



JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination May 2012

Subject: Human Anatomy & Physiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. a) Describe the structure, functions and lifecycle of red blood cells. (2+2+4)
b) What is erythropoiesis? Describe the different stages involved in erythropoiesis. (1+6)
2. a) What is cardiac cycle? Describe the various events in cardiac cycle with help of a neat labeled diagram. (1+6+3)
b) Describe the hormonal regulation of blood pressure. (5)
3. a) With the help of a neat labeled diagram describe the internal structure of ovary and the process of ovulation. (3+3+4)
b) Describe the events in spermatogenesis. (5)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Describe the composition and functions of cerebrospinal fluid. (2+3)
5. Classify connective tissues and describe their functions. (2+3)
6. How is food digested in the small intestine?
7. Classify bones and describe their functions. (3+2)
8. Describe the salient features of an action potential in a ventricular fiber.
9. Explain the various blood groups and significance of blood grouping. (4+1)
10. List out the components and functions of bile. (3+2)
11. Describe the anatomy of gustatory receptor and their types. (3+2)

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. What are the functions of lymph?
13. Name the two photoreceptors and mention the difference between them.
14. Enumerate the hormones of adrenal glands.
15. Define vital capacity and mention the normal value.
16. What is pulmonary circulation? State its functions.
17. Define terminal ganglia and give two examples.
18. Name heart valves and give the function.



2

QP Code: 1402

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination May 2012

Subject: Pharmaceutical Organic Chemistry-I

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. a) Write two methods for the preparation of carboxylic acid.
b) Explain briefly the chemistry (reactions) of carboxylic acids.
c) Comment on the relative reactivity of acid derivatives [RCOCl, RCOOR, RCONH₂ (RCO)₂O] towards nucleophilic substitution. (5+7+3)
2. a) Classify amines. Give chemical test to differentiate amines.
b) Give two methods for the preparation of amines.
c) Describe the chemical reactions of amines. (4+4+7)
3. a) What are alcohols? Classify alcohols with examples.
b) Write two methods for the preparation of alcohols.
c) Suggest a mechanism for the esterification of alcohols. (3+8+4)

II. SHORT ESSAY (Answer any six questions)

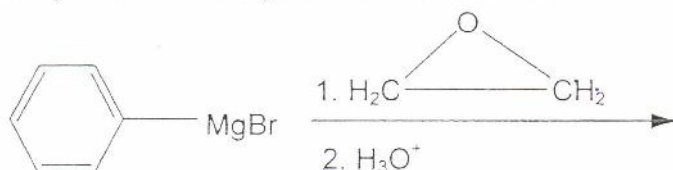
6x5=30 Marks

4. What is Hückel's $4n+2$ rule? Comment on the aromatic character of benzene.
5. Acetoacetic ester synthesis and its synthetic utility.
6. Explain the theory of orientation in aromatic electrophilic substitution reaction taking suitable example.
7. Mechanism of Knoevenagel reaction.
8. Dwell briefly on E2 reaction. Comment on Saytzeff's rule.
9. Briefly describe alkylation and elimination reaction of amines.
10. Nucleophilic aromatic substitution reactions.
11. Kinetics of SN₁ reaction.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define dipole moment.
13. Define constitutional isomer and provide one example.
14. Draw the structural formula for each of the following compounds:
a) Phenyl ethanoate
b) 2, 4-Dimethyl 2-pentene.
15. Define Markovnikov's rule.
16. n-pentane has a higher boiling point than neopentane. Explain.
17. Homolysis and heterolysis of covalent bonds.
- 18.





3

QP Code: 1403

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination May 2012

Subject: Pharmaceutical Inorganic Chemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. a) What are complexometric titrations?
b) Explain the principle and procedure involved in the assay of calcium gluconate.
c) Explain various steps involved in the gravimetry. (3+6+6)
2. a) What are anti-microbials? Write their mode of action and name of two official compounds. Explain the principle involved in the assay of chlorinated lime.
b) What are saline cathartics? Classify them. Write the preparation and assay of magnesium sulphate. (8+7)
3. a) With a neat labeled diagram, give the construction of Gutzeit's apparatus. Explain the principle and reaction involved in the limit test for arsenic.
b) Write a note on impurities in pharmaceutical substances. (10+5)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. What is the difference between Mohr's and Volhard's method of estimation of halides? Explain the assay of sodium chloride by modified Volhard's method.
5. Describe the physiological acid base balance.
6. Write a note on combination antacid preparations.
7. What are determinate and indeterminate errors? Give examples.
8. What are dental products? Explain the role of fluoride in dental caries.
9. What are antidotes? Classify them with examples.
10. Write the preparation, assay and use of sodium benzoate.
11. Define emetic. Give the method of preparation of copper sulfate.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Pharmaceutical applications of radioisotopes.
13. Significant figures.
14. Acidifiers.
15. Write a note on storage of iodine and disodium edetate volumetric solutions.
16. Define terms: a) Normality & b) Molality.
17. Chemical composition and use of talc.
18. Write the storage of potassium permanganate and hydrogen peroxide.



4

QP Code: 1404

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination May 2012

Subject: General Pharmaceutics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define posology. How will you calculate the dose for infants and children based on their physical factors?
2. Define suspensions. Classify suspension with examples. Write the advantages and disadvantages of suspensions.
3. Define creams. Write the method of preparation and evaluation of creams.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain the tests for identification of types of emulsions.
5. Flocculated and deflocculated suspensions.
6. Formulation and labelling requirements for liniments.
7. Formulation and examples of mouthwashes.
8. Describe the parts of prescription.
9. Explain the salient features of latest edition of IP.
10. Write a note on dextrans.
11. Describe physical incompatibility.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define emulsion and mention its types.
13. Displacement value.
14. Additives used in liquid orals.
15. Storage of blood products.
16. Define maceration & percolation.
17. Advantages and disadvantages of suppositories.
18. Differentiate creams and gels.



5

QP Code: 1405

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination May 2012

Subject: Biostatistics & Computer Science

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. a) Calculate the appropriate measure of dispersion from the following data:

Wages	No. of earners
<35	14
35-37	60
38-40	95
41-43	24
>43	7

- b) Find the value of mode with the help of arithmetic mean and median of the following frequency distribution.

Marks:	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80
No. of students:	4	16	48	52	57	18	09	04

- c) Distinguish between correlation and regression.

2. a) Write a note on generation of computer.

- b) Calculate Karl Pearson's coefficient of correlation between expenditure on advertising and sales from the following data

Advertising expenses (1000 Rs):	39	65	62	90	82	75	25	98	36	78
Sales (lakh Rs)	47	53	58	86	62	68	60	91	51	84

- c) Find the mean and SD of binomial distribution.

3. a) What is computer? What are the applications of computer?

- b) Calculate the regression equation of X on Y from the following data –

X :	1	2	3	4	5
Y :	2	5	3	8	7

- c) Two types of batteries are tested for their length of life and the following results were obtained

Battery A: $n_1=10$, $\bar{x}_1=500$ hrs, $\sigma_1^2=100$

Battery B: $n_2=10$, $\bar{x}_2=560$ hrs, $\sigma_2^2=121$

Compute student's t test and test whether there is a significant difference in two means.

PTO

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain the various measures of dispersion.
5. Find the rank correlation for the following data and give comments.
Marks in Accountancy (X): 84 56 89 58 59 67 74 78
Marks in Maths (Y): 38 69 56 58 63 78 87 77
6. Explain the block diagram of computer.
7. Define normal distribution and name any properties of normal distribution.
8. The number of telephone lines busy at an instant of time is a binomial variate with probability 0.1 that a line is busy. If 10 lines are chosen at random, what is the probability that (i) no line is busy (ii) all lines are busy (iii) at least one line is busy (iv) at most 2 lines are busy?
9. Write a note on pen drive.
10. The mean of 200 observations was 50. Later on, it was discovered that two observations were wrongly read as 92 and 8 instead of 192 and 88. Find out the correct mean.
11. a) Find the 1's and 2's complement of the following binary numbers.
 - i. $(11101011)_2$
 - ii. $(11010101)_2$b) Multiply $(11010)_2$ by $(101)_2$
c) Divide $(11010)_2$ by $(101)_2$
d) Convert $(651)_8$ to a number in binary

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Why do computers use the binary number system instead of decimal number system?
13. Write a note on flow charts.
14. Write a note on memory in computer.
15. List out the merits and demerits of sampling.
16. Define the concept of probability.
17. Write a note on coefficient of variation.
18. Define mode. Write its merits and demerits.

JSS UNIVERSITY, MYSORE

First Year B.Pharm (RS1) Examination - May 2013

Subject: Human Anatomy & Physiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Describe the uterine changes during menstrual cycle and explain how the hormones control it. Explain the process of oogenesis. (10+5)
2. Give the classification of tissues with examples. Write the properties and functions of cardiac, smooth and skeletal muscles. (5+10)
3. Draw a neat labeled diagram of structure of respiratory system. Explain the transport of respiratory gases in the blood. (5+10)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Define the term 'blood pressure' and write the various factors that regulate blood pressure.
5. Describe the process of digestion in small intestine.
6. Write the functions of medulla oblongata and cerebellum.
7. Briefly write the mechanism of coagulation of blood.
8. Explain the role of kidney in maintenance of acid-base balance.
9. Describe the secretion and functions of thyroid gland.
10. Write the functions of sympathetic and parasympathetic nervous system.
11. Explain the nerve mechanism of sensation of hearing.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Olfactory nerve.
13. Draw a labeled diagram showing deflection waves of ECG.
14. Chemoreceptor trigger zone.
15. Hemophilia.
16. Functions of bile.
17. Classify joints.
18. Anti diuretic hormone.

JSS UNIVERSITY, MYSORE**First Year B.Pharm (RS1) Examination - May 2013****Subject: Pharmaceutical Chemistry-I**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) Elaborate the SN^2 reaction mechanism with suitable example. (10+5)
b) What are the steps involved in gravimetric analysis?
2. a) Distinguish the properties of aldehydes and ketones. Describe the general methods of preparation of these two groups of compounds. (8+7)
b) Explain the aldol condensation and crossed aldol condensation.
3. a) Elaborate the principle and procedure for the limit test of arsenic. (10+5)
b) How is 0.1 M iodine solution IP prepared?

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain Diels Alder reaction.
5. Explain the significance of anti Markownikoff's orientation.
6. Explain the stability of conjugated dienes with example.
7. Explain the modified Mohr's method.
8. What is the principle involved in the limit test of chloride?
9. What are the general methods of preparation of carboxylic acid?
10. Explain the mechanism of free radical reaction.
11. Explain the theories of acid-base indicators. Explain the standardization of sodium thiosulphate solution.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. What are the different solvents used in non aqueous titration?
13. Explain esterification reaction with an example.
14. Elaborate benzoin condensation.
15. Write the IUPAC name for isopropyl alcohol and ISO butane.
16. Write Sachse Mohr's theory of strainless rings.
17. How to distinguish 1, 2, 3 alcohols?
18. Differentiate iodimetry and iodometry.

JSS UNIVERSITY, MYSORE

First Year B.Pharm (RS1) Examination - May 2013

Subject: Biochemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Explain the types of enzyme inhibition with examples and appropriate Lineweaver- Burke's plots.
2. Explain the β oxidation of palmitic acid with energetics.
3. Describe the pathway of gluconeogenesis. Add a note on its substrates and gluconeogenic enzymes.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. What are energy rich compounds? Write their biological significance.
5. Describe oxidative phosphorylation.
6. Write the IUB classification of enzymes with examples.
7. Allosteric enzymes.
8. Classification of carbohydrates.
9. Explain the process of glycolysis.
10. Write the mechanism of electron transport chain.
11. Describe fatty liver.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Why is mitochondria called the power house of the cell?
13. Name the purine and pyrimidine bases.
14. Write the clinical significance of adrenaline and noradrenaline.
15. Write the Michaelis - Menten equation with plot.
16. Name two isoenzymes and their applications.
17. Name the uncouplers of oxidative phosphorylation.
18. Define transcription.

JSS UNIVERSITY, MYSORE

First Year B.Pharm (RS1) Examination - May 2013

Subject: Physical Pharmaceutics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. What are the different methods of studying complex formation? Describe the solubility method to determine the formation of a complex and its stability constant.
2. Describe the flow behaviour of Newtonian and non Newtonian systems. Describe the role of thixotropy in formulation.
3. Explain a method each for the determination of surface tension and for interfacial tension. Write a note on HLB classification.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain how pharmaceutical preparations can be protected against hydrolysis and oxidation.
5. What are protective colloids? Describe a method to evaluate the protective property of colloids with a suitable example.
6. Write a brief note on the preservation of emulsions.
7. Describe the methods for estimating the buffer capacity of solution.
8. Explain the derived properties of powders.
9. Explain the reasons for setting of suspensions and measures to prevent the same.
10. Explain the determination of viscosity using a rotational viscometer.
11. Describe the solute-solvent interactions that influence the solubility of drugs in liquids.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Write the Arrhenius equation and explain the terms.
13. Explain Raoult's law.
14. Compare advantages and disadvantages of colorimetric and electrometric methods of pH determination.
15. What is optical activity? Write two of its applications.
16. Differentiate ideal and real solutions.
17. Write the effect of temperature on viscosity.
18. Briefly describe the process of detergency.

JSS UNIVERSITY, MYSORE
First Year B.Pharm (RS1) Examination - May 2013

Subject: Pharmacognosy

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Mention the plant fibres used in pharmacy and write pharmacognosy of any two fibres.
2. Write a detailed account of the methods of drug evaluation with special reference to microscopical evaluation.
3. Give the biological source, method of collection and preparation, chemical constituents, uses and adulterants of balsam of tolu.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Give the pharmacological classification of crude drugs with examples and write its advantages and disadvantages.
5. Write a note on storage of medicinal plants.
6. Substitutes and adulterants of clove.
7. Write the method of cultivation and collection of senna.
8. Write the source, method of preparation, chemical constituents and uses of cod liver oil.
9. Write the differentiating tests between Sumatra benzoin and Siam benzoin.
10. Write a note on plant hormones.
11. Explain the preparation of surgical catgut.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

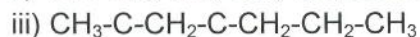
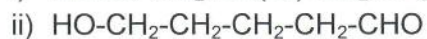
12. Chemical constituents and uses of bees wax.
13. Alphabetical classification of crude drugs.
14. Difference between fats and waxes.
15. Source and uses of kieselguhr.
16. Write a note on ash value.
17. Mention botanical source and uses of chaulmoogra oil.
18. Define soil and soil fertility.

2
QP Code: 1402**JSS UNIVERSITY, MYSORE****First Year B.Pharm Examination - May 2011****Subject: Pharmaceutical Organic Chemistry-I***Note: Draw neat labeled diagrams wherever necessary.**Your answer should be specific to the questions asked.***Time: 3 hours****Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

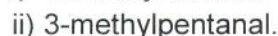
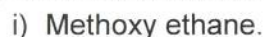
1. Explain the preparation and synthetic uses of Grignard reagent with suitable examples.
2. Explain the synthetic methods and reactions of amines.
3. Why do atoms undergo hybridization? Explain various types of hybridization in carbon compounds with suitable examples.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. a) Write the IUPAC nomenclature for the following:



- b) Write the structure of the following compounds.



5. Why are phenols acidic in nature? Explain the effect of substituents on the acidity of phenols.
6. Write notes on resonance and its importance.
7. Explain Aldol condensation and crossed Aldol condensation.
8. Explain the mechanism, reactivity and orientation of E_1 reaction.
9. Write the synthetic methods and reactions of acid chlorides.
10. Explain Diels – Alder reaction.
11. Write the reaction and synthetic uses of diazonium salts.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Explain polarity of bond.
13. Define carbanion and give example.
14. Explain peroxide effect.
15. Arrange the following carboxylic acids in decreasing order of stability: propanoic acid, 2-methyl propanoic acid and 2-chloropropanoic acid.
16. Why are terminal alkynes acidic?
17. Write the products formed in monochlorination of n-pentane.
18. Write one example each for primary, secondary, tertiary and quaternary amines.

May-2011



QP Code: 1401

JSS UNIVERSITY, MYSORE
First Year B.Pharm Examination - May 2011

Subject: Human Anatomy & Physiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Give the composition of blood. Enumerate the physiological functions of erythrocytes. Explain the mechanism and factors controlling blood coagulation.
2. How is autonomic nervous system (ANS) distributed? Give the physiological function of sympathetic system.
3. Explain the steps involved in thyroid hormone synthesis. Give the physiological function and deficiency of the same.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Briefly describe the functions of testosterone.
5. Describe the regulation of ovulation.
6. How are gases transported in the human body?
7. Write a note on cardiac output.
8. Write the structure and functions of skin.
9. Write the composition and function of bile secretions.
10. With the help of a diagram, explain the absorption of food in villi.
11. What is glomerular filtration rate? Give its normal value. Draw the structure of a nephron and label its parts.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Name the respiratory centres.
13. What is baroreceptor reflex?
14. Explain the terms a) Diabetes mellitus b) Menarche.
15. Diagrammatically represent skeletal muscle action potential.
16. Write two important functions of plasma proteins.
17. Give the movements of shoulder joint.
18. What is spermatogenesis?

JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination - May 2011****Subject: Pharmaceutical Inorganic Chemistry**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) Explain the sources of impurities in pharmacopoeial substances with suitable examples. (10)
b) Explain the principle and reaction involved in the assay of copper sulphate. (5)
2. a) What are antacids? Classify with examples. (4)
b) Give the ideal characteristics of antacids. (4)
c) Write the method of preparation and principle involved in the assay of sodium bicarbonate. (7)
3. a) Explain the major physiological ions and write their role in the body. (7)
b) Write a note on physiological acid-base balance. (3)
c) Write the method of preparation and principle involved in the assay of calcium gluconate. (5)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Write a note on dental products.
5. What are radio isotopes? Write their pharmaceutical applications.
6. Write the principle involved in the limit test for iron.
7. Explain the various methods of minimizing errors.
8. Write the method of preparation, assay and use of boric acid.
9. What are haematinics? Give the method of preparation and assay of ferrous sulphate.
10. Classify solvents in non-aqueous titrations with examples.
11. What are antimicrobials? Give examples. Explain their mechanism of action.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Write the molecular formula and medicinal use of sodium thiosulphate.
13. Write the composition and use of ORS.
14. Define the terms a) Astringents & b) Antioxidant.
15. Explain the chemical nature and use of talc.
16. Write the composition and use of barium sulphate.
17. What are expectorants?
18. Define primary and secondary standards.

JSS UNIVERSITY, MYSORE
First Year B.Pharm Examination - May 2011

Subject: General Pharmaceutics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Define suppositories. Write in detail the types of suppository bases. (2+7+6)
Explain the method of preparation of suppositories.
2. Define incompatibility. Explain the types of incompatibilities with examples. (2+13)
3. Classify liquid oral dosage forms. Write the general formulation aspects including excipients for monobasic dosage forms. (5+10)

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Differentiate simple and compound powders.
5. Explain the significance and parts of prescription.
6. Explain the preparation of lotion. Give examples.
7. Explain diffusible and indiffusible suspensions.
8. Explain the history of pharmacy profession in India.
9. Define granules. Write the preparation of effervescent granules.
10. Explain the collection, processing and storage of whole human blood.
11. Write the different extraction process.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Define gels and creams.
13. Types of emulsifying agents.
14. What are stabilizers? Give examples.
15. What are eutectic mixtures?
16. Advantages and disadvantages of powders.
17. What is cracking of emulsions?
18. Types of ointment bases.

JSS UNIVERSITY, MYSORE
First Year B.Pharm Examination - May 2011
Subject: Biostatistics & Computer Science

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

2x15=30 Marks

I. LONG ESSAY (Answer any TWO questions)

1. a) Calculate the mean and mode for the following data.

Value x	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency y	4	12	24	36	20	16	8	5

- b) Calculate the mean deviation and coefficient of mean deviation from median.

x	0-10	10-20	20-30	30-40	40-50	50-60
f	5	15	30	20	12	8

- c) What is meant by correlation? Briefly explain scatter diagram.

2. a) The following table gives the ages (in years) of 10 married couples. Calculate the coefficient of correlation between these ages.

Age of husband (x)	23	27	28	29	30	31	33	35	36	39
Age of wife (y)	18	22	23	24	25	26	28	29	30	32

- b) Write a note on normal distribution.

- c) Explain the application of computer in hospital and clinical pharmacy.

3. a) Two horses A and B were tested according to the time (in seconds) to run a particular race with the following results.

Horse A	28	30	32	33	33	29	34
Horse B	29	30	30	24	27	29	

Test whether you can discriminate between the two horses.

- b) The data given below relate to the score obtained by 9 salesmen of a company in an intelligence test and their weekly sales in thousands of rupees.

Salesman	A	B	C	D	E	F	G	H	I
Intelligence test score	50	60	50	60	80	50	80	40	70
Weekly sales	30	60	40	50	60	30	70	50	60

Obtain the regression equation of sales on intelligence test scores of the salesmen.

- c) Give the difference between hardware and software.

PTO

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. The following table gives the wages of the workers in a certain factory.

Daily wages (₹)	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70
No of workers	21	29	19	39	43	94	68	73	36	45

Draw a histogram based on the data given above.

5. The number of accidents in a year amongst taxi drivers in a city follows a Poisson distribution with mean 3. Out of 1000 taxi drivers find approximately the number of the drivers with a) No accident in a year b) More than 3 accidents in a year.

6. Compute the rank correlation coefficient for the following data.

x	68	64	75	50	64	80	75	40	55	64
y	62	58	68	45	81	60	68	48	50	70

7. Explain the block diagram of a computer.
8. Draw the flowchart to find average heights of boys and girls.
9. Define binomial distribution and name any two properties of binomial distribution.
10. Draw Ogive and also obtain median from Ogive.

x	0-10	10-20	20-30	30-40	40-50	50-60	60-70
f	6	10	18	25	15	12	8

11. Explain the construction and working procedure of pen drive.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define quartiles.
13. Define dispersion.
14. Write a note on null hypothesis.
15. Define algorithm.
16. What is main memory in computer?
17. What is the function of an operating system software?
18. Write a note on high level language.



QP Code: 1401

JSS UNIVERSITY, MYSORE
First Year B.Pharm Examination - May 2010
Subject: Human Anatomy & Physiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. What is meant by glomerular filtration rate (GFR)? Explain in detail the filtration of urine at glomerulus and factors controlling it.
2. Give the structure of eye. Explain the physiological functions and mechanism of vision.
3. Classify pituitary hormones. Give the physiological functions and deficiency of growth hormone.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Explain the differences between sympathetic and parasympathetic system.
5. Explain the respiratory volumes and capacity with graphical representation.
6. Briefly describe the mechanism of coagulation.
7. Write a note on the exocrine functions of pancreas.
8. Give the composition and function of salivary juice.
9. With a neat diagram explain the reflex arc.
10. Draw the internal structure of the heart and label it.
11. Write a note on spermatogenesis.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Draw the diagram of cardiac action potential and name the different phases.
13. Give the distribution and functions of glandular epithelial tissues.
14. How is oxygen transported in blood?
15. Classify joints with suitable examples.
16. What is purpura and leucocytosis?
17. Write two important functions of kidney.
18. Name the bones articulated in the formation of hip joint.



May - 2010 2

QP Code: 1402

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination - May 2010

Subject: Pharmaceutical Organic Chemistry-I*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Write detailed mechanism for:
a) Benzoin condensation.
b) Cannizzaro reaction.
c) Reformatsky reaction.
2. a) What are alkenes? (2+4+9)
b) Analyze the structure of alkenes.
c) Explain the following reaction of alkenes citing suitable examples.
(i) ionic additions (ii) free radical substitution.
3. a) What are S_N1 and S_N2 reaction? (3+8+4)
b) Describe the mechanism and kinetics of S_N1 reaction.
c) Comment on the stereochemistry of S_N2 reaction.

II. SHORT ESSAY (Answer any SIX questions)

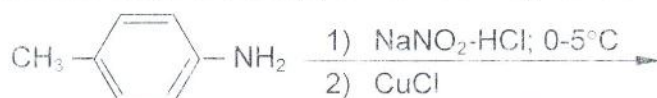
6x5=30 Marks

4. Explain mechanism for the nitration of benzene.
5. Baeyer's strain theory and its limitations.
6. Briefly describe one method employed for the preparation of alkenes.
Suggest a mechanism for the dehydration of alcohols.
7. Inductive effect and its influence on the acidity of carboxylic acids.
8. Malonic ester synthesis and its synthetic application.
9. Analyze the stability of carbonium ions.
10. Explain the Synthetic utility of Grignards reagent with relevant examples.
11. Basicity of amines.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. What are electron withdrawing functional groups? Provide two examples.
13. Polysubstitution is a complicating factor in Friedel-Crafts alkylation but not in aromatic nitration, sulfonation or halogenation. Explain.
14. Draw the structural formula for each of the following compounds:
a) 4-Isopropyl-3-phenylcyclopentanone.
b) 4-Hydroxy-2-pentenoic acid.
15. Depict ozonolysis reaction.
16. Define carbanion.
17. Why diethyl ether has much lower boiling point than n-butyl alcohol?
18. Predict the major product(s) of the following reactions.



2

QP Code:1403

JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination - May 2010****Subject: Pharmaceutical Inorganic Chemistry***Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.***Time: 3 hours****Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) Describe the principle and procedure involved in the limit test for arsenic with neat labeled diagram of Gutzeit's apparatus. (12+3)
b) Add a note on the importance of dental products.
2. a) Explain briefly about major physiological ions and physiological acid base balance. (8+6)
b) Write method of preparation and principle involved in assay of hydrogen peroxide
3. a) What are antacids? Give the ideal properties of antacids. (5+5+5)
b) Write the method of preparation and principle involved in assay of ferrous sulphate.
c) Write briefly about antidotes.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Write briefly on dermatological preparations.
5. Describe the properties of α , β , γ radiations.
6. What are astringents? Explain the preparation and assay of potassium alum.
7. Define and classify errors with examples.
8. What is argentometric titration? Explain the Villard's method for the estimation of halides.
9. Define emetic. Give the method of preparation of copper sulphate.
10. Write a note on masking and damasking agents used in complexometry.
11. Explain various types of solvents used in non aqueous titration.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define precision and accuracy.
13. Write the method of preparation and uses of sodium citrate.
14. Differentiate iodometry and iodimetry.
15. Define antidote with example.
16. Define the following terms: a) Half life b) Radio isotopes.
17. Complete and balance the equation.
(a) $\text{NH}_4\text{Cl} + \text{HCHO} \rightarrow ?$ (b) $\text{KMnO}_4 + \text{H}_2\text{O}_2 + \text{H}_2\text{SO}_4 \rightarrow ?$
18. Write the synonym and uses of magnesium sulphate and zinc sulphate.

QP Code: 1404

JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination - May 2010****Subject: General Pharmaceutics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Define prescription. Explain the parts of prescription. (3+12)
2. Define heterogeneous systems. Classify emulsifying agents with examples. What are the advantages and disadvantages of emulsions? (3+6+6)
3. Define incompatibilities. Explain the various types of incompatibilities. (3+12)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Identification test for emulsions.
5. Types of suspensions.
6. Dried human plasma.
7. Formulation of gels.
8. Explain percolation and soxhalation.
9. Salient features of Indian Pharmacopoeia.
10. Reasons and correction of incompatibility.
11. Stability problems of emulsions.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define suspensions and suspending agents.
13. Define displacement value.
14. Excipients used in liquid orals.
15. Storage of blood products.
16. Define eutectic mixtures.
17. Advantages and disadvantages of suppositories.
18. Differentiate creams and ointments.

JSS UNIVERSITY, MYSORE
First Year B.Pharm Examination - May 2010

Subject: Biostatistics & Computer Science

*Note: Draw neat labeled diagrams wherever necessary.
 Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

2x15=30 Marks

I. LONG ESSAY (Answer any TWO questions)

1. a) Obtain the mean, median & mode from the following data.

x : 12 13 17 18 19 19 20 21 21 22 24 27 30 31 31 (5+5+5)

- b) Calculate the co-efficient of variation for the following data.

x	4	8	12	16	20	24	28
f	3	13	22	39	18	12	2

- c) Find the Pearson's co-efficient of skewness for the following frequency distribution.

Class	3-7	8-12	13-17	18-22	23-27	28-32	33-37	38-42
Frequency	2	108	580	175	80	32	18	5

2. Explain the basic components of the MS Word and describe any 5 features of each.

3. a) Sex of birth and Rh factor are independent events and occur in any child. What will be the probability of a child being male and Rh^{ve}? (5+5+5)

- b) Following are the values of import of raw materials and export of finished product in suitable units. Calculate the co-efficient of correlation.

Export	10	11	14	14	20	22	16	12
Import	12	14	15	16	21	26	21	15

- c) The mean and variance of a binomial distribution are 3 and 2 respectively. Find the probability that the variate table values are less than or equal to 2.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Find the standard deviation of the set of observations
 3, 8, 6, 10, 12, 9, 11, 10, 12, 7

5. The following table gives age (X) in years of cars and annual maintenance cost (Y). Estimate the maintenance cost for a 4 year old car after finding the regression equations.

x	1	3	5	7	9
y	15	18	21	23	22

6. Calculate the 't' value from the following data.

x	2	4	6	9	11	6	5	3
y	21	24	27	31	35	20	17	11

7. Mean soil temperature and germination interval (time between sowing and appearance above ground) for winter wheat of 10 places are recorded below. Calculate the regression co-efficient and test its significance. Obtain the regression equation of rumination interval on mean soil temperature and comment on your result.

Mean soil temp.	38	42	45	42	44	40	46	44	43	40
No. of days	21	29	27	27	19	18	19	31	29	33

8. Define the following terms.
a) bit b) byte c) RAM d) ROM e) PROM f) EPROM
9. Describe the network topologies.
10. Write the uses of search engines. Give any 3 examples.
11. Draw a program flowchart to calculate and print the sum of all odd numbers between 9 and 100.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Enlist the different parts of CPU.
13. Define booting process.
14. Definition and notation of arithmetic mean, mode.
15. Define analog and digital.
16. List the merits & demerits of arithmetic mean.
17. Define correlation.
18. Define relational expressions.

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination - May 2013

Subject: Human Anatomy & Physiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. a) Briefly explain the cycle of respiration. (8+7)
b) Enumerate the various lung volumes and capacities.
2. a) Draw a neat labeled structure of the neuron. (5+10)
b) Explain the membranes covering the brain and spinal cord.
3. a) Draw a neat labeled structure of the kidney. (5+10)
b) Explain the functions of the kidney.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain the composition and functions of pancreatic juice and saliva.
5. Enumerate the activities of the digestive system.
6. Explain the process of osteogenesis.
7. Write the functions of blood.
8. Describe a normal ECG curve.
9. Describe the stages of cardiac cycle.
10. Describe the major functions of pituitary gland.
11. Outline the actions of thyroid hormone.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. What are the functions of connective tissue?
13. What are the three major classes of joints?
14. What is polycythemia?
15. Name the major plasma proteins.
16. Write a note on diseases of the heart.
17. Draw a neat labeled diagram of tongue.
18. Enlist the common disorders of the endocrine glands.

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination May 2013

Subject: Pharmaceutical Organic Chemistry-I*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Write the preparation and uses of melonic ester with suitable examples.
2. Explain the synthetic methods and reactions of alkenes.
3. Explain in detail the mechanism of electrophilic aromatic substitution, give examples and explain the effect of substituents on the reactivity & orientation of monosubstituted and disubstituted benzene.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. a) Write the IUPAC names for the followings:
 - i) $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_2\text{-CH}_2\text{-CH=CHCHO}$.
 - ii) $\text{NH}_2\text{-CH}_2\text{-CH}_2\text{-CH}_2\text{-OH}$.
 - iii) $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-C(CH}_3\text{)}_2\text{-CH}_2\text{-CH=CH}_2$



b) Write the structure of the following compounds:

- i) Propanedioic acid.
 - ii) 1, 3-pentadiene.
5. Why are carboxylic acids acidic in nature? Explain the effect of substituents on the acidity of carboxylic acid.
 6. Give an account on the various types of intermolecular force of attraction and their importance.
 7. Explain the mechanism, reactivity and orientation of acid catalyzed dehydration of alcohol.
 8. Explain the mechanism, reactivity and orientation of $\text{S}_\text{N}1$ reaction.
 9. Write two synthetic methods and two reactions of esters.
 10. Write two general methods of synthesis and reactions of alkynes.
 11. Explain Williamson synthesis including selection of suitable reagents for the synthesis of unsymmetrical ethers.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define atomic orbitals.
13. Define carbocation.
14. Why is 1, 2-butadiene less stable than 1, 3 - butadiene?
15. Why are cycloalkanes with six or more carbons as stable as open chain alkanes?
16. Why are phenols acidic?
17. Write the products formed when benzaldehyde is treated with methanal in presence of concentrated sodium hydroxide.
18. Write one example each for primary, secondary and tertiary alcohols.

JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination - May 2013****Subject: Pharmaceutical Inorganic Chemistry**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) Describe the principles and procedures involved in the limit test for chlorides and sulphates. (10+5)
b) Explain the arsenic limit test apparatus.
2. a) What are antacids? Describe milk of magnesia. (8+7)
b) Write the method of preparation and principle involved in assay of ferrous sulphate.
3. a) What is redox titration? Write the principle and procedure involved in the estimation of potassium permanganate. (8+7)
b) Write a note on electrolyte combination therapy and ORS.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. What are complexometric titrations? Write the principle and procedure involved in the estimation of calcium gluconate by complexometric method.
5. Write about properties of α , β , γ radiations.
6. What are astringents? Explain the preparation and assay of potassium alum.
7. Define and classify errors with examples.
8. Describe precipitation methods of analysis.
9. Define emetic. Give the method of preparation of copper sulphate.
10. Explain types of solvents used in nonaqueous titration.
11. Write the method of preparation and uses of sodium thiosulphate.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Write the synonym and uses of boric acid.
13. Define the following:
 - a) Antacids.
 - b) Antioxidants.
14. Complete and balance the equation:
 - a) $\text{Cu} + 2\text{H}_2\text{SO}_4 \rightarrow ?$
 - b) $\text{NaCl} + \text{AgNO}_3 \rightarrow ?$
15. Define primary standard. What are its requirements?
16. Write the method of preparation and uses of sodium citrate.
17. Differentiate iodometry and iodimetry.
18. Define antidote with example.

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination - May 2013

Subject: General Pharmaceutics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define posology and write the factors affecting dose selection. Explain the procedure of selection for infants and children.
2. Define monobasic dosage forms. Describe the formulation aspects of gargles and liniments.
3. Describe the types of extraction process.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain chemical incompatibility with examples.
5. Describe enemas.
6. Explain lotions with examples.
7. Describe flocculated and deflocculated suspensions.
8. Pharmacy education in India.
9. Describe simple and compound powders.
10. Explain therapeutic incompatibility.
11. Write the methods of preparation of emulsions.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Storage of blood products.
13. Define isotonic solutions and proof spirit.
14. Examples of organoleptic additives and stabilizer.
15. Eutectic mixtures.
16. Define ointment and give two examples of ointment bases.
17. Plasma substitutes.
18. Types of semisolid dosage forms with examples.

JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination May 2013****Subject: Biostatistics & Computer Science***Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.***Time: 3 hours****Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) Obtain the mean, median, & mode from the following data:-

(5+5+5)

Monthly Rent	20-40	40-60	60-80	80-100	100-120	120-140	140-160	160-180	180-200
No. of families	6	9	11	14	20	15	10	8	7

- b) Calculate the co-efficient of variation for the data:

X: 15, 12, 9, 18, 21, 15.

- c) Find the Pearson's co-efficient of skewness for the following frequency distribution:-

Annual Sales	0-20	20-40	40-60	60-80	80-100	100-120
Price	20	50	59	30	25	16

2. Describe the evolution of computers with respective block diagram.

3. a) What is the probability of getting a joker and ace from a pack of 54 cards?
- (5+5+5)**

- b) Computer correlation coefficient between supply and price of commodity using following data:-

Supply	152	158	169	182	160	166	182
Price	198	178	167	152	180	170	162

- c) If 12% of the tablets produced by a tablet machine are defective, what is the probability that out of a random sample of 20 tablets produced by the machine, 5 are defective?

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Define mean, median, mode, standard deviation and range.
5. From the data, calculate mean deviation from mode: X: 35, 40, 25, 20, 30.
6. Calculate the mean, the standard deviation and the Karl Pearson's co-efficient of skewness from the following data:-

Variable (X)	10	11	12	13	14	15	16	17	18	19
Frequency (y)	1	1	2	1	2	4	1	2	2	1

7. Calculate the regression co-efficient (b) and test its significance. Find out the regression equation.

x	9	8	12	7	13	12	17	21	2	19
y	9	7	10	8	8	11	12	15	16	15

8. Brief the functions and classifications of operating system.
9. List any 5 DOS commands and its uses.
10. Brief the applications of computer in the field of pharmacy.
11. Brief the use of mail-merge with an example.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define frequency and class.
13. Define histogram and frequency polygon.
14. List the characteristics a good measure should possess.
15. List any 5 output devices and its uses.
16. Define arithmetic expressions.
17. Define card reader.
18. Define TCP/IP.



QP Code: 1401

JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination November 2012****Subject: Human Anatomy & Physiology**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) What are leucocytes? Classify and describe the different types of leucocytes. (1+3+6)
- b) Explain the factors involve in clotting of blood. (5)
2. a) What is nephron? Describe the parts of nephron with help of a neat labeled diagram. (1+8)
- b) Describe the physiology of urine formation. (6)
3. a) Describe the internal structure of ear with the help of a neat labeled diagram. (4+6)
- b) Describe the physiology of hearing. (5)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Describe the endocrine function of pancreas.
5. How is blood pressure measured? What is its normal value? (4+1)
6. Describe the structure of a lymph node and its functions. (4+1)
7. What happens during the fight-or-flight response?
8. Describe the components of reflex arc and its functioning. (2+3)
9. Enlist the enzymes of pancreas and write their role in digestion. (2+3)
10. Describe the structure and functions of cerebellum. (2+3)
11. Explain the events of contraction and relaxation in muscle fiber.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. What are the functions of stomach?
13. Name two cranial nerves containing only sensory axons.
14. Enumerate the components of respiratory membrane.
15. Define hypermetropia and suggest a correction for the same.
16. What is calcitonin? Where is it produced?
17. Define peristalsis. What is its function?
18. What is the shape and size of heart?

November 2012

2

QP Code: 1402

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination November 2012

Subject: Pharmaceutical Organic Chemistry-I

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*



Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. a) Write an explanatory note on the structure of benzene and comment on its special stability.
b) Suggest a mechanism for the Friedel-Crafts acylation on benzene.
c) Explain the influence of $-CH_3$ group on the reactivity of benzene towards nitration. (7+5+3)
2. a) What are carbonyl compounds?
b) Why are aldehydes more reactive than ketones towards nucleophilic addition reaction?
c) Give an account of nucleophilic addition reaction of aldehydes. (2+5+8)
3. a) Write two methods for the preparation of alkanes.
b) Comment on the stability of free radicals.
c) Describe the chemistry of alkanes with suitable examples. (4+6+5)

II. SHORT ESSAY (Answer any SIX questions)

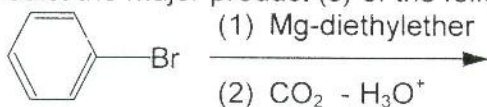
6x5=30 Marks

4. Suggest a mechanism for aldol condensation.
5. Explain the reactions of cyclopropane.
6. Comment on the stability of benzyl cation.
7. Explain the stereochemistry of S_N1 reaction.
8. Explain why methyl group is activating and ortho-and para-directing, towards aromatic electrophilic substitution reaction.
9. Sandmeyer reaction (synthesis of aryl halides from aryl diazonium salts).
10. Free radical substitution of alkane.
11. Comment how electronic effect of substituent influences the acidity of phenols.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Give two examples for electron releasing functional groups.
13. Explain why aromatic ring containing the $-NH_2$, NHR or NR_2 do not undergo Friedel-Crafts alkylation.
14. Indicate the electrophilic species in the following aromatic electrophilic substitution reactions a) Nitration b) Sulfonation.
15. Draw the structural formula for each of the following compounds:
a) 2-methyl-1-butene.
b) 5-oxohexanoic acid.
16. Define a nucleophile and give one example.
17. Carbon-carbon double bond is shorter than carbon-carbon single bond.
18. Predict the major product (s) of the following reactions.



JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination November 2012****Subject: Pharmaceutical Inorganic Chemistry**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

**Time: 3 hours****Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) Enumerate the significance of acid base balancing system and explain any two in detail.
b) Write a note on electrolyte combination therapy and ORS. (8+7)
2. a) Define limit tests. Explain the principle and procedure of limit test for iron.
b) What are antimicrobials? Enlist official antimicrobials. Write the method of preparation, identification tests and uses of hydrogen peroxide. (8+7)
3. a) What are haematinics? Write the preparation, principle of assay and uses of ferrous sulphate.
b) What are expectorants? Write the preparation, principle of assay and uses of copper sulphate.
c) What are dentifrices? Give an account of various dentifrices. (5+6+4)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. What is redox titration? Write a note on redox titrations.
5. Define emetics. Write the preparation and medicinal uses of sodium potassium tartarate.
6. Write a brief note on theory and solvents used in non-aqueous-titrations.
7. Define and classify errors with examples.
8. Explain precipitation methods of analysis.
9. What are complexometric titrations? Write the principle and procedure involved in the estimation of calcium gluconate by complexometric method.
10. What are the steps involved in the gravimetric method? Write the principle and procedure involved in the estimation of barium sulphate.
11. Explain the different theories of acid-base indicators in detail.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Explain the terms:
a) Titrant b) Titrate c) End point of the titration.
13. Define precision and accuracy.
14. Differentiate iodometry and iodimetry.
15. Write the synonym and uses of boric acid and heavy kaolin.
16. Define the following
a) Antacids b) Antioxidants
17. Complete and balance the equation:
a) $\text{Cu} + 2\text{H}_2\text{SO}_4 \rightarrow ?$
b) $\text{NaCl} + \text{AgNO}_3 \rightarrow ?$
18. Define primary standard. What are its requirements?



4

QP Code: 1404

JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination November 2012****Subject: General Pharmaceutics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Describe the history and development of pharmacy profession in India.
2. Define powders. Classify powders with official examples.
3. Describe in detail the formulation aspects of liquid dosage form.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Diffusible and indiffusible suspensions.
5. Throat paints.
6. Calculation of doses for children.
7. Handling of prescription.
8. Salient features of Indian Pharmacopoeia.
9. Granules and its method of preparation.
10. Collection and processing of whole human blood.
11. Packaging and evaluation of suppositories.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Control of blood products.
13. Physical incompatibility.
14. Types of bases in suppositories.
15. Pastes.
16. Posology.
17. Advantages and disadvantages of suspensions.
18. Identification test for emulsion.



5

QP Code: 1405

JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination November 2012****Subject: Biostatistics & Computer Science***Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.***Time: 3 hours****Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) Obtain the mean, median & mode from the following data
Height: 61, 62, 63, 61, 63, 64, 64, 64, 60, 65, 63, 64, 65, 66, 64
b) Calculate the co-efficient of variation for the data: X: 16, 18, 15, 13, 17
c) Find the Pearson's co-efficient of skewness for the following frequency distribution.

Class	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89
Frequency	5	9	14	20	25	15	8	4

2. Describe the basic components and parts of the computer.
3. a) Find the probability of drawing i) a spade ii) a king iii) a king of spades from a pack of 52 cards on a single draw.
b) Psychological tests of intelligence and arithmetical ability were applied to 10 candidates. Results are given below. Calculate the combined standard deviation between X and Y.

Intelligence ratio (X)	90	95	115	96	85	110	89	98	97	93
Arithmetic ratio (Y)	95	90	110	100	85	105	94	106	111	93

- c) Four coins are tossed simultaneously. What is the probability of getting at least two heads?

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Calculate the mean deviation about the mean for the following data:

Class	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
F	3	8	9	15	20	13	8	4

5. Calculate the Karl Pearson's co-efficient and skewness for the data recorded below:

Class	0-2	2-4	4-6	6-8	8-10	10-12	12-14
F	1	2	4	9	4	3	2

6. Find the coefficient correlation between x and y from the following data:

x	1	2	3	4	5	6	7	8	9
y	12	11	13	15	14	17	16	19	18

7. Four laboratories carried out experiment on precision and each used a sample of 5. The ammoniac content was analyzed. The results were:
The sum of squares = 0.84, SS between laboratories = 0.50
Draw up analysis of variance table the test of hypothesis that there is no difference between the laboratories. Given at 5%, $F_{3,16} = 3.25$, $F_{4,16} = 3.04$, $F_{3,17} = 3.15$.

PTO

8. The regression equation of X on Y is $3Y - 5X + 108 = 0$. The average of Y is 44000 and variance of X is $9/16^{\text{th}}$ of the variance of Y. Find average of Y and 'r'.
9. List the features of mainframe computers, laptops and palmtops.
10. Brief out about drug design.
11. List the functions of a database system.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Define frequency distribution and cumulative frequencies.
13. Define LAN, MAN, WAN.
14. Define WWW and E-mail and its uses.
15. Distinguish between correlation and regression.
16. Define machine language.
17. How many regression lines are there? What are its uses?
18. Define hypothesis and null hypothesis.



6

QP Code: 1406

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination November 2012****Subject: Physical Pharmaceutics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Explain how accelerated stability study is carried out. Explain its limitations.
2. Explain the various derived properties of powders.
3. Classify complexes. Explain metal ion complex with examples.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Define surfactants and classify them with suitable examples.
5. Derive Langmuir adsorption isotherm.
6. Explain HLB scale.
7. Classify emulsifying agents with suitable examples.
8. Explain the theories of emulsification.
9. Explain the kinetic properties of colloids.
10. Explain the pharmaceutical applications of polymers.
11. Derive an expression for first order reaction to determine rate constant.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define surface tension.
13. Define emulsion.
14. Mention any four applications of suspension.
15. Define half life of drug.
16. Differentiate between creaming and cracking of emulsion.
17. What is Newtonian system of flow?
18. Define thixotrophy.



7

QP Code: 1407

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination November 2012****Subject: Pharmaceutical Organic Chemistry-II**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) What are proteins? Classify them with suitable examples.
b) Explain the different methods to elucidate the primary & secondary structure of proteins. (5+10)
2. What are oils and fats? Give examples. Explain the analytical constants involved in the determination of oils & fats. (3+12)
3. What are monosaccharides? Give examples with structures. Explain the different methods of structural determination of glucose, including its configuration. (3+12)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Explain the medicinal uses & derivatives of phenanthrene.
5. What are furans? Outline the important reactions of furan.
6. Explain Meerwein Ponndorf Verley reduction with mechanism and examples.
7. Define stereo selective reactions with suitable examples.
8. What is meant by sequence rules? Explain its importance.
9. Compare the aromaticity of pyrrole, furan and thiophene.
10. Describe the mechanism of Wolf Kishner reduction.
11. Explain the phenomenon of stereo isomerism in biphenyl compounds.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. What are enantiomers?
13. What are R&S, D&L system?
14. Define optical activity.
15. Explain any one method of C-terminal amino acid analysis.
16. What are quinoline and isoquinolines?
17. Give any one method of preparation of phenothiazines.
18. What is rancidity of oils?



8

QP Code: 1408

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination November 2012
Subject: Pharmaceutical Engineering

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Draw the typical drying rate curve with a neat diagram. Explain the principle and operational details of fluidized bed dryer (FBD).
2. Describe the principle, construction, working, advantages and disadvantages of 'plate and frame filter press'.
3. Classify mixers based on mechanism. Describe the construction, working, advantages, disadvantages and applications of 'planetary mixer'.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Explain the working of fluid energy mill.
5. Describe the biological corrosion and suggest the preventive measures.
6. Explain the principle and operational details of spray dryer with a suitable diagram.
7. Explain the principle and working of an air-conditioner.
8. Explain Mier's super-saturation theory of crystallization.
9. Write the importance of stainless steel in pharmaceutical industry.
10. Give a neat diagram and working of "venturi meter".
11. Describe bubble cap rectifying column.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Primary refrigerants.
13. Name the official grades of powders.
14. Define sieve number and sieve nominal size of aperture.
15. What is Raoult's law? Give its significance.
16. Give different crystal habits with examples.
17. Define humid heat and enthalpy.
18. Reynolds number and its significance.



9

QP Code: 1409

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination November 2012****Subject: Applied Biochemistry**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Explain the theories of enzyme action and factors affecting enzyme action. Add a note on enzyme inhibition.
2. Describe fatty acid oxidation with its energetics and explain the role of carnitine in β -oxidation.
3. Define glycolysis. Explain the process of glycolysis. Give its significance.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Write a note on allosteric enzymes.
5. Explain the chemistry and biochemical role of thiamine.
6. Explain gluconeogenesis.
7. Write notes on the hormonal regulation of carbohydrate metabolism.
8. Explain the chemistry and biochemical role of sphingolipids.
9. Explain acetoacetate and fumarate pathway of tyrosine metabolism.
10. Explain the metabolism of bilirubin.
11. Explain the creatinin clearance test and its importance.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define Gibb's free energy.
13. Significance of cyclic AMP.
14. What is mutarotation?
15. Name the ketone bodies.
16. What are essential fatty acids? Give examples.
17. What is mutation?
18. What is transcription?



10

QP Code: 1411

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination November 2012****Subject: Pharmaceutical Jurisprudence & Management**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. What are the different licenses issued for the sale of drugs? Explain how general and restricted licenses are granted.
2. Write a detailed note on the stages of new product development.
3. What are the secondary functions of management? Explain.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. How is the Institutional Animal Ethics Committee constituted? Explain how breeding and stocking of animals are done.
5. Explain the different channels of distribution.
6. Explain briefly the different functions of pharmaceutical marketing.
7. Explain education regulation under Pharmacy Act 1948?
8. Define the terms coca leaf, opium and manufactured drugs under NDPS Act 1985.
9. Explain the concept of branding.
10. Write a note on market research.
11. Explain the loan license and repacking license.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define drug as per D & C Act.
13. Define patent and proprietary medicine (D&C Act).
14. Principle of goal setting theory of motivation.
15. Give specimen label for insulin injection.
16. What is Schedule 'G'?
17. Task management of leadership style.
18. What is brand? What are the advantages of having brand?



QP Code: 1412

JSS UNIVERSITY, MYSORE
Third Year B.Pharm Examination November 2012
Subject: Medicinal Chemistry-I

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)**2x15=30 Marks**

1. What are general anaesthetics? Explain their mechanism of action. Classify with examples and structures. Write the synthesis of methoxy flurane and thiamylal sodium. (1+4+5+5)
2. What are the various pathways of drug metabolism? Explain phase-I biotransformation reactions with examples. Enumerate the factors affecting the drug metabolism. (2+8+5)
3. Define and classify diuretics with examples and structures. Write the synthesis and mechanism of action of acetazolamide and furosemide. (5+10)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. What are sedatives and hypnotics? Classify with two examples and structures. Write the synthesis of chlordiazepoxide.
5. Write the synthesis of meperidine hydrochloride and methadone hydrochloride.
6. Write the synthesis and SAR of lidocaine.
7. Write the structure and uses of the following:
a) Nikethamide b) Salbutamol c) Carbachol d) Phenytoin sodium
e) Ipratropium bromide.
8. Write the synthesis of any two adrenergic antagonists.
9. Write the synthesis and SAR of carbamazepine.
10. Define and classify narcotic analgesics with examples and structures.
11. Define isosterism. What is the impact of biosteric modifications on the properties of molecules?

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Write a short note on oral hypoglycemic agents.
13. Write the structure and use of isosorbide dinitrate and clofibrate.
14. Write the synthesis of indomethacin.
15. Explain the mechanism of action of sympathomimetic drugs.
16. Outline the synthesis of valproic acid.
17. Write the synthesis of ephedrine.
18. Write the structure and uses of acetylcholine and atropine.

**JSS UNIVERSITY, MYSORE****Third Year B.Pharm Examination November 2012****Subject: Pharmacology-I**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) Define epilepsy. Classify the different types of seizures.
b) Explain the mechanism of action and adverse effects of phenytoin. (10+5)
2. What is angina pectoris? Classify the types of angina and the drugs for the treatment of angina.
3. Classify benzodiazepines. Write the mechanism of action, pharmacological actions and adverse effects of benzodiazepines.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Define receptor. Classify and explain the receptor types.
5. Explain drug photosensitivity with examples.
6. Explain the mechanism of action of digoxin.
7. Explain the pharmacology of loop diuretics.
8. Classify the antipsychotic drugs and write their uses.
9. Write a brief note on plasma protein binding.
10. Write the general treatment of status epilepticus.
11. Classify the drugs used in the treatment of asthma.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Give two examples of HMA CoA reductase inhibitors.
13. Write the complications of spinal anaesthesia.
14. What is drug allergy? Give examples.
15. Write any three newer nonbenzodiazepine hypnotics.
16. Name any four drugs that inhibit drug metabolizing enzymes.
17. What is first order kinetics?
18. Classify peripherally acting muscle relaxants.

**JSS UNIVERSITY, MYSORE****Third Year B.Pharm Examination November 2012****Subject: Biopharmaceutics & Pharmacokinetics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Explain the dosage form and formulation factors influencing drug absorption from GI tract with examples.
2. Explain the mechanism of drug absorption from the GI tract with examples.
3. Define and explain biological half life ($t_{1/2}$). Mention the factors influencing $t_{1/2}$. Explain the methods of determining $t_{1/2}$ from urinary excretion data.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Explain pH-partition theory.
5. Explain role of gastric emptying in drug absorption.
6. State and explain Noyes Whitney equation.
7. Define biopharmaceutics and explain its role in the product development.
8. Describe the method of residuals and its applications.
9. Define and explain V_d . Describe any one method for its determination.
10. Define bioavailability. Explain how absolute bioavailability is determined.
11. Explain the factors of pharmacokinetic variability.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define and explain pharmaceutical equivalents.
13. Draw a typical blood level curve following oral administration of a drug and indicate the important parameters.
14. Define and explain C_{max} .
15. Define and explain renal clearance.
16. Define and explain AUC.
17. Distinguish between disintegration time and dissolution rate.
18. Explain first pass effect with examples.



14

QP Code: 1418

JSS UNIVERSITY, MYSORE
Final Year B.Pharm Examination November 2012
Subject: Medicinal Chemistry-II

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)**2x15=30 Marks**

1. Classify antimalarials with examples. Explain the SAR of quinolines. Outline the synthesis of chloroquine and amodiaquine. (4+5+6)
2. Classify antineoplastic agents. Describe the mechanism of action of alkylating agents and antimetabolites. Outline the synthesis of mechlorethamine and methotrexate. (3+6+6)
3. What are beta lactam antibiotics? Outline the degradation products of penicillin. Explain the SAR of tetracyclines. (2+8+5)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Name any four anthelmintic drugs. Give the synthesis of thiabendazole.
5. What are sulphonamides? Explain the SAR among antibacterial sulphonamides.
6. Give the structure elucidation of ephedrine.
7. Write a note on antitubercular antibiotics.
8. Write the chemistry & synthesis of chloramphenicol.
9. Add a note on classification, distribution and general role of histamines.
10. Write a note on urinary tract anti-infectives. Outline the synthesis of nitrofurantoin.
11. What are prostaglandins? Outline the cyclo-oxygenase pathway.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Explain the term prodrug and bioprecursor with suitable example.
13. What are H₂ receptor antagonists? Give examples.
14. Outline the synthesis of toinaftate.
15. Explain the synergistic action of amoxicillin and clavulanic acid.
16. Define terpenoids. Give the structure of camphor.
17. Name any two polypeptide antibiotics and give their uses.
18. Outline the synthesis of nalidixic acid.



15
QP Code: 1419

JSS UNIVERSITY, MYSORE

Final Year B.Pharm Examination November 2012

Subject: Pharmacology-II

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Explain the mechanism of action of different classes of diuretics. Add a note on the therapeutic uses of diuretics. (12+3)
2. Explain the mechanism of action of immunosuppressants. Add a note on their therapeutic uses and adverse effects. (8+3+4)
3. Describe the role of platelets in hemostasis. Explain the mechanism of action, adverse effects and therapeutic uses of different antiplatelet agents. (4+4+4+3)

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Explain the mechanism of action and adverse effects of penicillins.
5. How are acute toxicity studies conducted? Explain their significance in drug discovery.
6. Explain transcription in eukaryotic cells.
7. Write briefly about viral vectors used in gene therapy.
8. Explain the role of H₂ receptors in gastric acid secretion and the role of H₂ blockers as antiulcer drugs.
9. Write a note on anticancer antibiotics.
10. Explain the mechanism of action and therapeutic uses of fluoroquinolones.
11. Explain the chemotherapy of AIDS.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Oncogenes.
13. Quinine.
14. Dapsone.
15. Heparin.
16. Erythromycin.
17. Mebendazole.
18. Therapeutic uses of different antiemetics.

JSS UNIVERSITY, MYSORE

First Year B.Pharm (RS-1) Examination - November 2013

Subject: Human Anatomy & Physiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. a) Define blood. Describe the composition and functions of blood. (2+6)
b) Explain the method to determine the blood groups. (7)
2. Draw a neat labeled diagram of urinary system and enumerate various functions of kidney. What are the factors controlling the urine volume? (7+8)
3. a) Define and classify parasympathetic nervous system. (7)
b) Explain the functions of parasympathetic nervous system. (8)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Describe the process of spermatogenesis.
5. Describe the respiratory process.
6. Explain the cardiac cycle.
7. Enumerate the functions of CNS.
8. Describe the anatomy of ANS.
9. Describe lymphoma.
10. Explain the process of atherosclerosis.
11. Classify various hormones and enlist the hormones secreted by pituitary gland.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. What is colorectal cancer?
13. What is cardiac output?
14. What is fertilization?
15. What is bronchial asthma?
16. What is glaucoma?
17. What is hepatitis?
18. What are the various types of joints?

JSS UNIVERSITY, MYSORE**First Year B.Pharm (RS-1) Examination - November 2013****Subject: Pharmaceutical Chemistry-I**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) Describe E_1 and E_2 reactions with their kinetics. Explain the order of reactivity in alkyl halides with example. (8+7)
b) Explain any three methods of preparation of carboxylic acid.
2. a) What is meant by isomerism? Classify with suitable example. (7+8)
b) Define hybridization. Explain sp^3 hybridization in alkanes with example.
3. a) Classify complexometric titration with example. How will you prepare and standardize 0.05 M EDTA solution? (8+7)
b) Explain the steps involved in gravimetric method of analysis.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain the principle involved in the limit test of arsenic.
5. How will you prepare and standardize 0.1 N iodine solution? Compare iodometry and iodimetry titration.
6. Classify acid base titration. Explain the principle involved in the assay of strong acid.
7. Explain different methods of expression of concentration.
8. Write a short note on Sachse Mohr's theory.
9. Explain free radical reaction of conjugated dienes.
10. With an example explain esterification reaction.
11. Explain principle and stereochemistry of SN_2 reaction of alkyl halides.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Classify precipitation titration with example from each.
13. Explain phenomenon of ozonolysis.
14. Define inductive effect with example.
15. Give example of primary and secondary standard for acid base titration.
16. Define positional isomerism with example.
17. Define cerimetric titration with example.
18. Write Saytzeff orientation.

JSS UNIVERSITY, MYSORE

First Year B.Pharm (RS-1) Examination - November 2013

Subject: Biochemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Explain the synthesis and breakdown of glycogen (glycogenesis and glycogenolysis) in liver and muscle.
2. Elaborate on the synthesis and excretion of urea from the body.
3. Explain:-
 - a) Ketogenesis.
 - b) Fatty liver.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Biological significance of cyclic AMP.
5. Describe active transport.
6. Isoenzymes and their diagnostic applications.
7. Define HMP shunt and write its significance.
8. Significance of phospholipids.
9. Biological significance of ATP.
10. Explain Michaelis Menten equation.
11. Types of RNA and their role in protein synthesis.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. What is creatinine clearance test? What is its significance?
13. Define mutation. Write its consequence.
14. Mention the different classes of lipids. Give examples.
15. Write the functions of cholesterol in the body.
16. What is substrate level phosphorylation? Give examples.
17. Name the hormones that affect glucose levels in the body.
18. Mention any two coenzymes and reaction in which each one participates.

JSS UNIVERSITY, MYSORE**First Year B.Pharm (RS-1) Examination - November 2013****Subject: Physical Pharmaceutics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Describe the boiling point composition curves of liquid-liquid solutions that help in fractional distillation.
2. Classify different types of colloids giving their salient features. Briefly describe the electrical properties of colloids.
3. Describe the different ways to present particle size distribution. Explain the optical microscopy method for determination of particle size.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain the principle involved in the determination of pH of a solution using electrometric method.
5. Define and explain the mechanism of thixotropy.
6. Define adsorption isotherm. Explain Freundlich's adsorption isotherm.
7. State and explain Henry's law of solubility of gases in liquids. Write its applications.
8. What is the influence of protein binding on drug action? Explain giving suitable examples.
9. Define and explain 'order of reaction'. What is meant by pseudo first order reaction?
10. Write the importance of Stoke's law of sedimentation in suspensions.
11. Explain the term 'solubility parameter'. Write four applications of the same.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Explain how cone and plate viscometers are superior to cup and bob viscometers.
13. Define inclusion complexes. Explain the monomolecular inclusion complexes with their pharmaceutical applications.
14. List the signs of instability in emulsions. Write a note on preservation of emulsions.
15. List four pharmaceutical preparations which require isotonic adjustment with buffer solutions.
16. What is meant by dielectric constant? Write two of its application in pharmacy.
17. Define angle of repose. Suggest two methods to improve the flow properties of granules.
18. Explain why surface active agents are adsorbed at the interface. Write two examples for non ionic surfactant.

JSS UNIVERSITY, MYSORE

First Year B.Pharm (RS-1) Examination - November 2013

Subject: Pharmacognosy

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Explain the factors affecting cultivation of crude drugs.
2. Give the biological source, method of preparation, chemical constituents, tests for identification and uses of gelatin.
3. Define and classify crude drugs. Describe in detail pharmacological and taxonomical classification of crude drugs.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. What are tannins? Write the source, macroscopical features, chemical constituents and uses of catechu.
5. Role of stomata in identification of crude drugs.
6. Substitutes and adulterants of digitalis.
7. Write in brief biological activity of taxol.
8. Write the method of preparation, chemical constituents and uses of agar.
9. Write the differentiating tests between cotton and wool. Mention their uses.
10. Write a note on conservation of medicinal plants.
11. Write an essay on preparation of medicinal castor oil.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Explain the term mulching and coppicing.
13. Write about pharmaceutical aids.
14. Difference between gums and mucilage.
15. Source and uses of shellac.
16. Moisture content.
17. Chemical test for podophyllum.
18. Substitutes and adulterants of ergot.



12

QP Code: 1401

JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination November 2010****Subject: Human Anatomy & Physiology**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) What is pulmonary ventilation? Describe the mechanism involved in the flow of air during pulmonary ventilation with the help of a diagram. (1+6+2)
b) Describe the exchange of gases in external and internal respiration. (3+3)
2. a) What are accessory digestive organs? Enlist them and describe the structure of a typical tooth. (1+2+6)
b) Describe the mechanical and chemical digestion in the stomach. (2+3)
3. a) Describe the structure of an eye ball with the help of a neat labeled diagram. (6+3)
b) Explain the process of image formation by describing refraction, accommodation and constriction of pupil. (2+2+2)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Describe the characteristics and functions of epithelial tissue. (2+3)
5. Classify joints with examples and describe the types of movements. (3+2)
6. Describe the extrinsic pathway of blood clotting. (3+2)
7. Classify leucocytes and describe their functions. (3+2)
8. Describe the salient features of ECG with the help of a neat labeled ECG tracing.
9. List out the functions of cerebellum.
10. Describe the internal structure of testis.
11. What are the functions of the posterior pituitary gland hormones?

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. What are the functions of kidney?
13. Enumerate the sex hormones.
14. Define renal clearance and mention the normal urea clearance value.
15. What is a reflex arc?
16. Exocrine functions of pancreas.
17. What is synaptic cleft? State its functions.
18. List the bones of cranium.

**JSS UNIVERSITY, MYSORE****First Year B.Pharm Examination November 2010****Subject: Biostatistics & Computer Science**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) Calculate the mean, the variance, the standard deviation and the coefficient of variation of the following distribution.

x	2	4	6	9	11	6	5	3
y	21	24	27	31	35	20	17	11

- b) Calculate the mean, the standard deviation and the Karl Pearson's coefficient of skewness from the data given below.

Variable(x)	10	11	12	13	14	15	16	17	18	19
Frequency(y)	1	1	2	1	2	4	1	2	2	1

- c) Find out the Coefficients of skewness and kurtosis for the following distribution of serum cholesterol levels of patients in a hospital.

Serum cholesterol	50-60	60-70	70-80	80-90	90-100
Patients	6	10	24	22	18

2. Write in detail about local area networks, its types and topologies.
3. a) Find the probability of getting at least 3 heads by tossing a coin 4 times.
b) Compute the correlation coefficient between 'head' and 'body' weights of insects and test its significance.

Head weight(mg)	18	20	25	28	19	27	30	34	36	33
Body weight (mg)	52	54	60	62	59	63	65	70	78	77

- c) An average of 5 cars arrives at the tollbooth every minute. Assuming this to be a Poisson distribution, what is the probability that exactly 0,1,2,3 and 4 cars arrive in a one minute period.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Define statistics and enlist the statistical methods.
5. Find the standard deviation of the set of numbers 3,8,6,10,12,9,11,10,12,7.
6. Calculate the Karl Pearson's coefficient and skewness from the data recorded below.

Variable (x)	10	20	30	40	50	60	70
Frequency (f)	1	5	12	22	17	9	4

7. Find the line of regression of y on x.

x	1	2	3	4	5	8	10
y	9	8	10	12	14	16	15

8. Brief out the classification of computer.
9. List the types of wide area network.
10. Explain the type of computer graphics and uses of graphics.
11. Explain the built in functions of excel.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define cluster sampling with an example.
13. Enlist the merits and demerits of a geometric mean.
14. Write the equations of regression lines.
15. Define hardware and software.
16. List the types of operators.
17. Define directories and files.
18. Define booting process.



15
Q

QP Code: 1404

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination November 2010

Subject: General Pharmaceutics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define and classify emulsion. Explain the method of preparation and stability of emulsion.
2. Define and classify suppositories. Explain the formulation, advantages and disadvantages of suppositories.
3. Explain blood products and their uses.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Write a short note on 'pharmacy as a career'.
5. Define displacement value and its calculations.
6. Enlist examples of tinctures and extracts with official examples.
7. Write a note on dextrans.
8. Write the mechanism of drug penetration.
9. Write the principle involved in the preparation of calamine lotion.
10. Classify various dosage forms with examples.
11. Write a method for the preparation of elixir.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Write any two formulae to calculate doses in infants.
13. Define and classify suspension.
14. Enlist types of semisolid dosage forms.
15. Define physical and chemical incompatibilities.
16. Differentiate 'infusion' and 'decoction'.
17. Mention factors affecting dose selection.
18. Define 'maceration'.

**JSS UNIVERSITY, MYSORE**

First Year B.Pharm Examination November 2010

Subject: Pharmaceutical Inorganic Chemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. a) Describe the principle, reaction, apparatus and procedure involved in the limit test for arsenic with the help of a neat labeled diagram. (12+3)
b) Write a note on the importance of limit test.
2. a) Give the principle and brief procedure involved in the estimation of halides by Mohr's method. (6+5+4)
b) Explain the theory of adsorption indicators giving its advantages.
c) How is ammonium chloride estimated by the above method
3. d) What is radioactivity? Explain the properties of different types of radiation and their use. Explain the construction and working of any one instrument used in the measurement of radiation. (10+5)
e) Write a note on radioactive cobalt.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Define emetics? Explain the principle and procedure involved in the assay of copper sulphate.
5. Define astringents? Give the method of preparation and assay of Potash Alum.
6. What are dentifrices? Explain the role of fluoride in the treatment of dental caries. Write the preparation of sodium fluoride.
7. How will you prepare and assay boric acid.
8. What are masking and demasking agents? Explain the different methods by which masking agents act with examples.
9. What are antidotes? How do they act? Give the preparation of any one antidote.
10. How do you prepare and standardize 0.1N potassium permanganate solution?
11. What are expectorants? Classify them with examples. How do you prepare and assay potassium iodide.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Differentiate between iodometry and iodimetry.
13. What is the importance of Ca and Na in human nutrition?
14. What is barium sulphate reagent?
15. Define protogenic and protophilic solvents.
16. Give the preparation of Iron and ammonium citrate.
17. What is the composition of sodium chloride hypertonic injection and sodium chloride compound injection?
18. Define digestion and peptisation with suitable examples.

**JSS UNIVERSITY, MYSORE****First Year B.Pharm Examination November 2010****Subject: Pharmaceutical Organic Chemistry-I**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) Explain the method of preparation and any four synthetic uses of Grignard reagent with suitable examples. (11+4)
b) Give reason for the followings:
 - i) Electrophilic addition to carbon-carbon double bond follows Markovnikov's orientation.
 - ii) Monochlorination of n-butane gives more proportion of 2-chlorobutane and less proportion of 1-chloropropane.
2. a) Explain any three synthetic methods and any three reactions of carboxylic acids. (10+5)
b) Explain the acidity and effect of substituents on the acidity of carboxylic acids.
3. a) Explain Bayer's strain theory and its limitations. (5+10)
b) Explain the effect of substituents on the reactivity & orientation of monosubstituted benzene towards electrophilic aromatic substitution reaction.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Write the IUPAC rules for the nomenclature of alcohols and write the IUPAC names for glycerol, propylene glycol, oxalic acid, acetic acid and ethyl alcohol.
5. Explain reformatsky reaction.
6. What are carbenes? Write the mechanism of any one reaction involving the formation of carbene.
7. Write any three methods for the synthesis of alkenes.
8. What is nucleophilic aromatic substitution? Give examples? How does it differ from electrophilic aromatic substitution reaction as far as the reactivity is concerned?
9. Give a comparative account on any two methods for the conversion of alkenes to alcohols with emphasis on the orientation.
10. Explain the mechanism of Cannizaro reaction and crossed Cannizaro reaction.
11. Write the reactions for amides.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define Saytzeff rule.
13. Mention the types of hybridization of carbon in ethane and nitrogen in ammonia.
14. What are phenols? How do they differ from alcohol?
15. Write an example each for primary, secondary, tertiary and quaternary amine.
16. What are diazonium salts? Give one example.
17. Define electrophile and give examples.
18. Write the reaction between toluene with nitrating mixture.



QP Code: 1401

JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination November 2012****Subject: Human Anatomy & Physiology**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) What are leucocytes? Classify and describe the different types of leucocytes. (1+3+6)
- b) Explain the factors involved in clotting of blood. (5)
2. a) What is nephron? Describe the parts of nephron with help of a neat labeled diagram. (1+8)
- b) Describe the physiology of urine formation. (6)
3. a) Describe the internal structure of ear with the help of a neat labeled diagram. (4+6)
- b) Describe the physiology of hearing. (5)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Describe the endocrine function of pancreas.
5. How is blood pressure measured? What is its normal value? (4+1)
6. Describe the structure of a lymph node and its functions. (4+1)
7. What happens during the fight-or-flight response?
8. Describe the components of reflex arc and its functioning. (2+3)
9. Enlist the enzymes of pancreas and write their role in digestion. (2+3)
10. Describe the structure and functions of cerebellum. (2+3)
11. Explain the events of contraction and relaxation in muscle fiber.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. What are the functions of stomach?
13. Name two cranial nerves containing only sensory axons.
14. Enumerate the components of respiratory membrane.
15. Define hypermetropia and suggest a correction for the same.
16. What is calcitonin? Where is it produced?
17. Define peristalsis. What is its function?
18. What is the shape and size of heart?

November 2012

2

QP Code: 1402

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination November 2012

Subject: Pharmaceutical Organic Chemistry-I

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*



Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. a) Write an explanatory note on the structure of benzene and comment on its special stability.
b) Suggest a mechanism for the Friedel-Crafts acylation on benzene.
c) Explain the influence of $-CH_3$ group on the reactivity of benzene towards nitration. (7+5+3)
2. a) What are carbonyl compounds?
b) Why are aldehydes more reactive than ketones towards nucleophilic addition reaction?
c) Give an account of nucleophilic addition reaction of aldehydes. (2+5+8)
3. a) Write two methods for the preparation of alkanes.
b) Comment on the stability of free radicals.
c) Describe the chemistry of alkanes with suitable examples. (4+6+5)

II. SHORT ESSAY (Answer any SIX questions)

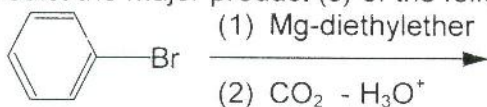
6x5=30 Marks

4. Suggest a mechanism for aldol condensation.
5. Explain the reactions of cyclopropane.
6. Comment on the stability of benzyl cation.
7. Explain the stereochemistry of S_N1 reaction.
8. Explain why methyl group is activating and ortho-and para-directing, towards aromatic electrophilic substitution reaction.
9. Sandmeyer reaction (synthesis of aryl halides from aryl diazonium salts).
10. Free radical substitution of alkane.
11. Comment how electronic effect of substituent influences the acidity of phenols.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Give two examples for electron releasing functional groups.
13. Explain why aromatic ring containing the $-NH_2$, NHR or NR_2 do not undergo Friedel-Crafts alkylation.
14. Indicate the electrophilic species in the following aromatic electrophilic substitution reactions a) Nitration b) Sulfonation.
15. Draw the structural formula for each of the following compounds:
a) 2-methyl-1-butene.
b) 5-oxohexanoic acid.
16. Define a nucleophile and give one example.
17. Carbon-carbon double bond is shorter than carbon-carbon single bond.
18. Predict the major product (s) of the following reactions.



JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination November 2012****Subject: Pharmaceutical Inorganic Chemistry***Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.***Time: 3 hours****Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) Enumerate the significance of acid base balancing system and explain any two in detail.
b) Write a note on electrolyte combination therapy and ORS. (8+7)
2. a) Define limit tests. Explain the principle and procedure of limit test for iron.
b) What are antimicrobials? Enlist official antimicrobials. Write the method of preparation, identification tests and uses of hydrogen peroxide. (8+7)
3. a) What are haematinics? Write the preparation, principle of assay and uses of ferrous sulphate.
b) What are expectorants? Write the preparation, principle of assay and uses of copper sulphate.
c) What are dentifrices? Give an account of various dentifrices. (5+6+4)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. What is redox titration? Write a note on redox titrations.
5. Define emetics. Write the preparation and medicinal uses of sodium potassium tartarate.
6. Write a brief note on theory and solvents used in non-aqueous-titrations.
7. Define and classify errors with examples.
8. Explain precipitation methods of analysis.
9. What are complexometric titrations? Write the principle and procedure involved in the estimation of calcium gluconate by complexometric method.
10. What are the steps involved in the gravimetric method? Write the principle and procedure involved in the estimation of barium sulphate.
11. Explain the different theories of acid-base indicators in detail.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Explain the terms:
a) Titrant b) Titrate c) End point of the titration.
13. Define precision and accuracy.
14. Differentiate iodometry and iodimetry.
15. Write the synonym and uses of boric acid and heavy kaolin.
16. Define the following
a) Antacids b) Antioxidants
17. Complete and balance the equation:
a) $\text{Cu} + 2\text{H}_2\text{SO}_4 \rightarrow ?$
b) $\text{NaCl} + \text{AgNO}_3 \rightarrow ?$
18. Define primary standard. What are its requirements?



4

QP Code: 1404

JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination November 2012****Subject: General Pharmaceutics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Describe the history and development of pharmacy profession in India.
2. Define powders. Classify powders with official examples.
3. Describe in detail the formulation aspects of liquid dosage form.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Diffusible and indiffusible suspensions.
5. Throat paints.
6. Calculation of doses for children.
7. Handling of prescription.
8. Salient features of Indian Pharmacopoeia.
9. Granules and its method of preparation.
10. Collection and processing of whole human blood.
11. Packaging and evaluation of suppositories.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Control of blood products.
13. Physical incompatibility.
14. Types of bases in suppositories.
15. Pastes.
16. Posology.
17. Advantages and disadvantages of suspensions.
18. Identification test for emulsion.



5

QP Code: 1405

JSS UNIVERSITY, MYSORE**First Year B.Pharm Examination November 2012****Subject: Biostatistics & Computer Science***Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.***Time: 3 hours****Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) Obtain the mean, median & mode from the following data
Height: 61, 62, 63, 61, 63, 64, 64, 64, 60, 65, 63, 64, 65, 66, 64
b) Calculate the co-efficient of variation for the data: X: 16, 18, 15, 13, 17
c) Find the Pearson's co-efficient of skewness for the following frequency distribution.

Class	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89
Frequency	5	9	14	20	25	15	8	4

2. Describe the basic components and parts of the computer.
3. a) Find the probability of drawing i) a spade ii) a king iii) a king of spades from a pack of 52 cards on a single draw.
b) Psychological tests of intelligence and arithmetical ability were applied to 10 candidates. Results are given below. Calculate the combined standard deviation between X and Y.

Intelligence ratio (X)	90	95	115	96	85	110	89	98	97	93
Arithmetic ratio (Y)	95	90	110	100	85	105	94	106	111	93

- c) Four coins are tossed simultaneously. What is the probability of getting at least two heads?

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Calculate the mean deviation about the mean for the following data:

Class	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
F	3	8	9	15	20	13	8	4

5. Calculate the Karl Pearson's co-efficient and skewness for the data recorded below:

Class	0-2	2-4	4-6	6-8	8-10	10-12	12-14
F	1	2	4	9	4	3	2

6. Find the coefficient correlation between x and y from the following data:

x	1	2	3	4	5	6	7	8	9
y	12	11	13	15	14	17	16	19	18

7. Four laboratories carried out experiment on precision and each used a sample of 5. The ammoniac content was analyzed. The results were:
The sum of squares = 0.84, SS between laboratories = 0.50
Draw up analysis of variance table the test of hypothesis that there is no difference between the laboratories. Given at 5%, $F_{3,16} = 3.25$, $F_{4,16} = 3.04$, $F_{3,17} = 3.15$.

PTO

8. The regression equation of X on Y is $3Y - 5X + 108 = 0$. The average of Y is 44000 and variance of X is $9/16^{\text{th}}$ of the variance of Y. Find average of Y and 'r'.
9. List the features of mainframe computers, laptops and palmtops.
10. Brief out about drug design.
11. List the functions of a database system.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Define frequency distribution and cumulative frequencies.
13. Define LAN, MAN, WAN.
14. Define WWW and E-mail and its uses.
15. Distinguish between correlation and regression.
16. Define machine language.
17. How many regression lines are there? What are its uses?
18. Define hypothesis and null hypothesis.

JSS UNIVERSITY, MYSORE

First Year B. Pharm Examination - November 2013

Subject: Human Anatomy & Physiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Write the anatomy, physiology and functions of adrenal gland.
2. Draw a neat labeled diagram of eye. Explain the physiology of vision.
3. Explain cardiac cycle.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Write the structure and functions of kidney.
5. Write the mechanism of respiration.
6. Explain digestion of carbohydrates.
7. Explain Rh-factor & its significance.
8. Classification and properties of nerve fibres.
9. Classify joints giving example.
10. Describe blood circulation.
11. Define pituitary disorders.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Name the bones of cranium.
13. List the hormones of pituitary gland
14. Define myasthenia gravis.
15. Classify tissues.
16. Name the parts of neuron.
17. Artificial respiration.
18. Bleeding and clotting disorders.

JSS UNIVERSITY, MYSORE**First Year B. Pharm Examination November 2013****Subject: Pharmaceutical Organic Chemistry-I**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) Define electrophilic substitution reaction. Explain the mechanism of nitration, sulphonation and Friedel Craft's alkylation reactions with examples. (2+8)
- b) Write a note on activating and deactivating O, P, and M directing groups. (5)
2. a) Write the mechanism of bimolecular nucleophilic substitution reaction of alkyl halide. Explain with any two evidences. (2+6)
- b) Define boiling point. Compare the boiling points of alkanes, carboxylic acids, alcohol and ethers. (2+5)
3. Give a comparative account on the mechanism kinetics, reactivity and orientation of E1 and E2 reactions.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain aldol condensation and crossed aldol condensation.
5. Explain Huckel's rule.
6. Write a note on acidity of phenols.
7. Explain the following reactions:
a) Cannizaro reaction b) Perkin reaction (2½+2½)
8. Write a note on Markownikoff's rule and peroxide effect. (2½+2½)
9. Explain Bayer's strain theory with its limitations. (2+3)
10. What are diazonium salts? Write their synthetic uses.
11. Write the synthesis of malonic ester and its synthetic uses.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define aprotic solvents.
13. Write the structure for the following:
a) Methyl methanoate b) 2-Pentanone.
14. Compare the polarity of water and methanol.
15. What are carbonyl compounds? Give two examples.
16. Give the IUPAC names for a) Formamide b) Ethyl acetate.
17. Why methane is insoluble in water.
18. What is an electrophile? Give two examples.

1st year B. Pharmacy & II B. Pharm
October 2011

QP Code: 1401

①

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination - October 2011

Subject: Human Anatomy & Physiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*



Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Draw the structure of the human brain and label it. Explain the various functions of cerebellum and enumerate the cranial nerves.
2. Name the female sex hormones and explain their physiological functions. Describe physiology of menstrual cycle.
3. Explain the anatomy of respiratory system with a neat labeled diagram. Explain mechanism of respiration.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Write a note on defects of eye.
5. Explain the types of intestinal motility and their significance.
6. Explain the digestion of carbohydrates.
7. Describe the functions of leukocytes.
8. What is micturition reflex? How it is regulated?
9. What is insulin? Where is it secreted? Write the physiological functions of insulin.
10. Write a note on cardiac cycle.
11. How is blood pressure regulated?

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Write the non auditory functions of ear.
13. Name the hormones secreted by posterior pituitary gland.
14. Give two important functions of epithelial tissues.
15. Define Landsteiner's law of blood grouping.
16. Define second messengers and give example.
17. What is hinge joint? Give its movements.
18. Give the composition of plasma.



2

QP Code: 1402

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination - October 2011

Subject: Pharmaceutical Organic Chemistry-I

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

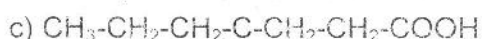
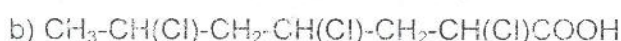
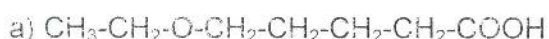
2x15=30 Marks

1. Explain the preparation and synthetic uses of acetoacetic ester with suitable examples.
2. Explain the synthetic methods and reactions of alkyl halides.
3. Give an account on the evidences for confirming the structure of benzene. Add a note on the orbital picture of benzene.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. A. Write the IUPAC nomenclature for the following:



- B. Write the structure for the following compounds:

a) 3-hydroxybutanoic acid.

b) 1-methoxy-2-propanol.

5. Why amines are basic in nature? Explain the effect of substituents on the basicity of amines.
6. What are carbocations? Classify them with suitable examples and explain their relative stability with reasons.
7. Write notes on nucleophilic aromatic substitution reaction.
8. Explain the mechanism, reactivity and orientation of SN_2 reaction.
9. Write the synthetic methods and reactions of acid anhydrides.
10. Explain Cannizaro reaction.
11. Explain the mechanism and orientation of free radical halogenations of alkanes.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Define dipole moment.
13. Define free radicals and classify them with example.
14. Explain Markovnikov's rule.
15. What are acid anhydrides? Write any two examples.
16. Write the limitations of Baeyer's strain theory.
17. Write the synthetic uses of diazonium salts.
18. What are carbenes.

3
QP Code:1403

JSS UNIVERSITY, MYSORE
First Year B.Pharm Examination - October 2011
Subject: Pharmaceutical Inorganic Chemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. a) Write the principle and procedure in the limit test for:
i) Chlorides ii) Iron
b) Write the principle involved in the assay of:
i) Sodium chloride ii) Hydrogen peroxide.
2. a) Explain Volhard's method of estimation of halides. Write the (9+6)
mechanism of indicator in Fajan's method.
b) What are primary standards? What are the properties of primary standards?
3. a) Explain briefly the major physiological ions and physiological acid base (8+4+3)
balance.
b) Write the method of preparation and principle involved in the assay of calcium gluconate.
c) Write in brief the combination of antacid preparations.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. What are expectorants? Write the method of preparation and assay of ammonium chloride.
5. Explain the different methods to minimize errors.
6. What are radioisotopes? Give the pharmaceutical applications.
7. Write the preparation and principle involved in the assay of chlorinated lime.
8. What are haematinics? Give the principle involved in the assay of ferrous sulphate.
9. Explain the various types of solvents used in non aqueous titrations.
10. Write a note on dental products. Explain the role of fluoride in dental caries.
11. Explain the basis of fixing limits for impurities.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. What are astringents? Give examples.
13. Define the following terms:
a) Antidotes b) Pharmaceutical aids.
14. Give reason for the use of glycerin in the assay of boric acid.
15. Write a note on significant figures.
16. Respiratory stimulants.
17. Chemical composition and use of kaolin.
18. Write the storage of iodine and hydrogen peroxide.



4
QP Code: 1404

JSS UNIVERSITY, MYSORE

First Year B.Pharm Examination - October 2011

Subject: General Pharmaceutics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Define prescription. Write in detail about the parts of prescription with an example. Add a note on handling of prescription with examples? (2+8+5)
2. Define emulsions. Classify types of emulsions. Explain the method of preparation of emulsions. (2+5+8)
3. Define ointment. Classify ointment bases. Explain the method of preparation of ointments. (2+5+8)

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Explain the stability problems of emulsions.
5. Classify suspending agents and the methods of preparation of suspensions.
6. What are elixirs? Explain the formulation aspects of elixirs with one example.
7. What are throat paints? Give the principle involved in the preparation of Mandl's paint.
8. What are the factors affecting dose selection?
9. Importance of pharmacopoeia.
10. Explain the collection and processing of human thrombin.
11. Explain therapeutic incompatibility with examples.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Differentiate creams and pastes.
13. Therapeutic uses of dextran.
14. Types of powders.
15. Name the tests for evaluation suppositories.
16. Types of extraction process.
17. Labeling requirements for gargles.
18. Define proof spirit and isotonic solutions.



5

QP Code: 1405

JSS UNIVERSITY, MYSORE
First Year B.Pharm Examination - October 2011

Subject: Biostatistics & Computer Science

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. a) If the average wages paid to 25 workers is Rs 79.60, find the missing frequencies.

Wages (Rs)	50	60	70	80	90	100	110
No. of workers	1	3	-	-	6	2	1

- b) Find the 6th decile and 70th percentile from the following data.

Marks	<10	10-19	20-29	30-39	40-49	50-59	60-69	70-79
No. of students	5	8	7	12	28	20	10	10

- c) Draw a histogram and frequency polygon for the following data.

Age in years	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of Persons	3	16	22	35	24	15	2

2. a) Find the standard deviation from the following data.

x	12	13	14	15	16	17	18	19
f	1	0	4	12	20	15	6	2

- b) What are the differences between digital and analog computers?
- c) If two regression equations are given as $3x+2y=26$ and $6x+y=31$, find mean values of x and y. Also find coefficient of correlation.
3. a) Explain the different types of correlation with the help of a diagram.
- b) Write an algorithm to pick the largest tender from a set of tenders.
- c) Three machines A, B and C manufactures respectively 0.4, 0.5 and 0.1 of the total production. The percentage of defective items produced by A, B and C is 2, 4 and 1 percent respectively. For an item chosen at random what is the probability that it is defective?

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. A group of 10 boys fed on a diet A and another group of 8 boys fed on a different diet B for a period of 6 months recorded the following increase in weights(lbs).

Diet A	5	6	8	1	12	4	3	9	6	10
Diet B	2	3	6	8	10	1	2	8		

Test whether diets A and B differ significantly regarding their effect on increase in weight.

PTO

5. Calculate the coefficient of rank correlation from the following:

X	48	33	40	9	16	16	24	16	65	57
Y	13	13	24	6	15	4	9	6	20	19

6. Draw the flow chart to find average heights of boys and girls.
7. The mark of 1000 students in an examination follows a normal distribution with mean 70 and standard deviation 5. Find the number of students whose marks will be
- Less than 65.
 - More than 75.
 - Between 65 and 75.
8. Find the mean and SD of Poisson distribution.
9. Give the difference between hardware and software.
10. Calculate mean and mode.

Marks	5-15	15-25	25-35	35-45	45-55	55-65	65-75
Students	7	12	17	29	31	16	3

11. a) Convert the following numbers in decimal to numbers in binary:
- $(72)_{10}$
 - $(101)_{10}$
 - $(65)_{10}$
- b) Convert the following numbers in binary to numbers in decimal:
- $(101)_2$
 - $(1101)_2$

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

- Define "range".
- What is main memory in computer?
- What are activities performed by CPU in instruction cycle?
- Define 'quartiles'.
- What do you mean by simple random sampling?
- What is the function of an operating system software?
- Write a note on high level language.



6

QP Code: 1406

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination - October 2011****Subject: Physical Pharmaceutics**

*Note: Draw neat labeled diagrams wherever necessary
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Explain the terms "surface tension" and "interfacial tension". Describe a suitable method for determining surface tension. State the importance of surface tension in pharmacy.
2. What are colloids? Classify colloids. Explain the properties of colloids.
3. Define polymers. Give pharmaceutical application of polymers. Explain the function of polymer as thickening agents and gelling agents.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Define latent heat of fusion. Write note on liquid crystals.
5. What is order of reaction? How is order of reaction determined?
6. Explain the mechanism of solute solvent interactions.
7. Write a note on physical stability of emulsion and preservation of emulsion.
8. Explain the rheology of Newtonian systems.
9. Explain the terms 'true density' and 'bulk density'.
10. Write a note on inclusion compounds.
11. Differentiate between flocculated and deflocculated suspension.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define various biphasic liquid dosage forms with examples.
13. Define thermodynamics with examples.
14. Write a note on polymorphism.
15. Enumerate derived properties of powders.
16. Define zero and first order reaction.
17. Write a note on kinematic viscosity.
18. Give brief account of HLB classification.



QP Code: 1407

JSS UNIVERSITY, MYSORE

Second Year B.Pharm Examination - October 2011

Subject: Pharmaceutical Organic Chemistry-II

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Explain the utility of the following synthetic tools citing relevant examples:
 - a) Clemmensen reduction.
 - b) Birch reduction.
 - c) Meerwin Ponndroff Verley reduction.
2.
 - a) Classify stereoisomers.
 - b) Give a brief account of stereospecific and stereoselective reaction with suitable examples.
 - c) Write a brief note on Walden inversion.
3.
 - a) How are proteins classified?
 - b) Give a brief account of the structure of proteins.
 - c) Suggest any two methods for the synthesis of amino acids.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Explain why pyrrole is a weak base.
5. Explain the sequence rule employed to assign absolute configuration to a chiral molecule.
6. Explain the reactions of naphthalene.
7. Explain the phenomenon of mutarotation.
8. Write a brief note on asymmetric synthesis and its significance.
9. Suggest a mechanism for Beckmann rearrangement.
10. Explain the various elements of symmetry as a tool to test chirality.
11. Explain the principle involved in the determination of saponification value of an oil.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Define the stereochemical notations D- and L-.
13. Draw the structure of sucrose and number the system.
14. Define Reichert Meissl (RM) value.
15. Name one drug that exhibits cis-trans isomerism.
16. Draw the heterocycle imidazole and azepine.
17. Define Huckle rule.
18. Explain the stereochemical prefix "erythro".



II B.Ph Oct-2011

8

QP Code: 1408

JSS UNIVERSITY, MYSORE

Second Year B.Pharm Examination - October 2011

Subject: Pharmaceutical Engineering

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. What is evaporation? Enumerate the factors to be considered in selection of an evaporator. Describe the construction, working, advantages and disadvantages of multiple effect evaporators.
2. Distinguish between distillation and evaporation. Write the principle involved in the steam distillation and describe the industrial process of steam distillation.
3. What are the different modes of heat transfer? Derive an equation for Fourier's Law and give its applications. Explain the construction and working of multipass heaters.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Describe the construction, working & applications of "spray dryer".
5. Explain the construction and working of a ball mill.
6. Explain the construction and working of planetary mixer.
7. Describe the mechanisms of filtration.
8. Describe the construction & working of agitated batch crystallizer.
9. Explain the working of an air conditioner.
10. Explain the advantages & disadvantages of plastic as construction material.
11. Briefly describe the methods to overcome corrosion in pharmaceutical industry.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Define bound and unbound moisture.
13. Name four applications of size reduction.
14. Distinguish between filtration & clarification.
15. Give the reasons of caking of crystals.
16. Define the terms "humidity" & "refrigeration".
17. Name two advantages of glass as construction material.
18. Define Reynold's number.



9
QP Code: 1409

JSS UNIVERSITY, MYSORE

Second Year B.Pharm Examination - October 2011

Subject: Applied Biochemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Explain the process of anaerobic glycolysis with reactions, significance and energetic.
2. Explain the various factors that effect enzyme activity.
3. Explain the *de novo* synthesis o fatty acids.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Explain the mechanism of electron transport chain.
5. Describe oxidative phosphorylation.
6. Explain competitive inhibition of enzymes with examples.
7. Explain gluconogenesis.
8. Classify of carbohydrates with examples.
9. Explain uric acid cycle.
10. Explain any two liver function tests.
11. Write the structure and functions of t-PNA

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. What is the normal level of urea in serum and urine?
13. Define the genetic code.
14. What is the difference between a nucleotide and a nucleoside?
15. Name four compounds containing haem as prosthetic group.
16. Name four phospholipids.
17. What is carnitine?
18. Mention any two significance of HMP shunt.



II B. ph. Oct-2011

10

QP Code: 1410

JSS UNIVERSITY, MYSORE

Second Year B. Pharm Examination - October 2011

Subject: Pathophysiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Define the term anemia. Explain the pathogenesis of various types of anaemia. (2+13)
2. What is hypertension? Classify hypertension. Explain the pathogenesis of hypertension. (2+2+11)
3. Enlist the clinical signs of inflammation and explain the mechanism involved in the process of inflammation and repair. (2+13)

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Write the signs and symptoms of mania and depression.
5. Write a note on pain pathway.
6. Explain the pathophysiology of angina.
7. Describe the causes of cell injury.
8. Describe the pathology of atherosclerosis.
9. Write a note on pathophysiology of acute renal failure.
10. Describe the microvascular complications of diabetes.
11. Explain the pathology of asthma.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Write the etiology of typhoid and tuberculosis.
13. Name the types of arrhythmias.
14. List the symptoms of gout.
15. Write the etiology and types of hepatitis.
16. Mention the etiology and symptoms of urinary tract infection.
17. Differentiate asthma and chronic obstructive airway disease.
18. Write the symptoms of meningitis.



B Pharm - Oct - 2011



QP Code: 1411

JSS UNIVERSITY, MYSORE

Second Year B.Pharm Examination - October 2011

Subject: Pharmaceutical Jurisprudence & Management

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Describe prohibited and permitted operations under NDPS Act.
2. Explain the education regulations as per the Pharmacy Act.
3. How do you differentiate leadership and management? Explain the theories of leadership.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Enlist the drugs prohibited to be imported under D & C Act.
5. What are the functions and duties of government analyst?
6. What is market research? Explain types of market research with an example.
7. Describe the stages of product life cycle.
8. Write the constitution and functions of drugs technical advisory board.
9. Describe the scope of pharmaceutical marketing.
10. How is bonded laboratory designed and constructed?
11. What is meant by MAPE and how retail prices of formulations is calculated under DPCO 1995?

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Define segmentation.
13. What is 'job analysis'?
14. Define adulterated drug under D & C Act.
15. Define Schedule 'H' and Schedule 'X'.
16. Qualities of sales representative.
17. What is the role of retailer in pharmaceutical marketing?
18. Objectives of Drugs and Magic Remedies Act.

**JSS UNIVERSITY, MYSORE****Second Year B.Pharm Examination May 2012****Subject: Physical Pharmaceutics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Define rheology. Explain Newtonian and non-Newtonian system of flow.
2. Classify complexation. Explain organic molecular complex.
3. Define dissolution. Explain Noyes Whitney equation. Explain the various factors affecting dissolution.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain any one method to determine particle size of a drug.
5. Write a note on preservation of emulsion.
6. Explain the optical properties of colloids.
7. Describe the various factors which influence the flow property of a powdered drug.
8. Explain with a suitable diagram cone and plate viscometer.
9. Explain HLB scale.
10. Derive an expression to determine the rate constant of second order reaction.
11. Explain in detail spreading coefficient.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define Stoke's law.
13. Define half life and write its significance.
14. Define thixotropy.
15. Define porosity.
16. Define zero order reaction.
17. Explain the term adsorption isotherm.
18. Explain Fick's law of diffusion.



7

QP Code: 1407

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination May 2012****Subject: Pharmaceutical Organic Chemistry-II***Note: Draw neat labeled diagrams wherever necessary.**Your answer should be specific to the questions asked.***Time: 3 hours****Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) Explain conformational isomerism.
b) Explain Sawhorse and Newman projection formula and comment on their application.
c) Draw the energy - dihedral angle diagram for the key conformations of n-butane and perform the conformational analysis. (3+5+7)
2. Explain the utility of the following synthetic tools with relevant examples:
a) Wolff-Kishner reduction
b) Catalytic hydrogenation
c) Oppenauer oxidation. (5+5+5)
3. Describe the method of synthesis, reactions and medicinal uses of the derivatives of the following compounds:
a) Phenothiazine
b) Furan. (7½ + 7½)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain the conformational analysis of cyclohexane.
5. Describe Dakins reaction and its synthetic application.
6. List various options available for the resolution of a racemic mixture. Explain in detail the chemical approach through conversion to diastereomers.
7. Explain the principle involved in the determination of iodine value of an oil.
8. Pyrrole is a weaker base than pyridine. Explain.
9. Briefly describe the properties of amino acids.
10. Suggest a synthetic route for the preparation of naphthalene.
11. Describe the chemistry of glucose.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define the stereochemical notation 'R'.
13. What is Zwitter ion?
14. Draw the structure of quinoline and indicate a drug having this heterocycle.
15. Define the term 'enantiomer'.
16. Draw the structure of sucrose and number the heterocyclic system.
17. Define Clemmensen reduction.
18. Define acid value.



JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination May 2012
Subject: Pharmaceutical Engineering

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. What is drying? Explain the drying rate curves. Describe the principle, construction, working and applications of freeze dryer. (1+3+2+3+3+3)
2. What is filtration? With a neat labeled diagram, describe the construction, working, merits and demerits of filter press. Add a note on filter aids with examples. (1+3+3+2+2+4)
3. What is crystallization? Explain the Mier's supersaturation theory of crystallization and its limitations. Describe the construction and working of Swenson Walker crystallizer. (1+4+2+4+4)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Describe the equation for overall heat transfer coefficient.
5. Describe briefly factors affecting evaporation.
6. Explain the theory of molecular distillation.
7. Explain different factors affecting size reduction.
8. Describe the construction, working and applications of Silverson mixer.
9. Explain the principle involved in refrigeration.
10. Describe the factors influencing the selection of materials of pharmaceutical plant construction.
11. Give a brief account of various measures to control industrial hazards.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define Fourier's law.
13. What are the applications of evaporation process?
14. Name two 'azeotropic' liquids.
15. What is the significance of size reduction?
16. What is vortex formation?
17. Write one disadvantage and one application of propeller mixer.
18. Classify the different types of centrifuges.

QP Code: 1409

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination May 2012****Subject: Applied Biochemistry**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Explain the mechanism and role of electron transport chain.
2. a) What are carbohydrates? Classify them with suitable examples.
b) Explain the process of gluconeogenesis.
3. Explain the urea cycle and metabolic disorders of urea cycle.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain enzyme inhibitions with examples.
5. Explain the chemistry and biochemical role of riboflavin.
6. Explain oxidative phosphorylation.
7. Explain the metabolism of bilirubin.
8. Name the ketone bodies. Explain their formation.
9. Explain the conversion of tyrosine to catecholamine.
10. Explain transamination reactions.
11. Explain the steps involved in the biosynthesis of pyrimidine nucleotides.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define facilitated transport.
13. Define coenzyme and isoenzyme.
14. Explain Michaelis Menton equation.
15. What is the difference between amylose and amylopectin?
16. Write the significance of glycolysis.
17. What are essential amino acids? Give four examples.
18. What is replication?

**JSS UNIVERSITY, MYSORE****Second Year B.Pharm Examination May 2012****Subject: Pathophysiology**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. What is inflammation? What are its types? Explain in detail about the mediators of inflammation.
2. Explain the pathogenesis of AIDS.
3. Write the etiology and pathophysiology of peptic ulcer.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Describe the basic principles of wound healing in the skin.
5. Write a note on T and B cells.
6. Explain the pathogenesis of osteoarthritis.
7. Define angina pectoris; write its types and clinical symptoms.
8. Explain the process of cell death.
9. Define, classify and write the criteria for autoimmunity.
10. Write the etiology and clinical symptoms of asthma.
11. Write the definition, types and pathogenesis of diabetes mellitus.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. What are the causes of cell injury?
13. Define acute and chronic inflammation.
14. What are transplantation antigens?
15. Classify respiratory tract infections.
16. Write the symptoms of Parkinson's disease.
17. Define and classify epilepsy.
18. Write the clinical symptoms of cirrhosis.

**JSS UNIVERSITY, MYSORE****Second Year B.Pharm Examination May 2012****Subject: Pharmaceutical Jurisprudence & Management**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Describe the constitution and functions of Drugs Technical Advisory Board (DTAB) and Drugs Consultative Committee (DCC).
2. How do you differentiate leadership and management? Explain the theories of leadership.
3. What classes of advertisements are prohibited and exempted under the Drugs and Magic Remedies Act? Give reasons for exemption.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Enlist the drugs prohibited to be imported under D & C Act.
5. Explain the constitution of Pharmacy Council of India.
6. What is market research? With an example explain types of market research.
7. Describe the stages of product life cycle.
8. Explain the role of pharmacist in community pharmacy.
9. Explain the objectives of Institutional Animal Ethics Committee.
10. How is bonded laboratory designed and constructed?
11. What is meant by MAPE and how retail prices of formulation is calculated under DPCO 1955?

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define segmentation.
13. What is job analysis?
14. Define misbranded drug under D & C Act.
15. Define schedule 'C & C₁' and schedule 'P'.
16. Qualities of sales representative.
17. What is the role of retailer in pharmaceutical marketing?
18. Qualification of government analyst and drugs inspector.

May - 2011

6

QP Code: 1406

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination - May 2011

Subject: Physical Pharmaceutics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. What is meant by micromeritics? Explain with examples the importance of particle size in pharmaceutical systems. Enumerate the various methods of particle size determination.
2. What are surface acting agents? Explain their application in pharmacy. Write a note on HLB classification.
3. Explain the rheology of non-Newtonian systems. Give the application of thixotropy.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Write short note on phase rule.
5. Explain diffusion principles in biological systems.
6. Explain how accelerated stability studies are carried out. Define shelf life.
7. Explain kinematic properties of colloids.
8. Explain in brief formulation of suspension.
9. What is protein binding of drugs. Explain with examples.
10. Enumerate the factors influencing solubility of drugs.
11. Explain theories of emulsification.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. What are aerosols?
13. Give an account on solubility expressions.
14. What are surface acting agents?
15. Mention the pharmaceutical applications of polymers.
16. Define polymorphism.
17. Mention protective action of colloids.
18. Write a note on metal complexes.

May - 2011



7

QP Code: 1407

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination - May 2011
Subject: Pharmaceutical Organic Chemistry-II

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. a) Explain stereospecific and stereoselective reactions with suitable example. (8)
b) Explain the determination of open chain structure of α -D-glucose. (7)
2. a) Explain the mechanism and stereochemistry of SN_1 and SN_2 reactions with suitable example. (7)
b) Describe Knorr synthesis and Pschorr synthesis. (8)
3. a) Explain the general reactions of fats and oils. (5)
b) Write a note on peptide synthesis. (4)
c) Write the structure and use of a derivative bearing the following heterocycle: (6)
i) Indole ii) Pyrimidine iii) Phenothiazine

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Describe any two method of preparation of pyridine.
5. Explain atropisomerism with example.
6. Write the principle involved in the determination of
a) Acetyl value b) Iodine value
7. What are disaccharides? Give examples. Write the applications of cellulose derivatives in pharmacy.
8. Explain the structure of protein.
9. Explain the determination C-terminal amino acid residue.
10. Write briefly the chemical reactions of phenanthrene.
11. Explain the relative stability of different conformational isomers of cyclohexane.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Give one example for catalytic hydrogenation.
13. Define R and S system of nomenclature of optical isomer.
14. What is Beckmann reaction?
15. Write the synthesis of acridine.
16. Write the structure of maltose and sucrose.
17. Define and give the significance of Reichert Meissl value.
18. Define saponification value.

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination - May 2011

Subject: Pharmaceutical Engineering

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. a) What is corrosion? Name the various types of corrosion. How can corrosion be prevented?
b) Explain the merits and demerits of iron as material of construction.
2. a) Explain the engineering principles with equations involved in the process of size reduction.
b) Describe the construction and working of an equipment for size reduction which works on the principle of both attrition and impact.
3. a) Define evaporation. Explain the various factors affecting evaporation.
b) Explain the construction and working of a multiple effect evaporator.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Compare and contrast the advantages and disadvantages of pitot tube and rotameter.
5. Explain the hazards due to fire and its safety measures.
6. Describe meta filter.
7. Explain freeze drying.
8. How do you determine humidity? Mention the importance of humidity control in pharmaceutical industry.
9. What is Reynolds number and write its significance.
10. Give the general principle of centrifugation and explain any one centrifuge.
11. Give the principle and working of Silverson mixer.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. What is laking of crystals? How is it prevented?
13. Enumerate the factors affecting size reduction.
14. Name the different types of industrial filters.
15. Write the types of cast iron alloys.
16. Name the types of glass used in pharmaceutical industry.
17. Name five important classes of plastics.
18. Define Raoult's law.



9
QP Code: 1409

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination - May 2011

Subject: Applied Biochemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Define and explain the following with reactions.
a) Glycogenesis b) Glycogenolysis
2. Define β -oxidation. How is palmitic acid catabolized by this process? Give its energetics.
3. What is DNA replication? Explain the semi-conservative method of DNA replication.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Describe how amino acids are catabolized?
5. Name few uncouplers of ETC. Explain the mechanism of inhibition of oxidative phosphorylation with one example.
6. Write a note on regulation of carbohydrate metabolism. Name the diseases related with abnormal carbohydrate metabolism.
7. What are phospholipids? Mention their chemistry, types and biological significance.
8. Explain Lineweaver-Burk plot. Mention its significance.
9. Write the structure and biochemical role of co-enzymes derived from the following vitamins.
a) Niacin b) Pantothenic acid.
10. What is enzyme inhibition? Explain the various types of enzyme inhibition.
11. Write a note on lipid profile tests.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Differentiate nucleotide with nucleoside with an example.
13. Expand SGOT and SGPT and mention their diagnostic significance.
14. What are porphyrins?
15. Name the bile salts. Mention their biological significance.
16. Write the structure of sucrose. Why is sucrose not a reducing sugar?
17. What is Gibbs free energy? Mention its importance.
18. Write the significance of glycolysis.



10

QP Code: 1410

JSS UNIVERSITY, MYSORE
Second Year B. Pharm Examination - May 2011

Subject: Pathophysiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. What are the clinical signs of inflammation? Describe the different types of inflammation with their mechanism.
2. Describe the pathophysiology of hyperlipidaemia and causes of atherosclerosis.
3. Describe the pathogenesis of different types of anemia.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Write note on pathogenesis of headache.
5. Write different types of tuberculosis with their manifestations.
6. Explain the signs and symptoms of AIDS.
7. Explain the various phases of cell cycle in oncology.
8. Explain the signs, symptoms and pathology of gout.
9. Classify renal failure and write note on pathogenesis of ARF.
10. Write a note on autoimmunity.
11. Write a note on morphology of cell injury.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. List the causative organisms for UTI.
13. Define the JNC 7 classification of Hypertension.
14. List down the triggers for asthma.
15. Name the mediators of inflammation
16. What is homeostasis?
17. Name any two thyroid diseases.
18. List the symptoms of peptic ulcer.

JSS UNIVERSITY, MYSORE

Second Year B.Pharm Examination - May 2011

Subject: Pharmaceutical Jurisprudence & Management

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Describe the qualification, duties and functions of drugs inspector.
2. Explain the features and types of salesmen.
3. Explain the requirements and manufacturing of alcoholic preparations outside bond.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. What is first register and how is it prepared?
5. Describe the channels of distribution.
6. What are the operations totally prohibited under NDPS Act?
7. What are the functions of Pharmacy Council of India?
8. Write a note on various dimensions of pharmaceutical market.
9. Explain pharmacist in relation to his profession.
10. 'Money is the only effective motivating factor'. Explain.
11. Describe the offences and penalties under Medicinal and Toilet Preparations Act.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. What are the objectives of D & C Act?
13. What is the role of retailer in pharmaceutical marketing?
14. Give the formula for calculating retail price of a drug formulation.
15. Define the terms advertisement and magic remedies.
16. Concept of branding.
17. Write a note on democratic leadership style.
18. What are the objectives of pharmaceutical policy?

II B. Pharmacy May - 2010

QP Code: 1406

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination - May 2010

Subject: Physical Pharmaceutics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*



Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Explain non Newtonian system of flow.
2. Derive an expression for Scatchard plot.
3. How will you formulate a suspension and explain the various parameters involved.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Write a note on autoxidation.
5. Explain how hydrolysis and oxidation influence degradation.
6. Explain any one method to determine surface tension of liquids.
7. Differentiate between a flocculated and deflocculated suspension.
8. Write a note on chelate.
9. Explain pH titration method to study complexation.
10. Explain any one method to determine protein binding of drugs.
11. Write a note on physical stability of emulsion.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Define 'complexation'.
13. Explain the term 'spreading coefficient'.
14. Define the term 'angle of repose'.
15. Mention any two applications of thixotrophy.
16. What are critical pressure and critical temperature?
17. Explain Henderson Hasselbach equation.
18. Explain Noyes Whitney equation.

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination - May 2010
Subject: Pharmaceutical Organic Chemistry-II

*Note: Draw neat labeled diagrams wherever necessary.
 Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)**2x15=30 Marks**

1. a) Explain various steps involved in assigning absolute configuration to an organic molecule as per Cahn-Ingold-Prelog convention with suitable example. (7+5+3)
 b) Explain plane of symmetry and comment on meso-compound.
 c) Give the name and structure of two drugs that exhibits enantiomerism.
2. Describe the method of synthesis, reactions and medicinal uses of the derivatives of the following compounds: (7½+7½)
 a) Pyridine b) Quinoline
3. a) Define and classify carbohydrates. (3+7+5)
 b) Explain the determination of ring size of glucose.
 c) Comment on the phenomenon of mutarotation.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Explain atropisomerism. Give an example of a drug molecule that exhibits this isomerism.
5. Clemmensen reduction and its synthetic utility.
6. Explain the principle involved in the determination of acid value of an oil.
7. Skatrup synthesis of naphthalene.
8. Suggest a mechanism for Schmidt rearrangement.
9. Give the structural requirements for a molecule to exhibit cis-trans isomerism. Explain the notations E- and Z- employed to designate cis-trans isomers.
10. Suggest a synthetic route for the preparation of thiophene (Paal-Knorr synthesis).
11. Explain N-terminal acid residue analysis.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define Flag pole interaction in cyclohexane.
13. Draw the structure of phenothiazine and indicate a drug having this heterocycle.
14. Define isoelectric point of an amino acid.
15. Draw the Fischer projection formula for Glucose and label the anomeric carbon.
16. Indicate one use each for lactose and starch in pharmacy.
17. Pyrrole is a weak base. Explain.
18. Define acid value.

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination - May 2010****Subject: Pharmaceutical Engineering**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Classify various drying equipments used in the pharmaceutical industry. (5+10)
Explain the principle, construction, working, advantages and disadvantages of fluidized bed dryer.
2. Derive Bernoulli's equation giving assumptions. Explain the construction, working and applications of venturi meter. (9+6)
3. What are the various factors affecting size reduction? Describe the construction and working of hammer mill and fluid energy mill. (5+10)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. What is size separation? Explain the working of bag filters.
5. Write a note on meta filters.
6. What is comminution? Explain the various laws governing the comminution.
7. Explain the theory of crystallization process.
8. Write a note on heat transfer by conduction.
9. Explain the principle of rectification.
10. Give the utilities and services to be provided in a pharmaceutical industry.
11. Write a note on prevention and control of corrosion.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Give the advantages of "Pitot tube".
13. Suggest a suitable size reduction mill for herbal drugs. Give two reasons for its selection.
14. Write Kozeny-Carmen equation and explain the terms.
15. What is mean free path?
16. What is the utility of humidity charts?
17. Define crystal lattice and crystal habit.
18. Define sieve number and give the significance.

May - 2010

QP Code: 1409

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination - May 2010

Subject: Applied Biochemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Explain the citric acid cycle with reactions, enzymes, coenzymes and energetics.
2. a) Explain the various types of enzyme inhibitors with examples
b) Describe the factors affecting enzyme activity.
3. Explain the biosynthesis of cholesterol from acetyl-CoA? Add a note on hyper-cholesterolemia.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Explain allosteric enzymes with examples.
5. Explain the mechanism of electron transport chain.
6. Explain substrate level phosphorylation.
7. Classification of lipids with examples.
8. Write the structure and functions of DNA
9. Write the structure and functions of ATP.
10. Explain fatty liver.
11. Explain urea cycle.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Name two purine and two pyrimidine nucleotides.
13. Mention two important functions of liver.
14. Give the structure of the three ketone bodies.
15. Give the structure of sphingomyelin.
16. Which is the rate limiting step in the synthesis of cholesterol?
17. Write the significance of glycolysis.
18. Name the substrates of gluconeogenesis.



QP Code: 1410

JSS UNIVERSITY, MYSORE
Second Year B. Pharm Examination - May 2010

Subject: Pathophysiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Explain the pathophysiology of epilepsy with clinical manifestations. ✓
2. Describe the causes of cell injury & explain the pathogenesis of reversible cell injury. ✓
3. Differentiate Type I & Type II diabetes and explain the pathogenesis of diabetes.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Write note on the mediators of inflammation.
5. Explain the pathogenesis of angina pectoris.
6. Differentiate asthma from COAD (Chronic Obstructive Airways Disease) and list the sign & symptoms of asthma.
7. Write note on pain pathway.
8. List the types of hepatitis and write note on the pathogenesis of hepatitis B.
9. Write note on pathogenesis of neoplasm.
10. Differentiate rheumatoid arthritis and osteoarthritis.
11. Write a note on pathogenesis of gastroenteritis.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. What is the relationship between jaundice & bilirubin?
13. What is Grave's disease?
14. Which vitamins are necessary for the formation of RBC?
15. List the factors which trigger asthma.
16. Differentiate atrophy and hypertrophy. ✓
17. What are the causative organisms for gonorrhoea & syphilis?
18. What are the types of arrhythmias?

May - 2010

QP Code: 1411

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination - May 2010
Subject: Pharmaceutical Jurisprudence & Management



*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Explain the principles of sales promotion.
2. Write in detail about pharmaceutical legislation in India.
3. Explain the different stages of product development of new drug.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. What is 'first register' and how is it prepared?
5. Explain the channels of drug distribution.
6. What are the operations totally prohibited under NDPS Act?
7. What are the functions of Pharmacy Council of India?
8. Write a note on various dimensions of pharmaceutical market.
9. Pharmacist in relation to his profession – explain.
10. "Money is the only effective motivating factor". Explain.
11. How do you differentiate drug store, chemist and druggist and pharmacy?

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. What are the objectives of Pharmacy Act?
13. What is the role of retailer in pharmaceutical marketing?
14. Give the formula for calculating retail price of a drug formulation.
15. Define the terms of advertisement and magic remedies.
16. Concept of branding.
17. Write a note on democratic leadership style.
18. What are the objectives of pharmaceutical policy?

JSS UNIVERSITY, MYSORE

Second Year B.Pharm Examination - May 2013

Subject: Physical Pharmaceutics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Distinguish kinetics of zero and first order reaction with examples. Explain methods to determine order of a reaction. Give any two applications of kinetics in pharmacy.
2. Define and explain significance of specific surface area. Explain in detail methods of determination of the same.
3. What are emulsions? Describe theories of emulsification. Explain formulation of emulsions.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Write a note on spreading coefficient.
5. Describe solute-solvent interaction that influences solubility of drugs in liquids.
6. Describe plastic flow system with an example.
7. Explain the concept of Donnan membrane equilibrium with a suitable example and equation.
8. Explain in brief sedimentation parameters and their determination.
9. What is protein binding of drug? Explain with an example.
10. Write a note on polymers as thickening agents.
11. Mention the derived properties of powder. Explain in brief any one method to determine true density and bulk density of the powder sample.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Write Clausius Clapeyron equation.
13. Give the official expressions of solubility.
14. Define positive adsorption. Give two examples.
15. Write Stokes equation. Give its application in evaluation of any one dosage form.
16. Define antithixotropy and rheopexy.
17. What is Krafft point?
18. Differentiate between colloidal and coarse dispersion.

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination - May 2013****Subject: Pharmaceutical Organic Chemistry-II**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Explain Beckmann rearrangement and Schmidt rearrangement with mechanism and examples. (7½+7½)
2. Explain the conformational isomerism with special reference to cycloalkanes.
3. Explain geometrical isomerism with examples. Explain the different methods to determine the configuration of geometrical isomers. (3+12)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain Oppenauer oxidation with specific examples.
5. Write a note on nomenclature of heterocyclic compounds.
6. Explain Claisen-Schmidt reaction with mechanism and examples.
7. Explain any two method of synthesis of imidazole.
8. Define stereo specific reaction. Explain with examples.
9. Explain the properties of oils and fats with special reference to hydrolysis and saponification.
10. Explain any two methods of synthesis of amino acids.
11. What are poly nuclear hydro carbons? Classify with suitable examples. Provide structure of at least one per classification. (1+2+2)

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. What is muta rotation?
13. Define iodine value.
14. Give the uses of starch derivatives in pharmacy.
15. What is peptide bond?
16. Explain catalytic hydrogenation with suitable examples.
17. Define stereo isomerism.
18. Significance of acid value.

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination - May 2013
Subject: Pharmaceutical Engineering

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. a) State and explain the laws governing size reduction. (5+10)
b) Describe principle, construction, working, advantages and disadvantages of 'ball mill'.
2. Classify dryers with examples based on mechanism and give their advantages and disadvantages. Explain the construction and operational details, advantages, disadvantages and applications of freeze dryer. (5+10)
3. a) Explain with diagram, construction and working of fractional distillation.
b) Explain the efficiency of fractional distillation.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Describe the theory of centrifugation.
5. Enumerate factors influencing evaporation. Explain any four of them in detail.
6. Enumerate mechanisms of filtration. Differentiate surface filtration and depth filtration.
7. Explain the principle and working of an air-conditioner.
8. What are the reasons for vortex formation? Suggest suitable solutions for the problems of vortex formation.
9. Deduce Fourier's law.
10. Write a note on refrigerants.
11. Describe Reynold's experiment to understand mechanism of fluid flow.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Name the official grades of powders.
13. Define crystal lattice & crystal habit.
14. Give advantages of multiple effect evaporator.
15. Give two differences between distillation & evaporation.
16. Applications of aluminum in plant construction.
17. Suggest a preferred dryer for:
a) Pasty materials.
b) Colloidal solution.
18. Write the advantages of screw conveyor.

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination - May 2013

Subject: Applied Biochemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. a) Explain the factors affecting the enzyme catalysed reaction. (10+5)
b) State Michaelis Menten equation and write the significance of Line Weaver Burk plot.
2. a) Describe the tricarboxylic acid cycle along with its significance and energetics. (10+5)
b) Explain the malate aspartate shuttle.
3. a) Explain the causes of ketosis and write the formation and utilization of ketone bodies. (10+5)
b) Write a note on atherosclerosis.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain the general mechanism of enzyme action.
5. Write an account on oxidative phosphorylation.
6. Explain glycogenolysis taking place in liver.
7. Describe the metabolism of methionine.
8. Write an account on mutation.
9. Creatinine clearance.
10. Define and classify lipids with suitable examples.
11. DNA as genetic material.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Specificity of enzymes.
13. Uncouplers of ETC.
14. Significance of HMP.
15. Significance of cholesterol.
16. Phenylketonuria.
17. Define and give example for nucleoside.
18. Significance of serum uric acid.

JSS UNIVERSITY, MYSORE

Second Year B.Pharm Examination - May 2013

Subject: Pathophysiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define and classify cell injury. Explain the pathogenesis of reversible cell injury.
2. Define and explain type III hypersensitivity in detail.
3. Explain the aetiology and pathophysiology of chronic renal failure

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Write the definition, types and signs of inflammation.
5. Explain the pathogenesis of meningitis.
6. Write a note on the mechanism of rejection of allograft.
7. Write a note on the adaptive changes of cell injury.
8. Write the signs and symptoms of schizophrenia and mania.
9. Write a note on the components and types of feedback systems.
10. Explain the pathogenesis of tuberculosis.
11. Write the aetiology and clinical symptoms of COAD.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define dystrophic and metastatic calcification.
13. Write the cardinal features of inflammation.
14. Define autoimmunity.
15. Write the aetiology of hypothyroidism and hyperthyroidism.
16. Define hypertension
17. Write the aetiology of typhoid and para typhoid.
18. Write the clinical symptoms of asthma.

JSS UNIVERSITY, MYSORE

Second Year B.Pharm Examination - May 2013

Subject: Pharmaceutical Jurisprudence & Management

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Enlist the channels of distribution. Explain in detail the functions of wholesaler and retailer.
2. What are the conditions to be fulfilled for the manufacture of schedule C & C1 and schedule X drugs?
3. How do you differentiate leadership and management? Explain the theories of leadership.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. What are the offences and penalties under Narcotic and Psychotropic Substances Act?
5. Explain the provisions of Cruelty to Animals Act.
6. Write short notes on entrepreneurship development.
7. What is education regulation under Pharmacy Act 1948?
8. Define the terms coca leaf, opium and manufactured drugs under ADPS Act 1985.
9. Explain the concept of branding.
10. Describe in brief the stages of product life cycle.
11. How are the retail prices of formulations fixed under drugs price control order?

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define cosmetic as per D & C Act.
13. Principle of goal setting theory of motivation.
14. Give specimen label for phenobarbitone tablets.
15. What is delegation of authority?
16. Define adulterated drug (D & C Act).
17. Task management of leadership style.
18. What is brand? What are the advantages of having brand?



6

QP Code: 1406

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination November 2012****Subject: Physical Pharmaceutics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Explain how accelerated stability study is carried out. Explain its limitations.
2. Explain the various derived properties of powders.
3. Classify complexes. Explain metal ion complex with examples.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Define surfactants and classify them with suitable examples.
5. Derive Langmuir adsorption isotherm.
6. Explain HLB scale.
7. Classify emulsifying agents with suitable examples.
8. Explain the theories of emulsification.
9. Explain the kinetic properties of colloids.
10. Explain the pharmaceutical applications of polymers.
11. Derive an expression for first order reaction to determine rate constant.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define surface tension.
13. Define emulsion.
14. Mention any four applications of suspension.
15. Define half life of drug.
16. Differentiate between creaming and cracking of emulsion.
17. What is Newtonian system of flow?
18. Define thixotrophy.



7

QP Code: 1407

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination November 2012****Subject: Pharmaceutical Organic Chemistry-II**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) What are proteins? Classify them with suitable examples.
b) Explain the different methods to elucidate the primary & secondary structure of proteins. (5+10)
2. What are oils and fats? Give examples. Explain the analytical constants involved in the determination of oils & fats. (3+12)
3. What are monosaccharides? Give examples with structures. Explain the different methods of structural determination of glucose, including its configuration. (3+12)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Explain the medicinal uses & derivatives of phenanthrene.
5. What are furans? Outline the important reactions of furan.
6. Explain Meerwein-Ponndorf-Lever reduction with mechanism and examples.
7. Define stereo selective reactions with suitable examples.
8. What is meant by sequence rules? Explain its importance.
9. Compare the aromaticity of pyrrole, furan and thiophene.
10. Describe the mechanism of Wolf-Kishner reduction.
11. Explain the phenomenon of stereo isomerism in biphenyl compounds.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. What are enantiomers?
13. What are R&S, D&L system?
14. Define optical activity.
15. Explain any one method of C-terminal amino acid analysis.
16. What are quinoline and isoquinolines?
17. Give any one method of preparation of phenothiazines.
18. What is rancidity of oils?



8

QP Code: 1408

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination November 2012
Subject: Pharmaceutical Engineering

***Note:** Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Draw the typical drying rate curve with a neat diagram. Explain the principle and operational details of fluidized bed dryer (FBD).
2. Describe the principle, construction, working, advantages and disadvantages of 'plate and frame filter press'.
3. Classify mixers based on mechanism. Describe the construction, working, advantages, disadvantages and applications of 'planetary mixer'.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Explain the working of fluid energy mill.
5. Describe the biological corrosion and suggest the preventive measures.
6. Explain the principle and operational details of spray dryer with a suitable diagram.
7. Explain the principle and working of an air-conditioner.
8. Explain Mier's super-saturation theory of crystallization.
9. Write the importance of stainless steel in pharmaceutical industry.
10. Give a neat diagram and working of "venturi meter".
11. Describe bubble cap rectifying column.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Primary refrigerants.
13. Name the official grades of powders.
14. Define sieve number and sieve nominal size of aperture.
15. What is Raoult's law? Give its significance.
16. Give different crystal habits with examples.
17. Define humid heat and enthalpy.
18. Reynolds number and its significance.



9

QP Code: 1409

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination November 2012****Subject: Applied Biochemistry**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Explain the theories of enzyme action and factors affecting enzyme action. Add a note on enzyme inhibition.
2. Describe fatty acid oxidation with its energetics and explain the role of carnitine in β -oxidation.
3. Define glycolysis. Explain the process of glycolysis. Give its significance.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Write a note on allosteric enzymes.
5. Explain the chemistry and biochemical role of thiamine.
6. Explain gluconeogenesis.
7. Write notes on the hormonal regulation of carbohydrate metabolism.
8. Explain the chemistry and biochemical role of sphingolipids.
9. Explain acetoacetate and fumarate pathway of tyrosine metabolism.
10. Explain the metabolism of bilirubin.
11. Explain the creatinin clearance test and its importance.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define Gibb's free energy.
13. Significance of cyclic AMP.
14. What is mutarotation?
15. Name the ketone bodies.
16. What are essential fatty acids? Give examples.
17. What is mutation?
18. What is transcription?



10

QP Code: 1411

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination November 2012****Subject: Pharmaceutical Jurisprudence & Management**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. What are the different licenses issued for the sale of drugs? Explain how general and restricted licenses are granted.
2. Write a detailed note on the stages of new product development.
3. What are the secondary functions of management? Explain.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. How is the Institutional Animal Ethics Committee constituted? Explain how breeding and stocking of animals are done.
5. Explain the different channels of distribution.
6. Explain briefly the different functions of pharmaceutical marketing.
7. Explain education regulation under Pharmacy Act 1948?
8. Define the terms coca leaf, opium and manufactured drugs under NDPS Act 1985.
9. Explain the concept of branding.
10. Write a note on market research.
11. Explain the loan license and repacking license.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define drug as per D & C Act.
13. Define patent and proprietary medicine (D&C Act).
14. Principle of goal setting theory of motivation.
15. Give specimen label for insulin injection.
16. What is Schedule 'G'?
17. Task management of leadership style.
18. What is brand? What are the advantages of having brand?



17

QP Code: 1406

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination November 2010****Subject: Physical Pharmaceutics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Define suspension. Explain the necessity of suspending agents in suspension stability. Differentiate between flocculated and deflocculated suspension.
2. Define and classify complexes with examples. Explain protein binding and its importance.
3. What is drug adsorption? Explain the adsorption at liquid interface and detergency adsorption at solid interface.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain the optical properties of colloids.
5. Explain Brookfield viscometer.
6. Explain how the stability of emulsion is evaluated.
7. Differentiate Newtonian and Non-Newtonian fluids with examples.
8. Briefly explain zero order kinetics.
9. Write the pharmaceutical applications of thixotropy.
10. Write notes on relative humidity.
11. Write the application of pharmaceutical polymers.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define "true density".
13. What is co-solvency process?
14. Differentiate half life and shelf life.
15. How is hydrolysis of drugs prevented?
16. What is eutectic mixture?
17. What is Fick's law of diffusion?
18. Define "sedimentation".

**JSS UNIVERSITY, MYSORE****Second Year B.Pharm Examination November 2010****Subject: Pharmaceutical Organic Chemistry-II**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Explain the Skraup's quinoline synthesis. Outline any five reactions of quinoline. (5+10)
2. Explain the nomenclature of geometrical isomers. Add a note on methods of determination of configuration of geometrical isomers. (5+10)
3. What are carbohydrates, classify them with examples. Explain the structural determination of glucose. (2+3+10)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain the different methods for resolution of racemic mixtures.
5. Define asymmetric synthesis with suitable examples.
6. Classify heterocyclic compounds with examples.
7. Explain Fischer indole synthesis.
8. Write the structure of any one acridine derivative, its medicinal uses and one important reaction. (1+2+2)
9. Give an account of electrophilic substitution reaction of furan.
10. Define saponification value. Explain the principle involved in its determination.
11. Give an account of Hantzsch pyridine synthesis.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Aromaticity of thiophene.
13. Structure and medicinal uses of any one imidazole derivative.
14. What is the order of reactivity of SN^1 and SN^2 reactions?
15. What is Reichart-Meissl (RM) value?
16. What is iso electric point?
17. What are essential amino acids? Give examples.
18. What is terminal residue analysis?

**JSS UNIVERSITY, MYSORE****Second Year B.Pharm Examination November 2010****Subject: Pharmaceutical Engineering**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Explain the term evaporator capacity. Write a note on factors affecting rate of evaporation. Describe the principle, construction, working, advantages and disadvantages of 'multiple effect evaporator'.
2. Explain the mechanism of crystallization. Describe the principle, construction, working, advantages and disadvantages of Swenson Walker crystallizer.
3. a) Draw the typical drying rate curve.
b) Explain the principle and operational details of spray dryer with a suitable diagram.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Describe the various methods of combating corrosion.
5. What are the possible industrial hazards? How can they be prevented?
6. What are the properties of glass? What are its applications as a material of construction?
7. Working and construction of Silverson emulsifier.
8. State and explain Fouriers law of heat transmission with equation.
9. Explain the procedure for the separation of an azeotropic mixture.
10. What are the reasons for vortex formation? Suggest suitable solutions for the problems of vortex formation.
11. Explain the working principle of fluid energy mill.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. What is mean free path?
13. State and explain Stefan Boltzman's law of heat radiation.
14. Kozeny-Carman equation and its significance.
15. Define the term 'attrition' and its impact in size reduction.
16. Write the advantages of screw conveyor.
17. Define the terms 'pitting corrosion' & 'galvanic corrosion'.
18. Write the uses of humidity chart.



20

QP Code: 1409

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination November 2010****Subject: Applied Biochemistry**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Describe IUB classification and properties of enzymes. Add a note on mechanism of co-enzyme action.
2. Describe citric acid cycle. Write its energetics.
3. Explain the different liver function tests.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. What are energy rich compounds? Explain the biochemical role of any one energy rich compound.
5. What are isoenzyme? Give example along with biochemical role.
6. Explain gluconeogenesis and its significance.
7. Explain HMP shunt and its importance.
8. Define lipids, classify them with examples. Give the biochemical role of lipids.
9. Explain transamination with example.
10. Write notes on the chemistry of porphyrins.
11. Write the salient features of codon.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define active transport.
13. What is the effect of temperature on the rate of enzyme action?
14. Give two examples each for monosaccharide and disaccharide.
15. What are anomers?
16. Name the bile acids and their biochemical roles.
17. Define deamination and mention its significance.
18. What is the clinical application of creatinine clearance test?



21

QP Code: 1410

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination November 2010****Subject: Pathophysiology**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Enlist the factors contributing to ulcer and describe the pathogenesis of peptic ulcer.
2. Explain the pathophysiology of ischemic heart disease.
3. What are the criteria for autoimmunity? Classify the autoimmune diseases & explain the mechanism of autoimmunity.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain the signs & symptoms of schizophrenia.
5. Write a note on iron deficiency anemia.
6. Describe the pathophysiology of cirrhosis.
7. Explain the difference between malignant & benign tumour.
8. Write a note on mechanism of inflammation.
9. Write a note on pathogenesis of Parkinson's disease.
10. Differentiate acute renal failure & chronic renal failure.
11. Write a note on upper respiratory tract infections.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define cell death.
13. Basic principles of wound healing.
14. Define the term hypersensitivity.
15. Name the factors which precipitate hypertension.
16. Name the causative organisms for UTI.
17. Name any two thyroid diseases.
18. Classify hepatitis.



22

QP Code: 1411

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination - November 2010****Subject: Pharmaceutical Jurisprudence and Management**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Describe prohibited and permitted operations under NDPS Act.
2. Explain the education regulations as per the Pharmacy Act.
3. Enlist primary and secondary functions of management and explain any one in detail.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. List out the drugs prohibited to be imported under D & C Act.
5. What is packaging? Explain the role of packaging in product differentiation.
6. What is market research? Explain types of market research with example.
7. Describe ethics in marketing.
8. Explain the constitution and functions of drugs technical advisory board.
9. Write a note on entrepreneurship development.
10. How is bonded laboratory designed and constructed?
11. What is meant by MAPE and how is retail prices of formulation calculated under DPCO 1995?

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define segmentation.
13. What is job analysis?
14. Define adulterated drug under D & C Act.
15. Define schedule 'H' and schedule 'X'.
16. Qualities of sales representative.
17. What is the role of retailer in pharmaceutical marketing?
18. Objectives of Drugs and Magic remedies Act.

JSS UNIVERSITY, MYSORE

Second Year B.Pharm Examination - November 2013

Subject: Physical Pharmaceutics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define suspension. Explain the method to achieve controlled flocculation. Add a note on evaluation of suspensions.
2. What are colloids? Classify with examples. Describe their electrical and kinetic properties.
3. Classify complexes with examples. Describe any two methods of analysis of complexes. Write in brief about inclusion complexes.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Write a note on phase rule.
5. Describe ideal solution of solid in liquid and give method for determining molar heat of fusion of a solute.
6. Explain the process of detergency.
7. How do you express the equivalent diameters of an asymmetric particle?
8. Write a note on thixotropy and its applications.
9. How are pharmaceuticals stabilized against oxidative degradation?
10. Write a note on HLB in formulation of emulsions.
11. Explain two factors affecting the rate of a reaction.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define polymorphism with suitable examples.
13. Give the units of rate constants for zero, first and second order kinetics.
14. Classify synthetic emulgents with examples.
15. Define chelates. Give any two of its application.
16. State and explain Henry's law.
17. Write Edmundson's equation with terminologies.
18. What are bulges and spurs?

JSS UNIVERSITY, MYSORE**Second Year B.Pharm Examination - November 2013****Subject: Pharmaceutical Organic Chemistry-II**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) Explain different methods of resolution of racemic mixture. (8)
b) What are carbohydrates? Classify with examples. (7)
2. a) Explain any two methods of synthesis of furan. (7)
b) Describe Clemmensen reduction and Birch reduction. (8)
3. a) Give detailed account of structure of starch. (5)
b) Explain the structure of proteins. (4)
c) Write the structure and uses of a derivative bearing the following heterocycle: i) Thiophene ii) Imidazole iii) Quinoline (6)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Write a short note on atropisomerism.
5. Explain sequence rule with example.
6. Write the principle involved in the determination of
a) Acid value b) Saponification value
7. Explain general and cyclic structure of glucose.
8. Explain determination of N-terminal amino acid residue.
9. Give chemical reactions of naphthalene.
10. Write conformational isomerism of cyclopentane.
11. What are disaccharides? Explain the structure of maltose.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Classify stereoisomerism with example.
13. What is Wolff Kishner reduction?
14. Define polynuclear hydrocarbon with example.
15. Write the synthesis of indole.
16. Write the structure of sucrose and lactose.
17. Define iodine value.
18. What is Dakin reduction?

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination - November 2013
Subject: Pharmaceutical Engineering

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)**2x15=30 Marks**

1. a) Explain the mechanisms of heat transfer. (6)
b) Derive Fourier's law for heat transmission through a metal wall. Write the applications of Fourier's law. (6+3)
2. a) Define evaporation. What are the factors affecting the rate of evaporation? (1+4)
b) Explain the principle, construction, working, advantages and disadvantages of multiple effect evaporator. (2+2+2+2+2)
3. a) Classify drying equipments used in pharmaceutical industry. (5)
b) Explain the principle, construction, working, advantages and disadvantages of freeze dryer. (2+2+2+2+2)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Describe the different methods by which supersaturation can be brought about.
5. Explain different methods of decreasing humidity.
6. Give the construction and working of planetary mixer. (2+3)
7. Explain different methods of preventing corrosion.
8. Explain construction and working of a mill for sterile products. (2+3)
9. Explain construction and working of a filter for sterile products. (2+3)
10. Write the principle of molecular distillation giving the significance of mean free path.
11. What are the reasons for fire hazards? How can they be prevented? (2+3)

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Explain the terms 'mass balance' and 'energy balance'. (1+1)
13. Write the merits and demerits of plastic as construction material. (1+1)
14. What is Reynolds number? Write its significance. (1+1)
15. What are the disadvantages of sieve shaker?
16. What are the pharmaceutical applications of centrifugation?
17. Write the fundamental factor which influences the selection of a location of a pharmaceutical plant.
18. What are the qualities of refrigerants?

JSS UNIVERSITY, MYSORE
Second Year B.Pharm Examination - November 2013

Subject: Applied Biochemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. a) Describe aerobic glycolysis along with energetics and its significance. (10+5)
b) Write a note on glycogen storage diseases.
2. a) Write the pathway for the synthesis of cholesterol starting from acetyl CoA. (10+5)
b) Write a note on fatty liver.
3. a) Describe the transamination and deamination of amino acids along with suitable examples. (10+5)
b) Write the metabolic pathway for the formation of dopamine, nor adrenaline and adrenaline.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Write a note on induction of genes.
5. Electron transport chain.
6. Diabetes mellitus.
7. Outline the biosynthesis of lecithin and cephalin.
8. Write the reactions involved in the formation of urea in liver.
9. Catabolism of adenine and guanine.
10. Vanden Bergh test.
11. Cyclic AMP and its biological significance.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Energy rich compounds.
13. Allosteric enzymes.
14. Role of NAD.
15. Effect of insulin on glycogen metabolism.
16. Hypercholesterolemia.
17. Biological role of amino acids.
18. Genetic code.

JSS UNIVERSITY, MYSORE

Second Year B.Pharm Examination - November 2013

Subject: Pathophysiology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define and classify cell injury. Explain the pathogenesis of reversible cell injury.
2. Define and explain Type III hypersensitivity.
3. Explain the aetiology and pathophysiology of chronic renal failure.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Write the definition, types and signs of inflammation.
5. Explain the pathogenesis of meningitis.
6. Write a note on the mechanism of rejection of allograft.
7. Write a note on the adaptive changes of cell injury.
8. Write the signs and symptoms of schizophrenia and mania.
9. Write a note on the components and types of feedback systems.
10. Explain the pathogenesis of tuberculosis.
11. Write the aetiology and clinical symptoms of COAD.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define dystrophic and metastatic calcification.
13. Write the cardinal features of inflammation.
14. Define autoimmunity.
15. Write the aetiology of hypothyroidism and hyperthyroidism.
16. Define hypertension.
17. Write the aetiology of typhoid and otitis media.
18. Write the clinical symptoms of asthma.

JSS UNIVERSITY, MYSORE

Second Year B.Pharm Examination - November 2013

Subject: Pharmaceutical Jurisprudence & Management

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Write the qualification, duties and functions of drugs inspector.
2. Describe the stages of new product development.
3. Write the requirements and manufacturing of alcoholic preparations outside bond.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. What is first register and how it is prepared?
5. Write in brief about ethics in marketing.
6. What are the operations totally prohibited under NDPS Act?
7. What are the functions of Pharmacy Council of India?
8. Write a note on various dimensions of pharmaceutical market.
9. Explain the role of pharmacist.
10. Write a note on entrepreneurship development.
11. Write the offences and penalties under Medicinal and Toilet Preparations Act.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. What are the objectives of D & C Act?
13. What is the role of retailer in pharmaceutical marketing?
14. Give the formula for calculating retail price of a drug formulation.
15. Define the terms 'advertisement' and 'magic remedies'.
16. What is delegation of authority?
17. Write a note on democratic leadership style.
18. What are the objectives of pharmaceutical policy?

JSS UNIVERSITY, MYSORE
Third Year B.Pharm Examination - May 2010
Subject: Medicinal Chemistry-I



*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. What are antipsychotics? Give their mechanism of action. Classify them with examples and write one structure for each group. Explain the SAR of phenothiazines. Write the synthesis of prochlorperazine meclate. (1+3+4+4+3)
2. What are sympathomimetic agents? Write the biosynthesis of adrenergic neurotransmitters. Classify sympathomimetics with examples and write one structure for each group. Write the synthesis of phenylephrine and terbutaline. (1+4+4+6)
3. Define and explain the importance of partition coefficient, chelation and solubility properties of a drug in relation to its biological activity. (5+5+5)

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Write a note on reversible cholinesterase inhibitors. Outline the synthesis of pyridostigmine.
5. What are sedatives and hypnotics? Classify them with examples.
6. Classify anti-inflammatory agents giving two examples for each class. Outline the synthesis of any one of them.
7. Explain the factors affecting drug metabolism.
8. What are CNS stimulants? Classify them with two examples. Outline the synthesis of any one CNS stimulants.
9. Classify adrenergic antagonists with examples. Write the synthesis of any one.
10. What are antihypertensive agents? Give the structure of captopril, clonidine hydrochloride and reserpine.
11. What are anticonvulsants? Classify them with two examples of each class. Write the mechanism of action of anticonvulsants.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. What are anti-tussives? Write the structure of any two.
13. What are anti-hyperlipidemic agents? Write the structure of lovastatin.
14. Outline the synthesis of halothane.
15. Write the structure and uses of chlorthalidone.
16. Outline the synthesis of naproxen.
17. What are calcium channel blockers? Give two examples.
18. Write the structure and use of digoxin.

JSS UNIVERSITY, MYSORE
Third Year B.Pharm Examination - May 2010

Subject: Pharmacology- I

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. What is arrhythmia? What are the different types of arrhythmias? Classify anti-arrhythmic drugs with examples. (3+5+7)
2. Classify NSAIDs. Explain the mechanism of action, pharmacological actions and adverse effects of aspirin. (3+12)
3. What are anti-convulsants? Classify them with examples. Write the mechanism of action, pharmacological action and adverse effects of phenytoin. (3+5+7)

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Explain the different phases of clinical trial.
5. Write the management of organophosphorus compound poisoning.
6. Write the drugs used in the treatment of shock.
7. Explain preanesthetic medication.
8. Classify the drugs used in the treatment of asthma.
9. Write a brief note on plasma volume expanders.
10. Write the mechanism of action and clinical uses of barbiturates.
11. Classify diuretics with specific examples.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Give two examples for HMG CoA reductase inhibitors.
13. What is atherosclerosis?
14. What is prodrug? Give examples.
15. Name any two respiratory stimulant drugs.
16. Give two examples of selective COX-2 inhibitors.
17. Write the mechanism of action of a general anaesthetic.
18. What is drug dependence?

JSS UNIVERSITY, MYSORE
Third Year B.Pharm Examination - May 2010
Subject: Pharmacognosy & Phytochemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Define adulteration and evaluation? Explain evaluation methods for crude drugs.
2. Explain the source, cultivation, collection, macroscopy, constituents and uses of Senna.
3. Describe the pharmacognostical study of opium. ✓

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Explain the taxonomical classification of drugs and write its advantages and disadvantages?
5. Define proteins. Explain the pharmacognosy of spirulina.
6. Describe the pharmacognostical study of podophyllum.
7. Explain the preparation of surgical "catgut". ✓
8. Describe the microscopy of nux-vomica. ✓
9. Explain the chemical tests and uses of aloe.
10. Give the source, chemical constituents and use of pilocarpus.
11. What are pharmaceutical aids? Describe any one.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Give the chemical constituents and uses of colophony.
13. Chemical tests for honey.
14. Give the source and uses of pyrethrum.
15. Write the chemical tests for gum acacia.
16. Define pharmacognosy and give two examples for animal fibres.
17. Write the source and uses of gymnema.
18. Explain murexide test.

15

may - 2010

QP Code: 1415

JSS UNIVERSITY, MYSORE
Third Year B.Pharm Examination - May 2010

Subject: Pharmaceutical Biotechnology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Explain how the total and viable population of bacteria in a sample is assessed.
2. Describe the production of vitamin B₁₂ by fermentation process.
3. Write the principle pharmacopoeial procedure and interpretation of microbial assay of streptomycin by using *Bacillus subtilis*.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Explain the mode of action and application of dyes and mercurial disinfectants.
5. Explain the gas pack for cultivation of anaerobics.
6. Write the principle and procedure of starch hydrolysis test.
7. Explain the chemistry of immunoglobulin.
8. Explain ELISA. Write its diagnostic applications.
9. Write causative agent, mode of transmission and treatment of typhoid.
10. Standardization of bacterial vaccines.
11. Describe the method of production of insulin by genetic engineering.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Difference between 'enriched' and 'enrichment' media.
13. What is meant by negative staining?
14. Ideal properties of disinfectants.
15. Industrial applications of yeast.
16. Mechanism of actions of radiation sterilization.
17. List the types of enzyme immobilization.
18. Functions of restriction endonuclease.

15

JSS UNIVERSITY, MYSORE
Third Year B.Pharm Examination - May 2010

Subject: Quality Assurance

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. 'Zero Defect Concept' is achieved through TQM. How is the philosophy of TQM applicable to a pharmaceutical industry?
2. What are the quality management principles for continuous improvement as per ISO-9000?
3. What procedures are followed in disposing waste materials in pharmaceutical industries? How is it documented?

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Define the terms 'accuracy' and 'precision'. How are they determined?
5. What do you understand with the concept of 'vendor development'?
6. Explain 'master production' and 'control record'.
7. Explain 'site master file' as per schedule M.
8. Write QC tests for glass containers used in pharmaceutical packaging.
9. Explain the importance of hygiene in obtaining quality products.
10. What is meant by 'cross contamination'? How can it be prevented during production?
11. Describe 'batch processing record'.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. What parameters are calibrated for UV-Vis spectrophotometer?
13. What are the management responsibilities towards quality management systems?
14. What is covered by 21 CFR 210?
15. Distinguish between quality control and quality assurance.
16. Explain the need for as well as the contents of a procedural manual.
17. What is covered by ICH Q3C (R4)?
18. Explain the need and benefits of WHO certification.

18

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination - May 2010****Subject: Biopharmaceutics & Pharmacokinetics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Enumerate the role of various physico-chemical factors in the absorption of drugs, citing suitable examples.
2. What is a compartment? Explain the characteristics of 'one compartment' model. Explain the method of calculating the pharmacokinetic parameters in one compartment model by administering i.v. bolus injection? (3+5+7)
3. Explain the theories of dissolution. What factors will influence the dissolution rate of drugs? Explain the methods for improving dissolution of drugs. (5+5+5)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. What is the significance of *in vitro*- *in vivo* correlation (IVIVC)? Briefly describe the approaches available for IVIVC.
5. Compare the sigma minus method and excretion rate method.
6. Enumerate the anatomical and physiological factors of the gastro intestinal tract in the absorption of drugs.
7. Explain dose adjustment in renal impairment.
8. Enumerate the role of drug-drug interactions with suitable examples.
9. What are the differences between bioavailability and bioequivalence?
10. What is renal clearance and how is it determined?
11. Explain the relevance of bioequivalence testing.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Certain vitamins are administered along with food. Explain.
13. How is the bioavailability of a drug having site specific absorption improved?
14. Define pharmacodynamics and give two examples.
15. Define *in vivo* sink condition.
16. How is the area under the curve determined?
17. Mention the significance of lipid water partition coefficient in drug absorption.
18. Explain ion-pair transport.

178

**JSS UNIVERSITY, MYSORE****Third Year B.Pharm Examination May 2012****Subject: Medicinal Chemistry-I**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. What are sympathomimetic agents? Classify with examples. Explain the structure activity relationship of sympathomimetic agents. Give the synthesis of phenylephrine. (2+4+6+3)
2. Classify the cardiovascular drugs. Describe the mechanism of action of calcium channel blockers as antihypertensive agents. (8+7)
3. What are antipsychotics? Write the synthesis of prochlorperazine maleate and chlordiazepoxide and explain SAR of phenothiazines. (2+4+4+5)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain the general pathways of drug metabolism.
5. Explain the effect of protein binding and chelation in relation to biological action.
6. Write the synthesis of halothane and ketamine hydrochloride.
7. What are anticonvulsants? Write the mechanism of action of oxazolidine diones.
8. Define diuretics and classify them with examples.
9. Explain SAR of morphine analogues.
10. Write the synthesis and mechanism of action of benzocaine.
11. Write the structure and uses of the following:
 - a) Carbachol
 - b) Isosorbide dinitrite
 - c) Nikethamide
 - d) Ephedrine
 - e) Tolazoline.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. What is chelation and ionization?
13. Write the synthesis of diazepam.
14. Define sedatives and hypnotics with examples.
15. Give the structure and uses of any two cholinergic blocking agents.
16. What are anti-arrhythmic drugs? Give two examples.
17. Write the synthesis of acetazolamide.
18. What are anticoagulants? Write the structure of warfarine.



17

QP Code: 1413

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination May 2012****Subject: Pharmacology-I**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Classify anti-hypertensive drugs. Describe the pharmacology of any two class of drugs.
2. Classify antipsychotics. Write in detail the pharmacological actions and adverse effects of chlorpromazine.
3. Explain the various routes of administration of drugs with their advantages and limitations.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Describe the mechanism of action and uses of morphine.
5. Explain the mechanism of action of digoxin.
6. Write a short note on clinical trials.
7. Explain the preanesthetic medication.
8. Classify the drugs used in the treatment of parkinsonism.
9. What is arrhythmia? Classify anti-arrhythmic drugs.
10. Write the mechanism of action and clinical uses of benzodiazepines.
11. Explain the drug-drug interactions with examples.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Name the drugs used in the treatment of anxiety.
13. Define tachyphylaxis.
14. What is adverse drug effect?
15. Name any two non sedative antihistamines.
16. Give two examples of selective COX-2 inhibitors.
17. How does a local anesthetic work?
18. What is drug addiction?



14

QP Code: 1414

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination May 2012****Subject: Pharmacognosy & Phytochemistry**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Define cardio active sterols. Write the pharmacognostical study of digitalis.
2. Write in detail about the source, cultivation, collection, preparation, macroscopy, constituents and uses of liquorice.
3. Describe the various methods of classification of crude drugs with examples and write merits and demerits of pharmacological classification.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Define pharmaceutical aids and write the source, constituents and uses of talc.
5. Give examples for tropane alkaloids and write the source, chemical constituents and uses of any one tropane alkaloid.
6. Explain the microscopy of cinnamon with a neat labeled diagram.
7. Write a brief note on plant hormones and their applications.
8. Write a note on conservation of medicinal plants.
9. Give the pharmacognostic study of ephedra.
10. Write the source, chemical constituents with structures and use of chaulmoogra oil.
11. Explain the export potential of herbal drugs and medicinal plants.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Source and use of lemon grass oil.
13. Explain Borntrager's test and modified Borntrager's test.
14. Chemical constituents and uses of agar.
15. Write the thalleioquin test.
16. Source and use of ginger.
17. Define plant fibres and surgical dressings.
18. Define antihepatotoxic and oral hypoglycemic agents with examples.



15

QP Code: 1415

JSS UNIVERSITY, MYSORE

Third Year B.Pharm Examination May 2012

Subject: Pharmaceutical Biotechnology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. What are the ideal properties of disinfectant? Describe the bacteriostatic and bactericidal methods of evaluation of disinfectants.
2. Explain in detail the production of penicillin G by fermentation.
3. Enlist and explain various antigen-antibody reactions in detail. Mention their diagnostic applications.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain various methods of preservation of pure culture.
5. Explain, how bacterial vaccines are standardized.
6. Write the importance of air discharge tap in laboratory autoclave.
7. Write the principle of indole production test and starch hydrolysis test.
8. Describe the method of production of hepatitis B vaccine by genetic engineering.
9. Describe the steps in the production of monoclonal antibodies. Give their applications.
10. Explain the various methods of cultivation of virus.
11. Write the causative agent, mode of transmission and treatment of cholera.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. List the types of enzyme immobilization.
13. What are plasmids? Write its uses.
14. Write the importance of sterilization indicators.
15. Write the principle of acid fast staining.
16. Draw ultra structure of flagella.
17. Write the different methods of attenuation.
18. Give the properties of antigens.



16

QP Code: 1416

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination May 2012****Subject: Quality Assurance**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. What are the requirements of sterile product manufacturing areas for good manufacturing practices according to Schedule M.
2. Describe stability testing procedure of new drug substances according to ICH guidelines.
3. Define and explain various steps in analytical method validation.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Write a note on WHO certification.
5. Write a note on handling of returned goods.
6. What measures are taken for disposal of scrap?
7. What are the functions of a quality control laboratory?
8. Describe the importance of quality audit.
9. What is in-process quality control?
10. Describe the specifications for purchase of raw materials.
11. Write QC tests for containers and caps.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. What are the objectives of writing an SOP?
13. Define calibration. Where is it useful?
14. Write any two conditions for product recall.
15. What is a quality manual?
16. Write the significance of a batch manufacturing record.
17. What are the advantages of vendor development?
18. Define the terms QC and QA.



17

QP Code: 1417

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination May 2012****Subject: Biopharmaceutics & Pharmacokinetics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Explain the biological factors influencing drug absorption from GI tract with examples.
2. Define and explain bioavailability and bioequivalence and their significance. How will you determine the absolute bioavailability of a orally administered drug?
3. Define and explain the term compartment. Explain one compartment model with extra vascular drug administration with all the relevant expressions and graphs.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. State and explain Noyes - Whitney equation.
5. Define biopharmaceutics and explain its role in product development.
6. Describe the method of residuals and its applications.
7. Define and explain V_d . Describe any one method for its determination.
8. How is the dosage adjustment made in renal impairment?
9. Explain the factors of pharmacokinetic variability.
10. Explain the factors influencing C_{ss} (steady state plasma concentration) flowing multiple dosing.
11. Explain the kinetics of passive diffusion.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define and explain renal clearance.
13. Define and explain AUC.
14. Define and explain C_{max} .
15. Draw a typical blood level curve following oral administration of a drug and indicate the important parameters.
16. Distinguish between disintegration time and dissolution rate.
17. Explain first pass effect with examples.
18. Explain polymorphism with examples.

May - 2011



12

QP Code: 1412

JSS UNIVERSITY, MYSORE

Third Year B.Pharm Examination - May 2011

Subject: Medicinal Chemistry-I

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. What are antipyretics? Explain the SAR of morphine analogues. Write the mechanism and synthesis of methadone hydrochloride.
2. What are adrenergic antagonists? Explain the SAR of beta blockers. Explain the mechanism of action and physico chemical properties of solanaceous alkaloids.
3. Define vasodilators. Write a note on cardiotonics and calcium channel blockers. Write the mechanism of action antiarrhythmic drugs. Give the synthesis of disopyramide phosphate.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Write a note on history and development of medicinal chemistry.
5. Explain the phase-I pathway of drug metabolism with examples.
6. Give the synthesis of phenytoin and valproic acid.
7. Explain the mechanism of action of sympathomimetic agents and give the synthesis of tolazoline.
8. What are cholinesterase inhibitors? Explain the mechanism action of pyridostigmine.
9. Write the synthesis, mechanism of action and uses of guanethidine monosulphate.
10. What are anti-hyperlipidemic agents? *classify them with examples.* Write the synthesis of clofibrate.
11. Write the functions, structure and biosynthesis of acetylcholine.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Define redox potential and surface activity.
13. Write the synthesis of promazine hydrochloride.
14. Write the structure and uses of reserpine and sodium nitroprusside.
15. Give the structure and uses of any two carbonic anhydrase inhibitors.
16. Write the synthesis of chlorthiazide.
17. Write the structure and uses of morphine and loperamide hydrochloride.
18. What are analeptics and psychomotor stimulants?



13

QP Code: 1413

JSS UNIVERSITY, MYSORE
Third Year B.Pharm Examination - May 2011

Subject: Pharmacology- I

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Define and classify receptors and explain each type of receptor.
2. Write in detail the mechanism of action and pharmacological actions of aspirin. What are the precautions and contraindications for its use?
3. Explain the various routes of administration of drugs with their advantages and limitations.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Write the pharmacological actions of morphine.
5. Explain the mechanism of action of digoxin.
6. Write a short note on pharmacogenetics.
7. Explain the various stages of anesthesia.
8. Classify the drugs used in the treatment of hypertension.
9. What is arrhythmia? Classify anti arrhythmic drugs.
10. Write the mechanism of action and adverse effects of phenytoin.
11. Classify the different types of diuretics with examples.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Name the drugs used in the treatment of status epilepticus.
13. Write the factors which modify drug action.
14. Define teratogenicity with specific examples.
15. Name any two non sedative antihistamines.
16. What are antacids? Give examples.
17. What is adverse drug reaction?
18. Define drug tolerance.

JSS UNIVERSITY, MYSORE
Third Year B.Pharm Examination - May 2011
Subject: Pharmacognosy & Phytochemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Explain the history, scope and development of pharmacognosy.
2. Define adulteration. How is the adulteration of crude drug detected?
3. Explain the source, cultivation, collection, preparation, chemical constituents and uses of arjuna.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Write the life cycle of ergot.
5. Describe the pharmacognostic study of black catechu.
6. Name any one oral hypoglycaemic drug and write its source, chemical constituents and uses.
7. Explain the process involved in the preparation of aloe from various sources.
8. Explain the pharmacognosy of benzoin.
9. Explain the microscopy of senna with a neat labeled diagram.
10. Describe the processing and storage of crude drugs.
11. Define lipids. Write the pharmacognosy of shark liver oil.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Define mutation and write the various types of mutagens.
13. Write the source and uses of pectin.
14. Write the Trim & Hill reaction for iridoids.
15. Chemical constituents and uses of squill.
16. Explain the Vitali-Morin test.
17. Write the source and uses of silk.
18. Write the principle of Millons test.

JSS UNIVERSITY, MYSORE
Third Year B.Pharm Examination - May 2011
Subject: Pharmaceutical Biotechnology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Compare and contrast dry heat and moist heat sterilization. Explain with reasons which method is superior.
2. Write the principle, pharmacopoeial procedure and interpretation of microbial assay of streptomycin.
3. Explain in detail the production of penicillin G by fermentation.

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Explain the method of production of insulin by genetic engineering.
5. Enlist the various methods of immobilization of enzymes. Write their applications.
6. Explain the phenomena of 'transduction' and 'conjugation'.
7. Distinguish between endotoxin and exotoxin.
8. Write the mechanism of action and applications of phenols and ethylene oxide disinfectants.
9. Write the principle of MR and VP test.
10. Write the causative agent, mode of transmission and treatment of tuberculosis.
11. What are 'B' and 'T' cells? Write their role in immunity.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Advantages of dehydrated media.
13. Functions and importance of cytoplasmic inclusions.
14. Merits and demerits of radiation sterilization.
15. How can synchronous growth curve of bacteria be obtained?
16. Classify vaccines with examples.
17. Pharmaceutical applications of monoclonal antibodies.
18. Mechanism of Gram's staining.



16

QP Code: 1417

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination - May 2011****Subject: Biopharmaceutics & Pharmacokinetics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) What are the advantages and limitations of using urinary excretion data for pharmacokinetic data analysis? (7)
b) Explain the rate of excretion method for the estimation of elimination rate constant. (8)
2. Explain the role of biological factors in the absorption of drugs citing suitable examples.
3. Explain the bioequivalence testing of 5 brands of tablets containing the same dose of drug. How will you interpret the results?

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Explain the Fick's first law of diffusion.
5. Define biological half life and therapeutic range and mention their significance.
6. What is the role of protein binding in the absorption of drugs? Explain its advantages and disadvantages with suitable examples.
7. Differentiate between passive diffusion and active transport giving suitable example.
8. Explain the dissolution rate testing of drugs which do not follow the sink condition in conventional dissolution testing.
9. Enumerate the food-drug interactions with suitable examples.
10. Suggest suitable methods of overcoming first pass effect giving suitable examples.
11. How is the dosage regimen in repetitive i.v. dosing calculated?

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define biopharmaceutics.
13. What is apparent volume of distribution and mention its significance.
14. What are the advantages of assuming compartment modeling?
15. Define renal clearance and clearance ratio.
16. What is pinocytosis?
17. Micronization of a hydrophobic drug is not a suitable solution for improving dissolution. Explain.
18. From which part of the GI tract is a moderately weak base with a pK_a value of 7 absorbed and why?

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination - May 2013****Subject: Medicinal Chemistry-I**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Write in detail about oxidative reactions in phase-I metabolic pathways with examples. Explain the factors affecting drug metabolism and mention the significance of drug metabolism in medicinal chemistry. (8+4+3)
2. What are antiepileptics? Give their SAR and mechanism of action. Classify them giving one example and structure for each group. Outline the synthesis of ethosuximide. (1+6+6+2)
3. Classify narcotic analgesics with one example and structure for each group. Write the modifications of morphine. Outline the synthesis of fentanyl citrate and meperidine hydrochloride. (4+5+6)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Write the synthesis of phenytoin and nikethamide.
5. Define and classify anti-arrhythmic agents. Give the synthesis of nitroglycerin.
6. Outline the synthesis of any two adrenergic antagonists.
7. Write the structure and uses of the following.
a) Phenylbutazone b) Haloperidol c) Neostigmine d) Procaine
e) Warfarin.
8. Write notes on ionization and surface activity with examples.
9. Write the mechanism of action and synthesis of barbital.
10. Write the SAR of local anaesthetics having ester linkage.
11. Outline the synthesis of ketamine hydrochloride and imipramine hydrochloride.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Write the structure and uses of verapamil and quinapril hydrochloride.
13. Outline the synthesis of dicyclomine hydrochloride.
14. What are hypoglycemic agents? Give two examples.
15. Write the synthesis of amiloride.
16. What are analeptics? Give two examples.
17. What are cholinesterase inhibitors? Classify with one example.
18. Outline the biosynthesis of acetylcholine.

JSS UNIVERSITY, MYSORE
Third Year B.Pharm Examination - May 2013
Subject: Pharmacology-I

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. What are narcotic analgesics? Classify with examples. Describe the mechanism of action, pharmacological actions and adverse effects of morphine.
2. Define arrhythmias. Classify anti-arrhythmics with examples. Describe the mechanism of action, pharmacological actions and adverse effects of quinidine.
3. What are sympatholytics? Classify with examples. Describe the pharmacological actions, adverse effects and uses of propranolol.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. What are antianginal drugs? Classify them with examples and list their adverse effects.
5. Classify anti-epileptics with examples. Explain the pharmacology of phenytoin.
6. Describe the mechanism of action and uses of heparin. Add a note on low molecular weight heparin.
7. What are pre-clinical studies? Describe the steps involved in it.
8. Describe the pharmacology of ACE inhibitors.
9. Explain the mechanism of action and adverse effects of digitalis.
10. Write the therapeutic applications of atropine and its substitutes.
11. Classify choline-mimetics with examples. List the adverse effects and therapeutic uses of acetyl choline.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Describe the importance of sugar moiety in cardiac glycoside.
13. Enlist the drugs used in the treatment of anaemia.
14. Describe the mechanism and use of buspirone.
15. What are osmotic diuretics? Give two examples.
16. Treatment for barbiturate poisoning.
17. Mention the clinical uses of diuretics.
18. Differentiate between drug addiction and drug dependence.

JSS UNIVERSITY, MYSORE

Third Year B.Pharm Examination - May 2013

Subject: Pharmacognosy & Phytochemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define pharmacognosy and write the alphabetical and chemotaxonomical classification of herbal drugs.
2. Explain the factors affecting the cultivation of the medicinal plants.
3. Write in detail about the source, cultivation, collection, preparation, chemical constituents and uses of digitalis.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Write the different plant hormones and their applications.
5. Pharmacognosy of gum acacia.
6. Write the source, chemical constituents and uses of any one anti cancer drug.
7. Explain the process involved in the preparation of starch from various sources.
8. Pharmacognosy of caraway oil.
9. Write about the conservation of medicinal plants.
10. Write the pharmacognosy of a crude drug derived from purine.
11. Describe the manufacture of surgical sutures and ligatures.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define adulteration and give two examples.
13. Source and uses of gelatin.
14. Write the phytochemical tests for alkaloids.
15. Chemical constituents and uses of cinchona.
16. Explain the Goldbeater skin test.
17. Source and uses of beeswax.
18. Write the Millions test.

JSS UNIVERSITY, MYSORE

Third Year B.Pharm Examination - May 2013

Subject: Pharmaceutical Biotechnology

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define and classify disinfection with suitable examples. Explain the factors affecting action of disinfectants. Explain the principle and procedure involved in Rideal Walker coefficient. (2+4+4+5)
2. Classify fungi based on its type of sporulation. Explain the principle involved in the acid fast staining. Add a note on nutritional requirements of microorganisms. (5+5+5)
3. Describe the production of hepatitis B vaccine by rDNA technology. Write a note on cloning vectors with suitable examples. (10+5)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Describe bacterial transformation.
5. Explain the fermentative production of penicillin.
6. Define enzyme immobilization. Explain immobilization by entrapment and covalent bonding.
7. Define and classify immunity with examples.
8. Describe the principle and procedure involved in western blotting technique.
9. Write the steps involved in production of monoclonal antibodies using hybridoma technology.
10. Explain the difference between primary and established cell cultures.
11. What is biotransformation? Explain with four examples.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Enlist different antigen-antibody reactions.
13. Write the names of causative organisms of syphilis, tetanus, typhoid and cholera diseases.
14. Write the names of test organism used in the microbial assay of streptomycin and vitamin B₁₂.
15. Write the role of restriction endonuclease in rDNA technology.
16. In an industrial fermenter, what are the applications of spargers.
17. What are biosensors?
18. Write the differences between viable and total count of microorganisms.

JSS UNIVERSITY, MYSORE

Third Year B.Pharm Examination - May 2013

Subject: Quality Assurance

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. a) What is ISO? What does ISO 9000 series stand for? (5)
b) Describe briefly the quality elements of ISO. (10)
2. a) What is validation? Mention the types of validation. (5)
b) Explain 'analytical method' and the different steps involved in it. (10)
3. a) What are the factors to be considered while locating a pharmaceutical manufacturing plant? (4)
b) Describe GMP requirements of production area as per schedule M. (11)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. What factors influence 'total quality'?
5. Describe Kaizen philosophy.
6. Explain types of audit.
7. Write the importance of master production control record.
8. What are the components of a quality manual?
9. Write specimen protocols maintained for clinical and non-clinical testing.
10. Write a note on testing of caps used in packaging of pharmaceutical products.
11. Explain the purpose and contents of a procedural manual.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Distinguish between QC and QA.
13. What are the objectives of writing a good SOP.
14. When are products recalled from the market?
15. What is quarantine? Where and how is this area generally identified in a pharma industry?
16. Define calibration. Mention any two UV spectrophotometer calibration parameters.
17. Expand ICH and US-FDA.
18. Write a note on distribution record.

JSS UNIVERSITY, MYSORE

Third Year B.Pharm Examination - May 2013

Subject: Biopharmaceutics & Pharmacokinetics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Explain the kinetics and factors influencing dissolution rate of drugs. Add a note on official (IP) dissolution rate test.
2. Explain the role of the following in drug absorption with examples:
 - a) pH-partition theory.
 - b) Gastric emptying.
 - c) Food.
3. Define and explain the term compartment. Explain the pharmacokinetics of one compartment open model with extra vascular drug administration with all relevant equations and graphs.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain the kinetics of active transport.
5. State and explain the Ficks law.
6. Define biopharmaceutics and explain its role in product development.
7. Describe the method of residuals and its applications.
8. Define and explain V_d . Describe any one method for its determination.
9. How is the dosage adjustment made in renal impairment?
10. Explain the factors influencing C_{ss} (steady state plasma concentration) following multiple dosing.
11. Explain the factors of pharmacokinetic variability.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define and explain renal clearance.
13. Define and explain AUC.
14. Define and explain C_{max} .
15. Draw a typical blood level curve following oral administration of a drug.
16. Distinguish between disintegration time and dissolution of a drug.
17. Explain first pass effect with examples.
18. Explain polymorphism with examples.



QP Code: 1412

JSS UNIVERSITY, MYSORE
Third Year B.Pharm Examination November 2012
Subject: Medicinal Chemistry-I

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)**2x15=30 Marks**

1. What are general anaesthetics? Explain their mechanism of action. Classify with examples and structures. Write the synthesis of methoxy flurane and thiamylal sodium. (1+4+5+5)
2. What are the various pathways of drug metabolism? Explain phase-I biotransformation reactions with examples. Enumerate the factors affecting the drug metabolism. (2+8+5)
3. Define and classify diuretics with examples and structures. Write the synthesis and mechanism of action of acetazolamide and furosemide. (5+10)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. What are sedatives and hypnotics? Classify with two examples and structures. Write the synthesis of chlordiazepoxide.
5. Write the synthesis of meperidine hydrochloride and methadone hydrochloride.
6. Write the synthesis and SAR of lidocaine.
7. Write the structure and uses of the following:
a) Nikethamide b) Salbutamol c) Carbachol d) Phenytoin sodium
e) Ipratropium bromide.
8. Write the synthesis of any two adrenergic antagonists.
9. Write the synthesis and SAR of carbamazepine.
10. Define and classify narcotic analgesics with examples and structures.
11. Define isosterism. What is the impact of biosteric modifications on the properties of molecules?

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Write a short note on oral hypoglycemic agents.
13. Write the structure and use of isosorbide dinitrate and clofibrate.
14. Write the synthesis of indomethacin.
15. Explain the mechanism of action of sympathomimetic drugs.
16. Outline the synthesis of valproic acid.
17. Write the synthesis of ephedrine.
18. Write the structure and uses of acetylcholine and atropine.

**JSS UNIVERSITY, MYSORE****Third Year B.Pharm Examination November 2012****Subject: Pharmacology-I**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. a) Define epilepsy. Classify the different types of seizures.
b) Explain the mechanism of action and adverse effects of phenytoin. (10+5)
2. What is angina pectoris? Classify the types of angina and the drugs for the treatment of angina.
3. Classify benzodiazepines. Write the mechanism of action, pharmacological actions and adverse effects of benzodiazepines.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Define receptor. Classify and explain the receptor types.
5. Explain drug photosensitivity with examples.
6. Explain the mechanism of action of digoxin.
7. Explain the pharmacology of loop diuretics.
8. Classify the antipsychotic drugs and write their uses.
9. Write a brief note on plasma protein binding.
10. Write the general treatment of status epilepticus.
11. Classify the drugs used in the treatment of asthma.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Give two examples of HMA CoA reductase inhibitors.
13. Write the complications of spinal anaesthesia.
14. What is drug allergy? Give examples.
15. Write any three newer nonbenzodiazepine hypnotics.
16. Name any four drugs that inhibit drug metabolizing enzymes.
17. What is first order kinetics?
18. Classify peripherally acting muscle relaxants.

**JSS UNIVERSITY, MYSORE****Third Year B.Pharm Examination November 2012****Subject: Biopharmaceutics & Pharmacokinetics**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any TWO questions)****2x15=30 Marks**

1. Explain the dosage form and formulation factors influencing drug absorption from GI tract with examples.
2. Explain the mechanism of drug absorption from the GI tract with examples.
3. Define and explain biological half life ($t_{1/2}$). Mention the factors influencing $t_{1/2}$. Explain the methods of determining $t_{1/2}$ from urinary excretion data.

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Explain pH-partition theory.
5. Explain role of gastric emptying in drug absorption.
6. State and explain Noyes Whitney equation.
7. Define biopharmaceutics and explain its role in the product development.
8. Describe the method of residuals and its applications.
9. Define and explain V_d . Describe any one method for its determination.
10. Define bioavailability. Explain how absolute bioavailability is determined.
11. Explain the factors of pharmacokinetic variability.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Define and explain pharmaceutical equivalents.
13. Draw a typical blood level curve following oral administration of a drug and indicate the important parameters.
14. Define and explain C_{max} .
15. Define and explain renal clearance.
16. Define and explain AUC.
17. Distinguish between disintegration time and dissolution rate.
18. Explain first pass effect with examples.



23

QP Code: 1412

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination November 2010****Subject: Medicinal Chemistry-I**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Write the principles of drug therapy. Explain the different types of reaction in phase-I and phase-II with examples. What are the factors that affects drug metabolism?
2. What are sedatives? Explain the physicochemical properties and SAR of benzodiazepines. Write the synthesis of barbitol.
3. What are narcotic antagonists? Explain the mechanism of action of analgesics. Write the synthesis of Ibuprofen and fentanyl citrate.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Write a note on adrenergic neurotransmitters.
5. What are CNS stimulants? Explain the mechanism of action of tricyclic anti-depressants.
6. Write the synthesis of homatropine hydrogen bromide and procyclidine hydrochloride.
7. Explain the mechanism of action of anti-anginal vasodilators.
8. What are diuretics? Classify giving examples with one structure for each class.
9. What are local anesthetics? Write the synthesis and uses of lignocaine and procaine.
10. Explain the biosynthesis and metabolism of acetylcholine.
11. Write the structure and uses of the following:
a) Pyridostigmine b) Guanethedine c) Chlorthiazide
d) Meperidine hydrochloride e) Naproxen

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Write a note on steric effect.
13. Write the synthesis of triclofos sodium.
14. Write the mechanism of action of antiarrhythmic drugs.
15. Write the structure and uses of acetyl choline.
16. What are NSAIDS? Give examples.
17. Write the synthesis of indomethacin.
18. What are calcium channel blockers? Give two examples.



24

QP Code: 1413

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination November 2010****Subject: Pharmacology-I**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) Classify antihypertensives with examples and add a note on ACE inhibitors. (10)
b) Explain the mechanism of action of digoxin. (5)
2. Classify antipsychotics. Write the mechanism of action, therapeutic uses and adverse effects of chlorpromazine.
3. a) Define asthma. Classify the drugs used in the treatment of asthma. (7)
b) Write the pharmacological actions, mechanism of action and adverse effects of theophylline. (8)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain the action of nitrates in angina pectoris.
5. Describe drug dependence with examples.
6. Explain the mechanism of action of phenytoin.
7. Explain the pharmacology of high ceiling diuretics.
8. Classify sedatives and hypnotics with examples.
9. Explain the various stages of general anesthesia.
10. Write the general treatment of organophosphorous poisoning.
11. Classify the drugs used in the treatment of seizure.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define teratogenicity and carcinogenicity.
13. What is infiltration anesthesia?
14. What is prodrug? Give examples.
15. What is enterohepatic clearance of drugs?
16. Name two drugs that suppress dry cough.
17. Define volume of distribution.
18. Classify peripherally acting muscle relaxants.

**JSS UNIVERSITY, MYSORE****Third Year B.Pharm Examination November 2010****Subject: Pharmacognosy & Phytochemistry**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Explain the source, microscopy, macroscopy, life cycle, chemical constituents, tests and uses of ergot.
2. Explain the factors influencing cultivation of medicinal plants, types of soils and fertilizers of common use.
3. Define ligatures and sutures, classify with examples. Describe cotton and silk.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Define resins. Write the monograph of 'guggul'.
5. Give the examples for tumour inhibitors. Write a brief note on 'vinca'.
6. Explain the polyploidy with examples.
7. Give the microscopy of clove.
8. Define saponins and write the source, chemical constituents and uses of 'gokhru'.
9. Explain the storage and preservation of crude drugs.
10. Give the sources, chemical constituents and uses of rauwolfia.
11. Explain the present status and future scope of pharmacognosy.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Write the botanical source and uses of tea.
13. Explain Gold beater's test and ferric chloride test for tannins.
14. Source and uses of 'Rasana'.
15. Chemical constituents and use of cod liver oil.
16. Source and chemical constituents of a natural pesticide.
17. Write the source and uses of diosogenin.
18. Explain Dragendroff and Mayer's test.



26

QP Code: 1415

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination November 2010****Subject: Pharmaceutical Biotechnology**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Explain the production of monoclonal antibodies using hybridoma technology. Write the applications of monoclonal antibodies. (10+5)
2. Write a neat labeled diagram and describe the microscopic structure of bacteria. Explain the different phases of bacterial growth curve. (10+5)
3. Describe the production of human insulin by rDNA technology. Write a note on cloning vectors with suitable examples. (10+5)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Describe bacterial transformation.
5. Explain the fermentative production of ethanol.
6. Define sterilization. Classify methods of sterilization with examples.
7. Explain the principle involved in Chick - Martin test.
8. Describe the production of single cell protein and their applications.
9. Explain the fermentative production of streptokinase.
10. Explain the nutritional requirements of animal cell cultures.
11. Explain the mode of transmission and treatment of cholera.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Write the names of test organism used in the microbial assay of ciprofloxacin and vitamin B₁₂.
13. What is differential media?
14. Expand the term ELISA. Enlist any two applications of it.
15. Define toxoid and give two examples of toxoidal preparation.
16. What are the applications of baffles in an industrial fermenter?
17. Define immobilization of enzymes.
18. Write any four differences between prokaryotes and eukaryotes.



27

QP Code: 1416

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination November 2010****Subject: Quality Assurance**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) What is a master formula record? Outline the major components of master formula record. (9)
- b) What are the QC tests for glass containers when used as primary packaging materials? (6)
2. a) How is contamination controlled in sterile manufacturing areas? (8)
- b) Describe the responsibilities of a quality control laboratory. What are the minimum facilities that need to be equipped in a QC laboratory to maintain specified quality of a dosage form? (7)
3. a) What are the benefits of ISO certification? (6)
- b) What is calibration? Write analytical procedures for calibrating a spectrophotometer. (9)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. What are the advantages of validation studies?
5. What are the objectives of NABL certification?
6. What is quality policy? How does the mission and objectives in the policy help in overall governance of an industry?
7. How are returned goods handled?
8. What is audit? Write about types of audit.
9. Name drug regulatory agencies with their abbreviations in India, United States and United Kingdom.
10. What is qualification? Explain its types.
11. What was the need for the evolution of ICH? What features are covered by its guidelines?

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Write the importance of personnel hygiene in the pharmaceutical manufacturing facility.
13. What is patent? Write its importance.
14. List out any two conditions under which drug product is recalled from market.
15. Write two examples for secondary packing materials.
16. What factors are considered while locating a pharmaceutical plant?
17. What is retrospective validation? Write its importance.
18. Who is a vendor? How is a vendor selected?



28

QP Code: 1417

JSS UNIVERSITY, MYSORE

Third Year B.Pharm Examination November 2010

Subject: Biopharmaceutics & Pharmacokinetics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Enumerate the changes in geriatric and pediatric patients in ADME process. Explain the methods for the dose adjustment in such cases.
2. Explain the role of pharmaceutical factors in the drug absorption with suitable examples.
3. Enumerate the mechanisms of drug absorption.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain the different approaches for the calculation of dissolution rates. Mention their relative merits.
5. Explain the differences in the kinetics of blood levels following oral and IV administration of drugs.
6. A new drug was given in a single intravenous dose of 200 mg to an 80 kg adult male patient. After 6 hours, the plasma drug concentration was 1.5 mg/100ml of plasma. Assuming that the apparent volume of distribution (V_d) is 10% of the body weight, compute the total amount of drug in the body fluids after 6 hours. What is the half life of this drug?
7. In case of renal failure what approaches are followed for dose adjustment?
8. Write the advantages of buccal delivery of drugs with suitable examples.
9. What are the limitations of pH partition theory?
10. Write the calculation of dosage regimen in oral multiple dosing.
11. Write the principle of method of residuals.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. What is the significance of area under the curve (AUC)?
13. What is the rate limiting step in the bioavailability?
14. Define a) biological half life. b) therapeutic range.
15. What are the limitations of active transport?
16. From which part of the GI tract a very weak base like theophylline is ($pK_a=0.7$) absorbed and why?
17. Riboflavin is to be administered along with food. Explain
18. What is the significance of enterohepatic cycling of drugs?

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination - November 2013****Subject: Medicinal Chemistry-I**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. What are analgesics and antipyretics? Explain the SAR of morphine analogues. Outline the synthesis and mechanism of action of ibuprofen.
2. What are adrenergic antagonists? Explain the SAR of β blockers. Write the synthesis of tolazoline and propranolol.
3. Classify cardiovascular agents with examples. Write an account on calcium channel blockers. Give the synthesis of nitroglycerine and chlorthiazide.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Define and classify local anesthetic with examples.
5. What are anticonvulsants? Write its mechanism of action.
6. Explain the role of cytochrome P-450 mono-oxygenase in oxidative bio-transformations.
7. Write the mechanism of action, synthesis and uses of pyridostigmine.
8. Write the SAR of benzodiazepines.
9. Explain with the suitable example how hydrogen bonding influences biological activity.
10. Write the synthesis, mechanism of action and uses of promazine hydrochloride.
11. What are carbonic anhydrase inhibitors? Explain their mechanism of action.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define redox potential and surface activity.
13. What are general anesthetics? Write the structure of halothane and methoxyflurane.
14. Give the structure and uses of any two CNS stimulants.
15. What are sympathomimetic agents? Give two examples.
16. Write the structure and uses of clofibrate and warfarin.
17. What are hypoglycemic agents? Write the structure of any two synthetic hypoglycemic agents.
18. Write the synthesis of nikethamide.

JSS UNIVERSITY, MYSORE
Third Year B.Pharm Examination - November 2013
Subject: Pharmacology-I

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. a) Define parkinsonism. Classify the drugs available for the treatment of parkinsonism. (8)
b) Explain the role of dopamine agonist and catechol-o-methyl transferase inhibitors in Parkinson's disease. (7)
2. What is angina pectoris? Classify the types of angina and the drugs for the treatment of angina.
3. Classify antidepressants. Explain the role of selective serotonin re-uptake inhibitors and mood stabilizers in depression.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain the factors which modify drug action.
5. Describe drug teratogenicity with examples.
6. Write the properties of an ideal anaesthetic agent.
7. Write the pharmacology of potassium sparing diuretics.
8. Classify anti arrhythmic drugs.
9. Write a brief note on plasma protein binding.
10. Classify anti-hyperlipidemic drugs.
11. Classify the different types of seizure.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. What is first pass metabolism?
13. Define synergism. Give examples.
14. What is drug allergy? Give examples.
15. Define sedative and hypnotic.
16. What is status epilepticus? Give the drug of choice.
17. What is zero order kinetics?
18. Write the mechanism of action of monteleukast.

JSS UNIVERSITY, MYSORE

Third Year B.Pharm Examination - November 2013

Subject: Pharmacognosy & Phytochemistry

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define pharmacognosy and write the alphabetical and chemotaxonomical classification of herbal drugs.
2. Explain the factors affecting the cultivation of medicinal plants.
3. Write in detail about the source, cultivation, collection, preparation, chemical constituents and uses of digitalis.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Write the different plant hormones and their applications.
5. Pharmacognostic study of gum acacia
6. Write the source, chemical constituents and uses of any one anticancer drug.
7. Explain the process involved in the preparation of starch from various sources.
8. Pharmacognosy of caraway oil.
9. Write about the conservation of medicinal plants.
10. Write the pharmacognosy of a crude drug derived from purine.
11. Describe the manufacture of surgical sutures and ligatures.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define adulteration and give any two examples.
13. Source and uses of gelatin.
14. Write the phytochemical tests for alkaloids.
15. Chemical constituents and uses of cinchona.
16. Explain Goldbeater skin test.
17. Source and uses of beeswax.
18. Millon's test.

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination - November 2013****Subject: Pharmaceutical Biotechnology**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Define and classify disinfectants with suitable examples. Explain the factors affecting the action of disinfectants. Explain the principle and procedure involved in Rideal Walker coefficient. (2+4+4+5)
2. Classify fungi based on its type of sporulation. Explain the principle involved in the acid fast staining. Add a note on nutritional requirements of microorganisms. (5+5+5)
3. Describe the production of hepatitis B vaccine by rDNA technology. Write a note on cloning vectors with suitable examples.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Describe bacterial transformation.
5. Explain the fermentative production of penicillin.
6. Define enzyme immobilization. Explain immobilization by entrapment and covalent bonding.
7. Define and classify immunity with examples.
8. Describe the principle and procedure involved in western blot technique.
9. Write the steps involved in production of monoclonal antibodies using hybridoma technology.
10. Explain the difference between primary and established cell cultures.
11. What is biotransformation? Explain with four examples.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Enlist different antigen-antibody reactions.
13. Write the names of causative organisms of syphilis, tetanus, typhoid and cholera diseases.
14. Write the names of causative organism used in the microbial assay of streptomycin and vitamin B₁₂.
15. Write the role of restriction endonuclease in rDNA technology.
16. What are the applications of spargers in an industrial fermenter?
17. What are biosensors?
18. Write the differences between viable and total count of microorganisms.

JSS UNIVERSITY, MYSORE**Third Year B.Pharm Examination - November 2013****Subject: Quality Assurance**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) What is ISO? What does ISO 9000 series stand for? (5)
b) Describe briefly the quality elements of ISO. (10)
2. a) What is validation? Mention the types of validation. (5)
b) Explain process validation and the different steps involved in it. (10)
3. a) What are the factors to be considered while locating a pharmaceutical manufacturing plant? (4)
b) Describe GMP requirements of production area as per schedule M. (11)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. What factors influence 'total quality'?
5. Describe Kaizen philosophy.
6. Explain the types of audit.
7. Write the importance of master production control record.
8. What are the components of a quality manual?
9. Write specimen protocols maintained for clinical and non-clinical testing.
10. Write a note on testing of caps used in packaging of pharmaceutical products.
11. Explain the purpose and contents of a procedural manual.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Distinguish between QC and QA.
13. What are the objectives of writing a good SOP?
14. When are products recalled from the market?
15. What is 'quarantine'? Where and how is this area generally identified in a pharma industry?
16. Define calibration. Mention any two UV spectrophotometer calibration parameters.
17. Expand ICH and US-FDA.
18. Write the application of control charts.

JSS UNIVERSITY, MYSORE

Third Year B.Pharm Examination - November 2013

Subject: Biopharmaceutics & Pharmacokinetics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define bioavailability. Explain the physicochemical factors influencing the bioavailability.
2. Explain compartment models. Explain one compartment model with relevant equations and graphs.
3. Explain in detail physicochemical factors affecting drug absorption.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Why are bioequivalence studies conducted?
5. Explain active transport mechanism of drug absorption.
6. Explain the applications of pharmacokinetics in the design of a delivery system with suitable examples.
7. Write a note on in vitro - in vivo correlation.
8. Explain in vitro drug dissolution testing methods.
9. Describe the ways to adjust the dose in case of renal impairment.
10. Explain multiple dosing in respect of IV route.
11. Explain the methods for determination of area under the curve.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Draw blood level curves following IV and oral administration of drug.
13. Define bioequivalence.
14. Why are drugs administered in multiple doses?
15. How do you calculate 'AUC' by trapezoidal rule?
16. What are the characteristics of carrier mediated transport?
17. Mention any four factors enhancing dissolution.
18. What is the data used in pharmacokinetic analysis?



JSS UNIVERSITY, MYSORE
Final Year B.Pharm Examination May 2012
Subject: Medicinal Chemistry-II

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Classify local anti-infective agents with suitable examples. Add a note on cationic surfactants and dyes used as anti-infective agents. Outline the synthesis of hexachlorophene & halazone. (3+6+6)
2. Classify antihistaminic agents with examples. Give the clinical significance and mechanism of action of each class. Outline the synthesis of diphenhydramine & promethazine. (3+6+6)
3. Write four structures of cephalosporin class antibiotics. Write a note on beta lactamase inhibitors and SAR of tetracyclines. (4+5+6)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Write a note on urinary tract antiinfectives. Outline the synthesis of nalidixic acid.
5. Classify antimalarial agents with suitable examples. Outline the synthesis of chloroquine
6. What are antineoplastic agents? Differentiate malignant and benign tumors. Outline the synthesis of methotrexate.
7. Illustrate Hoffman's exhaustive methylation with relevant example.
8. Add a note on synthetic antifungal agents. Outline the synthesis of miconazole.
9. Name any four antiamoebic drugs. Outline the synthesis of diloxanide.
10. With suitable example, explain the mechanism of action of alkylating agents and antimetabolites.
11. What are gastric proton pump inhibitors? Give examples.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Write the structure and use of metronidazole.
13. Outline the synthesis and uses of acyclovir.
14. What are anthelmintic agents? Give two examples with structure.
15. What are anti-scabious agents? Give two examples with structure.
16. Explain the synergistic action of sulphamethoxazole and trimethoprim.
17. Give the chemical structure and uses of any macrolide antibiotic.
18. Write the structure and use of cimetidine.



19

QP Code: 1419

JSS UNIVERSITY, MYSORE

Final Year B.Pharm Examination May 2012

Subject: Pharmacology-II

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Classify oral hypoglycemic agents with examples. Explain the mechanism of action of each group. Write a note on insulin preparations. (5+5+5)
2. What are antihistamines? Classify them with examples. Explain their mechanism of action and therapeutic uses. (5+10)
3. Explain the mechanism of action and adverse effects of antiulcer drugs.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain the general principles for the treatment of poisoning.
5. Explain the mechanism of action and therapeutic uses of sulphonamides.
6. Explain the pharmacology of dapsone.
7. Explain the mechanism of action and adverse effects of penicillins.
8. Explain principle and procedure for the bioassay of insulin.
9. Explain the mechanism of action and therapeutic uses of antiemetics.
10. Explain about the treatment of malaria.
11. What are immunosuppressants? Explain about their therapeutic uses.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define acute and chronic toxicity.
13. Significance of biological clock.
14. Antigout drugs.
15. Principles of bio assay.
16. Macrolide antibiotics.
17. Drugs used in urinary tract infections.
18. Protease inhibitors.



20

QP Code: 1420

JSS UNIVERSITY, MYSORE**Final Year B.Pharm Examination May 2012****Subject: Advanced Pharmacognosy**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Explain the applications of various chromatographic techniques in the isolation, purification and identification of crude drugs.
2. Describe the biogenesis of amino acids through shikimic acid pathway. Name few alkaloids derived from those aminoacids.
3. Describe various guidelines prescribed by WHO and ICH for the assessment of herbal medicine and cosmetics.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Write the biogenetic pathway of cardiac glycosides.
5. Explain briefly about the utilization of radioactive isotopes in the investigations of biogenetic studies.
6. Briefly write the production and estimation of menthol from its natural source.
7. Write the different stability tests to be performed for herbal extracts.
8. How are lehya and bhasma prepared?
9. Explain the oral glucose tolerance test (OGTT).
10. Write the biological source, chemical nature and therapeutic uses of penicillin.
11. Give the applications of plant tissue culture in pharmacognosy.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Name two chemical substances used to produce diabetes in experimental animals.
13. Name two models of experiment used to assess the anti inflammatory activity of phytoconstituents in animals.
14. Define asawas and churna.
15. Write the classification of allergens.
16. Give the applications of callus culture.
17. Give the source and uses of pancreatin.
18. Name two herbal preparations containing amla and aloe separately.

**JSS UNIVERSITY, MYSORE****Final Year B.Pharm Examination May 2012****Subject: Formulative & Industrial Pharmacy**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Define tablets. Explain various additives used in the tablet formulation and describe the wet granulation technique. (2+8+5)
2. Define parenterals. With the help of a flow diagram explain the production of parenteral formulation. (2+13)
3. Explain the approaches in the design of controlled drug delivery system with its merits. (11+4)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain the steps of sugar coating of tablets.
5. Write a note on parenteral vehicles.
6. Explain coacervation phase separation technique.
7. Explain the formulation of tooth paste.
8. What are permeation enhancers? Give examples.
9. Explain the importance of accelerated stability studies.
10. Write a note on propellants used in aerosols.
11. Types of containers used for eye drops and their evaluation.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define qualities of a good shampoo.
13. Name film forming materials in tablet coating.
14. Enlist various sizes of capsules.
15. Preservatives used in parenteral preparations.
16. Film defects in tablet coating.
17. Objectives of stability study.
18. Enlist the processing problems during tableting.

**JSS UNIVERSITY, MYSORE****Final Year B.Pharm Examination May 2012****Subject: Instrumental Methods of Analysis**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) Explain the theory involved in fluorimetry.
b) Describe the instrumentation used in fluorimetry.
c) Explain various factors affecting fluorescence intensity of the molecule. (3+8+4)
2. a) Explain different IR regions and vibration modes observed in poly atomic molecules.
b) Enumerate sampling techniques employed in IR.
c) Give the application of IR spectroscopy. (6+5+4)
3. a) With the help of a neat diagram, describe the instrumentation of HPLC.
b) Explain the development techniques used in paper chromatography.
c) Describe the factors affecting gel filtration. (8+4+3)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Write a note on double beam UV-visible spectrophotometer.
5. Mention the rules applied in the interpretation of mass spectrum.
6. Explain the principles and equipment of gel electrophoresis.
7. Describe the construction, working and maintenance of the dropping mercury electrode.
8. With the help of a typical polarogram explain various regions and their significance.
9. Write a note on potentiometric titrations.
10. Explain the significance of derivatisation in gas chromatography with suitable examples.
11. Write a brief note on total quality management (TQM).

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define chromophore and auxochrome. Give examples.
13. Explain the theory involved in atomic absorption spectroscopy.
14. Make a comparison between nephelometry and turbidimetry.
15. Write the advantages and applications of HPTLC.
16. Define indicator and reference electrodes. Give suitable examples.
17. How are the components in thin layer chromatography visualised?
18. Explain the applications of conductometry.



23

QP Code: 1423

JSS UNIVERSITY, MYSORE**Final Year B.Pharm Examination May 2012****Subject: Pharmacy Practice**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Enumerate various methods of inventory control. Explain any three methods.
2. Explain the goals and procedures for medication history interview and clinical review.
3. Define over the counter medicines. Explain the role of pharmacist during the dispensing of over the counter medicines.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Write briefly on the preparation of a hospital pharmacy budget.
5. Define therapeutic drug monitoring and list out indications for carrying out TDM.
6. Describe the role of community pharmacists in adverse drug reporting.
7. Explain the role of pharmacist in the education and training programme.
8. Explain the functions of clinical pharmacy.
9. Explain the various barriers of communication.
10. Explain the storage and retrieval of drug information.
11. Explain the methods for detecting drug interactions

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Mention the types of blinding in a clinical trial.
13. Define reorder quantity level and lead time.
14. Explain the code of ethics for a pharmacist in relation to medical profession.
15. Mention the different parts of a prescription.
16. Define drug interaction.
17. Enumerate the content to be included in hospital formulary.
18. Define and classify adverse drug reactions.

JSS UNIVERSITY, MYSORE
Final Year B.Pharm Examination - May 2011
Subject: Medicinal Chemistry-II

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Classify antifungal agents with examples. Give the structure of any two antifungal antibiotics and synthetic antifungal agents. Outline the synthesis of miconazole and tolnaftate. (3+6+6)
2. What are beta lactam antibiotics? Give the degradation products of penicillin. Outline the chemistry and synthesis of chloramphenicol. (2+8+5)
3. Classify sulphonamides with suitable examples. Explain the SAR among antibacterial sulphonamides. Outline the synthesis of sulphacetamide and trimethoprim. (4+5+6)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. What is crystalluria? Enumerate the methods to overcome it.
5. Write a note on folate reductase inhibitors. Explain the synergistic action of sulphamethoxazole and trimethoprim.
6. Explain with suitable examples:
 - a) Halogen containing antiinfectives.
 - b) Dyes used as local antiinfective agents.
7. Write a brief note on combinatorial chemistry and prodrug concept in drug discovery.
8. Describe the structure elucidation of uric acid.
9. Define & classify antimalarial agents. Outline the synthesis of chloroquine.
10. Describe the stability and SAR of tetracyclines.
11. Define and classify anthelmintic drugs. Outline the synthesis of diethyl carbamazene.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Outline the synthesis of crotamiton
13. Give the interrelationship between caffeine, theophylline and theobromine.
14. List the important antiviral agents. Give the structure and use of any one antiviral drug.
15. Write the structure of any two quinolone antibacterials and give their uses.
16. Give the structure and use of metronidazole.
17. Write the structure and use of erythromycin.
18. Outline the synthesis of dapsone.



18

QP Code: 1419

JSS UNIVERSITY, MYSORE**Final Year B.Pharm Examination - May 2011****Subject: Pharmacology-II**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. Give the classification, mechanism of action and adverse effects of penicillins. Add a note on beta lactamase inhibitors.
2. Explain the mechanism of action and adverse effects of different classes of anticancer drugs.
3. Describe OECD guidelines for preclinical toxicity evaluation of drugs.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain the mechanism of action and adverse effects of oral anticoagulants.
5. Explain the role of proton pump in gastric acid secretion and the role of proton pump inhibitors as antiulcer drugs.
6. Explain the mechanism of action and adverse effects of tetracyclines.
7. Describe the chemotherapy of tuberculosis.
8. Explain the role of MAP kinase in cell division.
9. Explain the principle and applications of DNA recombinant technology.
10. Describe gene mutations.
11. Explain the mechanism of action and therapeutic uses of loop diuretics.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Mechanism of action of cyclophosphamide.
13. Therapeutic uses of metronidazole.
14. Mechanism of action of clotrimoxazole.
15. Pharmacological actions of ticlopidine.
16. Therapeutic uses of ondansetron.
17. Applications of bioassays.
18. Role of mRNA.



19

QP Code: 1420

JSS UNIVERSITY, MYSORE**Final Year B.Pharm Examination - May 2011****Subject: Advanced Pharmacognosy**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. What are the various methods of extraction of phytoconstituents from crude drugs? Describe the role of electrophoresis in the isolation, purification of crude drugs. (5+10)
2. Explain the industrial production and estimation of sennosides from senna.
3. What are the different types of tissue culture techniques? Explain any two of them. (5+10)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Write the biogenetic pathway of atropine.
5. Write the production and estimation of quinine.
6. Write the biological source, chemical nature and therapeutic uses of anti-HIV natural products.
7. Explain the role of amla and hibiscus in hair care preparations.
8. Write the basic principles involved in homeopathy system of medicine.
9. Define and classify allergens with examples.
10. Explain the historical development of plant tissue culture.
11. Write the biological source, methods of separation, chemical nature and uses of papain.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. What is competitive feeding?
13. Write the principle involved in the estimation of vinca.
14. Write the WHO guidelines for the assessment of herbal medicine.
15. Define arishta and asava.
16. Name two immobilized enzymes.
17. Write the applications of protoplast culture.
18. Write the source and uses of pepsin.

JSS UNIVERSITY, MYSORE

Final Year B.Pharm Examination - May 2011

Subject: Formulative & Industrial Pharmacy

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define aerosols. Explain in detail the components involved in the formulation of aerosols. (2+13)
2. Define microencapsulation. Explain co-acervation phase separation technique for microencapsulation. (2+13)
3. Define and classify tablets. Explain the processing problems involved during tableting. Describe the evaluation tests for tablets. (4+5+6)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain the formulation of buccal drug delivery systems.
5. Explain the formulation of liquid shampoo.
6. Explain ICH guidelines.
7. Explain film coating defects.
8. Explain various solubilization methods.
9. How is gelatin extracted for capsules?
10. Describe aseptic filling of parenterals.
11. Write a note on occuserts.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. What is bioavailability?
13. Objectives of stability studies.
14. Advantages of novel drug delivery systems.
15. Containers for aerosols.
16. Storage of capsule dosage forms.
17. What are pyrogens?
18. Advantages of controlled drug delivery systems.



JSS UNIVERSITY, MYSORE

Final Year B.Pharm Examination - May 2011

Subject: Pharmacy Practice

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Describe the procedure and advantages of unit dose drug distribution method to inpatients.
2. Explain the steps involved in patient counseling. Explain in detail the communication skills needed for a practicing pharmacists. (8+7)
3. Explain the various records to be maintained in the community pharmacy and the role of pharmacist in community health care education. (7+8)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain the various methods to determine economic order quantity (EOQ) and its importance.
5. Explain how to ensure the quality of drugs purchased by the hospitals.
6. Explain the role of pharmacy and therapeutics committee (PTC) in developing emergency drug lists.
7. Write briefly on the handling of radiopharmaceuticals in the hospital.
8. Explain the role of pharmacist in the inter departmental communication.
9. Write a note on the entry and deletion of drug from hospital formulary.
10. Explain any five pharmacokinetic drug interactions with suitable examples.
11. Define and explain the WHO recommendations for pharmaceutical care.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Enumerate the factors to be considered during the TDM.
13. What is tertiary drug information resource? Give two examples.
14. Enumerate any four professional activities of clinical pharmacists.
15. Define hospital pharmacy and clinical pharmacy.
16. Define drug and poison information.
17. Write the differences between hospital formulary and drug list.
18. Mention the uses of randomization in a clinical trial.

JSS UNIVERSITY, MYSORE

Final Year B.Pharm Examination - May 2013

Subject: Medicinal Chemistry-II

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)**2x15=30 Marks**

1. Define and classify antihistaminics with one example for each group. (3+5+7)
Explain the SAR of H₁ receptor antagonist. Outline the synthesis of chlorcyclazine hydrochloride and diphenhydramine hydrochloride.
2. Define alkaloids. Classify them and give one example from each class. (2+6+7)
Explain how the structure of atropine is elucidated.
3. What are anthelmintics? Classify with suitable examples. Add a note on mechanism of action of mebendazole. (3+4+8)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Write a note on antiviral agents.
5. Write the structure and uses of:
 - a) Ketoconazole.
 - b) PAS.
 - c) Eugenol.
 - d) Acyclovir.
 - e) Chlorambucil.
6. What is combinatorial chemistry? What are its applications? Explain.
7. What are prodrugs and bioprecursors?
8. What is Hoffman's exhaustive methylation?
9. What are sulfonamides? Explain why modern sulfonamides are having lower pK_a value.
10. Write a note on SAR of proton pump inhibitors.
11. Write the chemical degradation of penicillins.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Write the structure of any two drugs used as local anti-infective agents.
13. Give the name and specific uses of any two macrolide antibiotics.
14. Outline the synthesis of dapsone.
15. What is DOT therapy?
16. What are terpenes? Write the structure of thymol and citral.
17. What are antimalarial agents? Give two examples.
18. Write the structure and chemical name of lindane.

JSS UNIVERSITY, MYSORE
Final Year B.Pharm Examination - May 2013
Subject: Pharmacology-II

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)**2x15=30 Marks**

1. Classify antitubercular drugs with examples. Write their mechanism of action and therapeutic uses. (7+8)
2. Classify anticancer drugs with examples and describe their mechanism of action. What are the toxicities of anticancer drugs? (5+8+2)
3. Classify antihistamines with examples. Describe their pharmacological actions, therapeutic uses and toxicity. (5+6+2+2)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Describe the biosynthesis of thyroid hormones and various sites of action of antithyroids.
5. Classify antacids with examples and write their pharmacological actions.
6. Describe the mechanism of action of bacterial cell wall synthesis inhibitors.
7. Classify antiamoebic drugs with examples and describe the mechanism of action of any one of them.
8. Name serotonin antagonists and mention their therapeutic uses.
9. Describe carcinogenicity and teratogenicity.
10. Describe the bioassay of oxytocin.
11. Classify immunosuppressants with examples and describe the mechanism of action of any one of them.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define oxytocics with examples.
13. Describe the mechanism of action of any one laxative.
14. Mention the therapeutic uses of prostaglandins.
15. What are the general properties of aminoglycoside antibiotics?
16. Mention the therapeutic uses of androgens.
17. What are the general principles of bioassays?
18. Define suprainfection and chemoprophylaxis.

JSS UNIVERSITY, MYSORE
Final Year B.Pharm Examination - May 2013
Subject: Advanced Pharmacognosy

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Explain the basic principles involved in Ayurveda, Siddha, Unani and Homeopathic systems of medicine. Explain the preparation of arishta.
2. Describe the biological source, method of separation, chemical nature and uses of papain. Write the applications of immobilized enzymes.
3. Give a brief account of plant based industries involved in work on aromatic plants in India. How do you isolate and estimate asiaticoside?

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Write the biogenetic pathway of morphine.
5. Write the production and estimation of sennosides.
6. Write the biological source, chemical nature and therapeutic uses of streptomycin.
7. Describe briefly the role of nutraceuticals in the maintenance of health with examples.
8. Explain the role of henna and sandal wood in cosmetics.
9. Describe the various constituents in the preparation of nutrient media for plant tissue culture.
10. How is the hepatoprotective activity of the phytoconstituents in medicinal plants determined?
11. Give the biological source, method of separation, chemical nature and uses of pepsin.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Name the precursors required for the biosynthesis of atropine and morphine.
13. Define ghutika and lehya.
14. Write the sensitivity test for allergy.
15. Write the method of production of citric acid.
16. Write the biosynthesis of penicillin.
17. Name two important radio active isotopes with their half life period utilized in the investigation of biogenetic studies.
18. Write the principle involved in paper chromatography.

JSS UNIVERSITY, MYSORE

Final Year B.Pharm Examination May 2013

Subject: Formulative & Industrial Pharmacy

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. What is tablet coating? Explain in detail sugar coating process with equipments used. (2+10+3)
2. What are pyrogens? Explain the quality control tests for parenterals. (2+13)
3. What is preformulation study? Explain the significance of preformulation studies in the dosage form development. (1+14)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Give ICH guidelines for stability testing.
5. Write a note on enteric coating materials.
6. Explain the processing problems during manufacture of tablets.
7. Write the Ideal requirements for ophthalmic preparations.
8. Write a note on lyophilization.
9. Write a note on hair dyes.
10. Write the advantages & disadvantages of aerosols.
11. Write the differences between controlled release & sustained release dosage forms.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define shelf life & half life.
13. Selection of containers for parenterals.
14. Explain polymerization & its significance.
15. Herbal formulations.
16. Nature of capsule shell.
17. Propellants in aerosols.
18. Isotonicity.

JSS UNIVERSITY, MYSORE
Final Year B.Pharm Examination - May 2013

Subject: Instrumental Methods of Analysis

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)**2x15=30 Marks**

1. a) Define Beer and Lambert's law.
b) Explain the instrumentation involved in UV-visible spectroscopy.
c) Applications of UV-visible spectroscopy. (2+9+4)
2. a) Explain the instrumentation of atomic emission spectrophotometry (AES).
b) Describe the interferences in AES.
c) Write the applications of AES. (7+4+4)
3. a) Write the principle and classification of electrophoresis.
b) Explain the apparatus and method development involved in paper electrophoresis.
c) Write the applications and limitations of electrophoresis. (3+7+5)

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain the interpretation of IR spectrum.
5. Write the principles and applications of mass spectroscopy.
6. Explain the instrumentation of NMR spectroscopy.
7. Describe the methodology of column chromatography.
8. Explain the factors affecting fluorescent intensity.
9. Write a brief note on ion exchange chromatography.
10. Explain the sources and control of quality variation.
11. Explain the construction, advantages and disadvantages of glass electrode.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Define retention factor and retention time.
13. Explain spectral shifts with two examples.
14. Define quenching and mention the types.
15. Write the applications of X-ray diffraction methods.
16. What is HETP? Give its significance.
17. What is liquid junction potential and how can it be eliminated?
18. Define the following:
 - a) Isocratic elution.
 - b) Reverse-phase chromatography.
 - c) Fluorescence.
 - d) Finger-print region.

JSS UNIVERSITY, MYSORE

Final Year B.Pharm Examination - May 2013

Subject: Pharmacy Practice

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define hospital. Draw and explain the organization chart of a hospital.
2. State the goals and explain the procedure for adverse reaction management and provision of drug information by clinical pharmacists.
3. Describe the selection of site, layout, infrastructure, staff and legal requirements to start community pharmacy.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain floor stock drug distribution system with its advantages and disadvantages.
5. Explain the process of patient medication counseling and mention the skills needed by the pharmacists for counseling.
6. Explain the guiding principles to adapt hospital formulary system in the hospital.
7. Describe the goals and procedures for ward round participation.
8. Differentiate between type A and type B adverse drug reactions with suitable examples.
9. Explain the causes of medication non-adherence and explain the pharmacist's role in medication adherence.
10. Explain radiation hazards and their prevention.
11. Explain the legal aspects on storage of drugs.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Explain the advantages and disadvantages of over the counter sales.
13. Define inventory and control.
14. Define adverse drug reactions (ADRs).
15. Write a note on hospital formulary.
16. Explain the importance of communication skills.
17. Enumerate any four functions of hospital pharmacy.
18. What is drug information centre (DIC)?



14

QP Code: 1418

JSS UNIVERSITY, MYSORE
Final Year B.Pharm Examination November 2012
Subject: Medicinal Chemistry-II

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)**2x15=30 Marks**

1. Classify antimalarials with examples. Explain the SAR of quinolines. Outline the synthesis of chloroquine and amodiaquine. (4+5+6)
2. Classify antineoplastic agents. Describe the mechanism of action of alkylating agents and antimetabolites. Outline the synthesis of mechlorethamine and methotrexate. (3+6+6)
3. What are beta lactam antibiotics? Outline the degradation products of penicillin. Explain the SAR of tetracyclines. (2+8+5)

II. SHORT ESSAY (Answer any SIX questions)**6x5=30 Marks**

4. Name any four anthelmintic drugs. Give the synthesis of thiabendazole.
5. What are sulphonamides? Explain the SAR among antibacterial sulphonamides.
6. Give the structure elucidation of ephedrine.
7. Write a note on antitubercular antibiotics.
8. Write the chemistry & synthesis of chloramphenicol.
9. Add a note on classification, distribution and general role of histamines.
10. Write a note on urinary tract anti-infectives. Outline the synthesis of nitrofurantoin.
11. What are prostaglandins? Outline the cyclo-oxygenase pathway.

III. SHORT ANSWERS (Answer any FIVE questions)**5x2=10 Marks**

12. Explain the term prodrug and bioprecursor with suitable example.
13. What are H₂ receptor antagonists? Give examples.
14. Outline the synthesis of toinaftate.
15. Explain the synergistic action of amoxicillin and clavulanic acid.
16. Define terpenoids. Give the structure of camphor.
17. Name any two polypeptide antibiotics and give their uses.
18. Outline the synthesis of nalidixic acid.



15
QP Code: 1419

JSS UNIVERSITY, MYSORE

Final Year B.Pharm Examination November 2012

Subject: Pharmacology-II

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any TWO questions)

2x15=30 Marks

1. Explain the mechanism of action of different classes of diuretics. Add a note on the therapeutic uses of diuretics. (12+3)
2. Explain the mechanism of action of immunosuppressants. Add a note on their therapeutic uses and adverse effects. (8+3+4)
3. Describe the role of platelets in hemostasis. Explain the mechanism of action, adverse effects and therapeutic uses of different antiplatelet agents. (4+4+4+3)

II. SHORT ESSAY (Answer any SIX questions)

6x5=30 Marks

4. Explain the mechanism of action and adverse effects of penicillins.
5. How are acute toxicity studies conducted? Explain their significance in drug discovery.
6. Explain transcription in eukaryotic cells.
7. Write briefly about viral vectors used in gene therapy.
8. Explain the role of H₂ receptors in gastric acid secretion and the role of H₂ blockers as antiulcer drugs.
9. Write a note on anticancer antibiotics.
10. Explain the mechanism of action and therapeutic uses of fluoroquinolones.
11. Explain the chemotherapy of AIDS.

III. SHORT ANSWERS (Answer any FIVE questions)

5x2=10 Marks

12. Oncogenes.
13. Quinine.
14. Dapsone.
15. Heparin.
16. Erythromycin.
17. Mebendazole.
18. Therapeutic uses of different antiemetics.

JSS UNIVERSITY, MYSORE

Final Year B.Pharm Examination - November 2013

Subject: Medicinal Chemistry-II

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. What are anti-TB drugs? Enlist the problems associated with the treatment. What is DOTS therapy? Write the synthesis of any two drugs. (2+3+2+8)
2. What are purines? How is the structure of caffeine elucidated? Write a note on interrelationships of xanthines. (2+7+6)
3. What are anthelmintics? Classify with suitable examples along with structure. Write the mechanism of action of mebendazole. Outline the synthesis of thiabendazole and mebendazole. (3+4+8)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Write a note on antifungal antibiotics.
5. Write the synthesis of promethazine and dapsone.
6. What is combinatorial chemistry? Explain its applications.
7. Explain the SAR of tetracyclines.
8. What is Hoffman's exhaustive methylation?
9. What are sulfonamides? Explain why modern sulfonamides have lower pKa value.
10. Write the SAR of urinary tract anti-infective quinolones.
11. Write the chemical degradation of penicillins.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Write the structure of any two drugs used as anti-protozoal agents.
13. Give the name and specific uses of any two macrolide antibiotics.
14. Outline the synthesis of nalidixic acid.
15. Write the structure of any two prostaglandins used clinically.
16. What are terpenes? Write the structure of thymol and citral.
17. What are antimalarial agents? Classify them giving examples.
18. Outline the synthesis of benzyl benzoate.

JSS UNIVERSITY, MYSORE
Final Year B.Pharm Examination - November 2013

Subject: Pharmacology-II

*Note: Draw neat labeled diagrams wherever necessary.
 Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Describe the mechanism of action and pharmacological actions of glucocorticoids. Mention their therapeutic uses and toxicity. (3+8+4)
2. Classify penicillins with examples. Describe the mechanism of action of penicillins. Mention their therapeutic uses and toxicity. Add a note on beta-lactamase inhibitors. (5+4+4+2)
3. Classify drugs useful in peptic ulcer and describe their mechanism of action and toxicity. (5+10)

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Describe the cellular actions of oxytocin and mention its therapeutic uses.
5. Classify laxatives with examples and describe the mechanism of action of any two of them.
6. Describe the mechanism of action of any two antifungal drugs.
7. Describe the therapeutic uses and toxicity of antihistamines.
8. Write briefly on acute toxicity studies.
9. Describe the bioassay of insulin.
10. Describe the mechanism of action of alkylating agents and folate antimetabolites.
11. Describe the mechanism of action of any two anthelmintic agents.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Mention various preparations of insulin.
13. Define antiemetics and anorexiant with examples.
14. Mention the general toxicity of anticancer drugs.
15. What are the advantages of combination chemotherapy?
16. Define chronopharmacology.
17. Name two heavy metal antagonists and mention their therapeutic use.
18. Mention the adverse effects of macrolide antibiotics.

JSS UNIVERSITY, MYSORE
Final Year B.Pharm Examination - November 2013
Subject: Advanced Pharmacognosy

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Explain the role of chromatography and electrophoresis in the isolation, purification and identification of crude drugs.
2. Explain in detail about the industrial production and estimation of diosgenin and phyllanthin.
3. Write WHO and ICH guidelines for assessment of herbal medicines and cosmetics.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain the basic principle involved in Siddha system of medicine.
5. Write a brief note on sensitivity testing of allergens.
6. Write a note on nutritional requirements for plant tissue culture.
7. Explain callus and cell suspension culture, using a flow diagram.
8. Explain general methods for isolation and purification of immobilized enzymes.
9. Explain role of radioisotopes in investigation of biogenic studies.
10. Write a note on plant growth regulators.
11. Explain biological screening of plant constituents having hepatoprotective activity.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Define Bhasma and Arishta.
13. Write the applications of plant tissue culture.
14. Write the biological source, chemical constituents and uses of trypsin.
15. Write the biological source, chemical constituents and uses of pectinase.
16. What are auxins?
17. Define natural allergens.
18. Give four examples of anti-HIV natural products.

JSS UNIVERSITY, MYSORE

Final Year B.Pharm Examination - November 2013

Subject: Formulative & Industrial Pharmacy

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Explain in detail the various physicochemical properties of drug to be studied in preformulations.
2. Define and classify tablets. Explain the wet granulation technique. Describe the evaluation tests for tablets.
3. Write the production of hard and soft gelatin capsules. Write the storage requirements of capsules.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Explain osmotic drug delivery system.
5. Explain the formulation of tooth paste.
6. Write the advantages and disadvantages of controlled release system.
7. Explain the formulation of eye ointment.
8. Write a note on tablet defects.
9. Write short notes on pyrogen testing.
10. Explain various steps in sugar coating.
11. Explain the factors affecting bioavailability.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. What are enteric coated tablets?
13. Write the advantages of soft gelatin capsules.
14. Define aerosols.
15. Define microencapsulation.
16. What are ocuserts?
17. Mention the preservatives used in eyedrops.
18. Define lyophilization.

JSS UNIVERSITY, MYSORE**Final Year B.Pharm Examination - November 2013****Subject: Instrumental Methods of Analysis**

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours**Max. Marks: 70****I. LONG ESSAY (Answer any two questions)****2x15=30 Marks**

1. a) Explain the advantages of HPTLC over TLC. (4+7+5)
b) Write the instrumentation of HPTLC.
c) Give the applications of HPTLC.
2. a) Derive Beer and Lambert's law and explain the solvent effect on UV absorption spectra. (4+6+5)
b) Explain the instrumentation of a double beam UV spectrophotometer.
c) Enlist the detectors in UV spectrophotometer and explain photo tube and silicon photodiode in detail.
3. a) Explain the factors affecting fluorescence and give the applications of fluorimetry. (4+7+4)
b) Explain the instrumentation of flame photometer.
c) Define nephelometry and turbidimetry. Explain the similarities and differences between them.

II. SHORT ESSAY (Answer any six questions)**6x5=30 Marks**

4. Explain the various sampling techniques in IR spectroscopy.
5. Enlist the pumps used in HPLC and explain any one in detail.
6. Write a note on fragmentation in mass spectroscopy.
7. Explain the methodology and developmental techniques in paper chromatography.
8. Explain the sources and control of quality variation in quality assurance.
9. Explain the Ilkovic equation.
10. Enlist the columns used in GC and explain any two in detail.
11. Write a note on electrophoresis.

III. SHORT ANSWERS (Answer any five questions)**5x2=10 Marks**

12. Write a note on gel filtration chromatography.
13. Write a note on conductometric titrations.
14. Explain the construction and working of glass electrode.
15. Explain the terms chromophores and auxochromes.
16. Write a note on applications of atomic absorption spectroscopy.
17. Explain the difference between adsorption and partition column chromatography.
18. Write a note on X-ray diffraction.

JSS UNIVERSITY, MYSORE

Final Year B.Pharm Examination - November 2013

Subject: Pharmacy Practice

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Explain the specifications and contents of hospital formulary.
2. Describe the preparation of radio isotopes at laboratory level. Mention the specifications for radioactive laboratory.
3. What are the causes for medication non adherence? How to improve medication adherence?

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Describe the functions of hospital pharmacist.
5. Outline the organization and functions of pharmacy and therapeutic committee.
6. Prepare a model budget for hospital pharmacy.
7. Differentiate charged floor stock and non charged floor stock system
8. Add a note on external education and training programme.
9. Explain beneficial drug interactions with examples.
10. Write the steps involved in patient counseling.
11. Explain the different phase of clinical trial.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. Mention any two records to be maintained in retail pharmacy.
13. Write any two code of ethics for community pharmacist.
14. Write any two factors to be considered for therapeutic drug monitoring.
15. What happens when corticosteroids are administered with anti diabetic drugs?
16. Give two examples for controlled drugs.
17. Differentiate cool & cold storage specifications.
18. Mention two examples for clinical based hospitals.

JSS UNIVERSITY, MYSORE

First Year Pharm. D Examination - November 2013

Subject: Pharmaceutics

*Note: Draw neat labeled diagrams wherever necessary.
Your answer should be specific to the questions asked.*

Time: 3 hours

Max. Marks: 70

I. LONG ESSAY (Answer any two questions)

2x15=30 Marks

1. Define suppositories. Write the method of preparation and evaluation of suppositories.
2. Differentiate flocculated and deflocculated suspensions. Describe the methods of preparation of suspensions.
3. Define percolation and maceration process. Write in detail the process of percolation.

II. SHORT ESSAY (Answer any six questions)

6x5=30 Marks

4. Differentiate lotions and liniments.
5. Describe the preparation of surgical catgut.
6. Stability problems of emulsions.
7. Write the preparation of simple powders with example.
8. Write the formulation of ear drops.
9. Classify incompatibility with example.
10. Write the development of pharmaceutical industry in India.
11. List the adjuvants for the formulation of monophasic liquid dosage forms.

III. SHORT ANSWERS (Answer any five questions)

5x2=10 Marks

12. What is meant by displacement value?
13. Advantages and disadvantages of suspensions.
14. Types of suspending agents.
15. Effervescent granules.
16. Dusting powders.
17. What is meant by proof spirit and isotonic solution?
18. Define mouthwash and gargle.
