

**JSS UNIVERSITY, MYSURU**  
**First Semester - B Pharm (SS) - Examination May 2017**

**Subject: Human Anatomy and Physiology- I**

**Time: 3 hours**

**Max. Marks: 75**

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

**Section A:** Multiple Choice Questions

20 Marks

**Section B:** Long Essay

20 Marks

**Section C:** Short Essay

35 Marks

**Section A**

**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes submit the OMR sheet to the Invigilator.

**Multiple Choice Questions**

**20 x 1 = 20 Marks**

- 1 Subspecialty of anatomy which deals with structural changes (gross to microscopic) associated with diseases is called :
  - a) developmental anatomy
  - b) pathological anatomy
  - c) clinical anatomy
  - d) comparative anatomy
- 2 Entry of glucose into cells is an example of :
  - a) simple diffusion
  - b) osmosis
  - c) carrier mediated facilitated diffusion
  - d) re-entry
- 3 Peroxisomes contain several enzymes which can :
  - a) remove hydrogen atoms
  - b) add hydrogen atoms
  - c) add nitrogen atoms
  - d) synthesise protein
- 4 The number of genes present in mitochondrial DNA :
  - a) 23
  - b) 37
  - c) 38
  - d) 39

- 5 \_\_\_\_\_ is NOT an example of retroperitoneal organ:
- a) pancreas
  - b) kidneys
  - c) adrenal glands
  - d) liver
- 6 The major content of plasma membrane is :
- a) cholesterol
  - b) phospholipid
  - c) glycolipid
  - d) protein
- 7 Region of the brain concerned with the regulation of body temperature and eating :
- a) cerebellum
  - b) red nucleus
  - c) medulla oblongata
  - d) hypothalamus
- 8 In humans there are \_\_\_\_\_ pairs of spinal nerves.
- a) 12
  - b) 20
  - c) 31
  - d) 32
- 9 Disorder associated with growth hormone:
- a) cretinism
  - b) diabetes insipidus
  - c) acromegaly
  - d) goiter
- 10 Total number of carpal bones in the human skeleton :
- a) 80
  - b) 16
  - c) 14
  - d) 10
- 11 Which among the following is an example of a neurotransmitter?
- a) aldosterone
  - b) epinephrine
  - c) androgen
  - d) substance p
- 12 Which among the following is NOT an example of exocrine gland?
- a) sweat gland
  - b) sebaceous gland
  - c) adrenal gland
  - d) salivary gland



- 13** Spongy bone devoid of one of the following structural unit :
- a) lacunae
  - b) osteon
  - c) osteocyte
  - d) trabeculae
- 14** Ossification is a process of bone :
- a) degradation
  - b) formation
  - c) fracture
  - d) remodeling
- 15** Gustatory nucleus is the part of :
- a) substantia nigra
  - b) thalamus
  - c) cerebellum
  - d) medulla oblongata
- 16** Lactotrophs secrete :
- a) luteinizing hormone
  - b) prolactin
  - c) somatotropin
  - d) dopamine
- 17** The androgen secreted from adrenal cortex in both men and women is :
- a) testosterone
  - b) dehydroepiandrosterone
  - c) dihydrotestosterone.
  - d) methyl-testosterone
- 18** Infection of sebaceous glands at base of hair follicles of eye lash is called :
- a) dacryocystitis
  - b) conjunctivitis
  - c) sty
  - d) chalazion

19 Basal metabolic rate (BMR) is increased by :

- a) thyroid hormones
- b) insulin
- c) glucocorticoids
- d) adrenaline

20 Thymopoietin is a :

- a) hormone
- b) cellular component
- c) neurotransmitter
- d) covering membrane

### Section B

#### ESSAY (Answer any two questions)

2x10= 20 Marks

- 1 Classify the connective tissue. Explain the histology of bone with a neat diagram. (4+6)
- 2 a) Explain the sequence of reaction in ATP production in muscle fibers. (5+5)  
b) Distinguish between anaerobic and aerobic cellular respiration.
- 3 a) Draw the sagittal section of brain and spinal cord and label the parts. (6+4)  
b) Explain the component and functions of diencephalon.

### Section C

#### SHORT NOTES (Answer any seven questions)

7x5= 35 Marks

- 4 Explain the physiology of hearing.
- 5 Enumerate the cranial nerves.
- 6 Explain the steps involved in the synthesis and secretion of thyroid hormones.
- 7 Explain the sensory input and motor output in the spinal cord.
- 8 Explain compact and spongy bone.
- 9 Write a note on primary active transport mechanism.
- 10 Explain the types of body cavities.
- 11 Explain the structure of mitochondria with a diagram.
- 12 Explain the accessory structure of the eye.

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**JSS UNIVERSITY, MYSURU****First Semester - B. Pharm (SS) - Examination May 2017****Subject: Pharmaceutical Analysis****Time: 3 hours****Max. Marks: 75***Your answers should be specific to the questions asked.**Draw neat labeled diagrams wherever necessary***Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

- 1 One liter of one normal solution of sodium thiosulfate is prepared by dissolving \_\_\_\_ grams.
  - a) 0.25
  - b) 2.5
  - c) 25
  - d) 250
- 2 The following is an example of primary standard :
  - a) NaOH
  - b) HCl
  - c) H<sub>2</sub>SO<sub>4</sub>
  - d) Oxalic acid
- 3 A 100 mL solution containing one gram of substance is :
  - a) 0.001%
  - b) 0.01%
  - c) 0.1%
  - d) 1%
- 4 The following are cause of systematic error EXCEPT
  - a) under washing of precipitate
  - b) partially soluble precipitate
  - c) influence of indicator
  - d) noise of instrument

- 5 A 20mL of 0.1 N strong acid requires equal volume of \_\_\_\_\_ N of strong base for neutralization.
- a) 0.001
  - b) 0.01
  - c) 0.1
  - d) 1.0
- 6 Weakly acidic substances :
- a) donate proton readily
  - b) donate electron readily
  - c) do not donate proton readily
  - d) do not donate proton and electron readily
- 7 Weak acids are titrated by non-aqueous method using :
- a) NaOH
  - b) KOH
  - c)  $\text{NH}_4$
  - d) lithium methoxide
- 8 Mercuric acetate is added in ephedrine hydrochloride assay to produce :
- a) acidity
  - b) neutrality
  - c) mercury
  - d) free base
- 9 In the titration of zinc chloride with EDTA, the buffer used is :
- a) acetate
  - b) ammonia
  - c) citrate
  - d) borates
- 10 Metals that precipitate as hydroxyl is better assayed by :
- a) displacement titration
  - b) replacement titration
  - c) direct titration
  - d) back titration
- 11 Calcon is used as :
- a) titrant
  - b) secondary standard
  - c) primary standard
  - d) indicator

- 12 Ligand is formed as result of \_\_\_\_\_ bond.
- a) hydrogen
  - b) ionic
  - c) polar
  - d) covalent
- 13 \_\_\_\_\_ is a self-indicator in oxidation reduction.
- a) methyl orange
  - b) xlenol
  - c) phenolphthalein
  - d) cerric ammonium sulphate
- 14 In dissociation of water  $K_w$  is termed as :
- a) ions of water
  - b) product of water
  - c) ionic product of water
  - d) a variable
- 15 Triphenylmethane is used as \_\_\_\_\_ in dichrometry.
- a) primary standard
  - b) secondary standard
  - c) titrant
  - d) indicator
- 16 Osmic acid solution is used in :
- a) alkalimetry
  - b) dichrometry
  - c) bromatometry
  - d) non-aqueous titration
- 17 Molar ionic conductivity of  $H^+$  ion is
- a) 350
  - b) 199
  - c) 39
  - d) 35
- 18 In polarography life time of one drop of mercury is \_\_\_\_\_ sec.
- a) 2
  - b) 2 to 5
  - c) 5
  - d) more than 5



- 19 As per Ilkovic equation the diffusion current is \_\_\_\_\_ concentration of sample.
- proportional to
  - inversely proportional to
  - not related to
  - more than
- 20 Specific conductivity is a product of :
- conductivity and concentration
  - concentration and cell constant
  - ions and concentration
  - observed conductivity and cell constant

### Section B

#### ESSAY (Answer any two questions)

2x10=20 Marks

- What are primary and secondary standards? Explain preparation and determination normality of  $\text{KMnO}_4$  (3+4+3)
- Explain the theory of acid base indicators.
- Explain the principle of precipitation titrations. Differentiate the types of precipitation titrations.

### Section C

#### SHORT NOTES (Answer any seven questions)

7x5= 35 Marks

- Write a note on types of errors.
- Explain why non-aqueous titrations are essential with examples.
- Write the importance of masking agents with examples.
- Write a note on iodometry with an example.
- What is a cerimetric method? What are its advantages?
- Write the concepts of oxidation-reduction.
- Explain the construction and working of calomel electrode.
- Write a note on conductivity cell.
- Explain Ilkovic equation and its importance.

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**JSS UNIVERSITY, MYSURU****First Semester - B. Pharm (SS) - Examination May 2017****Subject: Pharmaceutics****Time: 3 hours****Max. Marks: 75***Your answers should be specific to the questions asked.**Draw neat labeled diagrams wherever necessary***Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

- 1 Alkaloidal salts with tannins is the example for :
  - a) physical incompatibility
  - b) chemical incompatibility
  - c) therapeutic incompatibility
  - d) tolerated incompatibility
- 2 The first edition Indian Pharmacopoeia was published in :
  - a) 1866
  - b) 1945
  - c) 1955
  - d) 1966
- 3 In non-flocculated suspension, the particles exist as \_\_\_\_\_ entities.
  - a) complex
  - b) compound
  - c) separate
  - d) multiple
- 4 When the action and duration of action of one drug is diminished by other drug, it is called as :
  - a) idiosyncrasy
  - b) antagonism
  - c) synergism
  - d) habituation

- 5 The first USP was published in the year :
- a) 1810
  - b) 1820
  - c) 1830
  - d) 1845
- 6 Which of the following is an example of suspending agent?
- a) sugar
  - b) kaolin
  - c) magnesium stearate
  - d) talc
- 7 Gargles are used for treatment of:
- a) mouth freshness
  - b) mouth ulcers
  - c) mild throat infection
  - d) choking
- 8 Double wrapping of powders is essential for :
- a) hygroscopic drugs
  - b) dusting powders
  - c) dentifrices
  - d) bulk powders
- 9 A formulation that should be applied with friction :
- a) lotion
  - b) ointment
  - c) paste
  - d) liniment
- 10 Concentration of sucrose in simple syrup IP :
- a) 60.00 % w/v
  - b) 60.00 % w/w
  - c) 66.67 % w/v
  - d) 66.67 % w/w
- 11 \_\_\_\_\_ is the most suitable vehicle for throat paints.
- a) glycerin
  - b) water
  - c) alcohol
  - d) polyethylene glycol

- 12 Saccharine is \_\_\_\_\_ times sweeter than sucrose.
- a) 10 - 100
  - b) 100 - 250
  - c) 300 - 450
  - d) 500 - 700
- 13 \_\_\_\_\_ is the ointment prepared by chemical reaction method.
- a) Whitefield's ointment
  - b) compound methyl salicylate ointment
  - c) sulphur ointment
  - d) strong iodine ointment
- 14 Theobroma oil is an example for :
- a) aqueous base
  - b) synthetic fat base
  - c) oleaginous base
  - d) emulsifying base
- 15 Example of eutectic mixture :
- a) menthol and kaolin
  - b) calcium carbonate and camphor
  - c) camphor and menthol
  - d) camphor and kaolin
- 16 Meaning of  $R_x$  in prescription:
- a) to take
  - b) medicines list
  - c) to prepare
  - d) dosage form type
- 17 Body of the prescription is :
- a) superscription
  - b) inscription
  - c) subscription
  - d) signature
- 18 Powder which is NOT for external use :
- a) dusting powder
  - b) dental powder
  - c) effervescent powder
  - d) insufflations

19 Posology is the science of :

- a) dosage form
- b) dose of drugs
- c) drug action
- d) administration of drugs

20 One teaspoonful is equal to \_\_\_\_\_

- a) 5 ml
- b) 10 ml
- c) 15 ml
- d) 30 ml

### Section B

**ESSAY (Answer any two questions)**

**2x10= 20 Marks**

1. Define prescription. Explain the parts of prescription with a model (2+8) prescription.
2. Define and classify incompatibilities. Explain physical incompatibilities with (4+6) examples.
3. Classify monophasic liquid dosage forms. Describe the formulation (4+6) aspects of monophasic liquid dosage forms.

### Section C

**SHORT NOTES (Answer any seven questions)**

**7x5= 35 Marks**

4. Differentiate flocculated and deflocculated suspensions.
5. Write a note on evolution of Indian pharmacopoeia.
6. Write a note on suppository bases.
7. Write a note on development of profession of pharmacy.
8. Write the formulae used for calculating the doses for children and infants.
9. Write a note on formulation of effervescent powders.
10. Write a note on nasal drops.
11. Explain instability problems in emulsions.
12. What are the ideal characteristics of ointment bases?

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**JSS UNIVERSITY, MYSURU****First Semester - B. Pharm (SS) - Examination May 2017****Subject: Pharmaceutical Inorganic Chemistry****Time: 3 hours****Max. Marks: 75***Your answers should be specific to the questions asked.**Draw neat labeled diagrams wherever necessary***Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

- 1 Which form of the arsenic reacts with mercuric chloride paper to give yellow color?
  - a) arsenic trioxide
  - b) arsenic gas
  - c) arsine gas
  - d) arseneous gas
- 2 In limit test for sulphates, potassium sulphate is added to the barium sulphate reagent :
  - a) to increase the sensitivity of test
  - b) to dissolve impurities
  - c) to increase the reaction between sulphates and barium chloride
  - d) to facilitate the reaction
- 3 Ammonia is added in the limit test for iron:
  - a) to increase the reaction between iron and thioglycolic acid
  - b) ferrous thioglycolate appears as purple color only in alkaline medium
  - c) to dissolve the impurities
  - d) to prevent discolouration of solution
- 4 The limit test for chlorides in potassium permanganate is carried out by decolorizing the sample with:
  - a) hydrochloric acid
  - b) alcohol
  - c) acetic acid
  - d) sodium hydroxide

- 5 The conjugate acid of a strong base is always:
- strong base
  - weak base
  - weak acid
  - neutral
- 6 The normal serum concentration of potassium ions is:
- 3.5 to 5.5 mEq/litre
  - 5.5 to 10 mEq/litre
  - 10 to 15 mEq/litre
  - 20 to 30 mEq/litre
- 7 Which one the following is the major extracellular anion?
- bicarbonate
  - biphosphate
  - chlorides
  - phosphate
- 8 Which one of the following compounds is used as polishing agent in dental products?
- calcium carbonate
  - sodium fluoride
  - strontium chloride
  - calcium chloride
- 9 Sodium chloride is assayed by :
- redox titration method
  - acid base titration method
  - precipitation titration method
  - gravimetry method
- 10 Magaldrate is the combination therapy of :
- antacids
  - antimicrobials
  - emetics
  - dental products
- 11 The molecular formula of bentonite is :
- $\text{Al}_2\text{O}_3 \text{ SiO}_2$
  - $\text{Al}_2\text{O}_3 \cdot 2 \text{ SiO}_2 \cdot 6 \text{ H}_2\text{O}$
  - $\text{Al}_2\text{O}_3 \cdot 4\text{SiO}_2 \cdot \text{H}_2\text{O}$
  - $\text{Al}_2\text{O}_3 \cdot 6 \text{ SiO}_2 \cdot 2 \text{ H}_2\text{O}$
- 12 Hydrogen peroxide acts as an antimicrobial by :
- oxidation
  - halogenations
  - protein precipitation
  - cell wall synthesis inhibition

- 13 Potassium iodide can be used as:
- a) emetic
  - b) expectorant
  - c) antidote
  - d) astringent
- 14 Which of the following is a suitable indicator for the assay of  $\text{FeSO}_4$  by permanganometry :
- a) ferroin solution
  - b) mordant black II
  - c) self indicator
  - d) methyl orange
- 15 Magnesium sulphate is used as:
- a) saline cathartic
  - b) emetic
  - c) astringent
  - d) antimicrobial
- 16 Potash alum can be used as :
- a) astringent
  - b) emetic
  - c) antidote
  - d) expectorant
- 17 Which one of the following is used as unit to measure radioactivity?
- a) Newtons
  - b) dynes
  - c) Becquerel
  - d) Joule
- 18 Which one of the following is the radio isotope of carbon?
- a)  $^{14}\text{C}$
  - b)  $^{13}\text{C}$
  - c)  $^{12}\text{C}$
  - d)  $^{11}\text{C}$

19 The radioactive calcium Ca-45 is used in the treatment of:

- a) cancers of bone
- b) cancers of intestine
- c) cancers of liver
- d) cancers of kidney

20 Sodium phosphate P-32 is used in the treatment of :

- a) diseases associated with RBCs and WBCs
- b) diseases associated with abdominal cancers
- c) cancers associated with intestine
- d) cancers associated with lungs

### Section B

#### ESSAY (Answer any two questions)

2 x 10= 20 Marks

1. Write the possible sources of impurities in pharmaceuticals. Explain the principle involved in the limit test for arsenic with reactions. (5+5)
2. a) Explain the physiological role of potassium ions and chloride ions. (3+3+4)  
b) Explain the principle involved in the assay of sodium chloride.
3. Write a note on combination of antacids in therapy. Explain the method of preparation and principle involved in the assay of sodium bicarbonate. (4+6)

### Section C

#### SHORT NOTES (Answer any seven questions)

7x5= 35 Marks

4. Write the principle involved in the limit test for heavy metals. Why sodium sulfide is preferred over hydrogen sulfide in this limit test?
5. Explain the maintenance of physiological acid base balance.
6. Write a note on iodine and its preparations which act as antimicrobials.
7. What are expectorants? Explain the preparation and assay of any one expectorant.
8. Write the preparation and principle involved in the assay of ferrous sulphate.
9. Name four compounds which are used as antidotes. Mention their specific uses. Write the preparation and assay of any one compound.
10. What are radiopharmaceuticals? List the therapeutic and diagnostic applications of radiopharmaceuticals.
11. Explain Geiger-Müller counter.
12. Write the properties of  $\alpha$  and  $\beta$  radiations.

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**JSS UNIVERSITY, MYSURU**  
**Second Semester - B Pharm (SS) - Examination May 2017**

**Subject: Human Anatomy and Physiology- II**

**Time: 3 hours**

**Max. Marks: 75**

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

**Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A**

**Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
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4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions**

**20 x 1 = 20 Marks**

- 1 Which of the following statements about erythrocytes is CORRECT?
  - a) they fight infection
  - b) they clot blood
  - c) they lack a nucleus
  - d) they are produced in the spleen
- 2 Where does haematopoiesis take place?
  - a) lungs
  - b) pancreas
  - c) liver
  - d) bone marrow
- 3 Which of the following is the function of white blood cells?
  - a) transport of oxygen
  - b) maintain homeostasis
  - c) defend against infection
  - d) produce haemoglobin
- 4 Lymph capillaries join together forming larger lymph vessels which give rise to :
  - a) portal vein
  - b) thoracic duct
  - c) inferior vena cava
  - d) superior vena cava



- 5 The heart's natural pacemaker is :
- a) sinoatrial node
  - b) atrioventricular node
  - c) bundle of His/atrioventricular bundle
  - d) left and right bundle branches
- 6 Which tunic of an artery contains endothelium?
- a) tunica interna
  - b) tunica media
  - c) tunica externa
  - d) tunica adventitia
- 7 The circulatory pathway that carries blood from the digestive tract towards the liver is :
- a) coronary circuit
  - b) cerebral circuit
  - c) hepatic portal circuit
  - d) pulmonary circuit
- 8 Blood in the pulmonary arteries :
- a) enters the right ventricle
  - b) flows towards the lungs
  - c) leaves the left ventricle to enter the aorta
  - d) flows from lungs to the left atrium
- 9 The process of taking food into the digestive system is known as:
- a) ingestion
  - b) propulsion
  - c) digestion
  - d) elimination
- 10 The cells of the stomach which secrete pepsinogen is called as :
- a) mucous neck cell
  - b) parietal cell
  - c) chief cell
  - d) goblet cell
- 11 Which one of the following is NOT a part of large intestine?
- a) rectum
  - b) colon
  - c) caecum
  - d) duodenum
- 12 The muscle involved in breathing that separates the thoracic and abdominal cavities is:
- a) diaphragm
  - b) internal intercostal muscle
  - c) external intercostal muscle
  - d) bronchiolar muscle

- 13 The maximum volume of air contained in the lung by a full forced inhalation is called:
- a) vital capacity
  - b) tidal volume
  - c) total lung capacity
  - d) inspiratory capacity
- 14 The functional unit of the kidney is :
- a) renal pyramid
  - b) renal medulla
  - c) nephron
  - d) renal cortex
- 15 The micturition center is located at :
- a) medulla oblongata
  - b) pons
  - c) sacral spinal cord
  - d) midbrain
- 16 The kidneys are located in the :
- a) pelvic cavity
  - b) peritoneal cavity
  - c) abdominal cavity
  - d) retroperitoneal cavity
- 17 In DNA, adenine normally pairs with :
- a) cytosine
  - b) guanine
  - c) thymine
  - d) uracil
- 18 Where does fertilization of the egg by the sperm typically occur?
- a) vagina
  - b) uterus
  - c) fallopian tube
  - d) ovary

- 19 The function of Leydig cells is to :
- a) secrete testosterone
  - b) activate the sperm flagellum
  - c) support spermatogenesis
  - d) secrete seminal fluid
- 20 The hormone that appears in the blood stream soon after implantation occurs and is indicative of pregnancy :
- a) oestrogen
  - b) progesterone
  - c) human chorionic gonadotropin
  - d) oxytocin

### Section B

#### ESSAY (Answer any two questions)

2x10= 20 Marks

- 1 Explain the process of haemopoiesis. Add a note on haemoglobin. (6+4)
- 2 Explain the events that occur in the heart during a cardiac cycle. Add a note on cardiac output. (6+4)
- 3 Explain the anatomy of stomach along with the secretions of stomach. Explain the mechanical and chemical digestion of food in stomach. (6+4)

### Section C

#### SHORT NOTES (Answer any seven questions)

7x5= 35 Marks

- 4 Structure and functions of spleen.
- 5 Conduction system of heart.
- 6 Mechanism of respiration.
- 7 Resuscitation methods.
- 8 Physiology of micturition.
- 9 Structure of nephron.
- 10 Physiology of menstruation.
- 11 Spermatogenesis.
- 12 Protein synthesis.

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**JSS UNIVERSITY, MYSURU****Second Semester - B. Pharm (SS) - Examination May 2017****Subject: Pharmaceutical Organic Chemistry - I****Time: 3 hours****Max. Marks: 75**

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

**Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLUE BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

- 1 Which of the following reaction type is characteristic of alkenes?
  - a) electrophilic addition
  - b) electrophilic substitution
  - c) nucleophilic substitution
  - d) nucleophilic addition
- 2 Chlorination of methane is an example of :
  - a) addition reaction
  - b) elimination reaction
  - c) substitution reaction
  - d) rearrangement reaction
- 3 Propene reacts with hydrogen bromide and its major product is :
  - a) 1- bromopropane
  - b) 2- bromopropane
  - c) 3 -bromopropane
  - d) isopropyl bromide
- 4 Wurtz reaction is useful for the preparation of :
  - a) alkyl halides
  - b) alcohols
  - c) alkanes
  - d) amines

- 5 Which of the following carbocations is least stable?
- primary
  - secondary
  - tertiary
  - methyl
- 6 Markownikoff rule is followed by which compound while reacting with HBr ?
- $\text{CH}_3\text{CHO}$
  - $\text{CH}_3\text{CH}_2\text{NH}_2$
  - $\text{CH}_3\text{-CH=CH-CH}_2$
  - $\text{CH}_3\text{CH}_2\text{CN}$
- 7 Alkyl halide reacts with sodium alkoxide to form ether. This reaction is known as :
- Williamson's synthesis
  - Fridel-Craft's synthesis
  - Wurtz reaction
  - Cannizaro reaction
- 8 Glycerol is a :
- monocarboxylic acid
  - monohydric alcohol
  - dihydric alcohol
  - trihydric alcocol
- 9 Reactions of a carbonyl compound with  $\text{NH}_2\text{OH}$  results in the formation of :
- semicarbazone
  - oxime
  - aminoketone
  - quaternary ammonium hydroxide
- 10 Oxidation of primary alcohol produces :
- acid
  - aldehyde
  - ketone
  - alkane
- 11 When an aldehyde reacts with aliphatic/aromatic amine, the product formed is known as:
- carbamate
  - Schiff's base
  - amide
  - oxime



- 12 Ketones DO NOT react with :
- a) hydroxylamine
  - b) sodium bisulphite
  - c) methanol
  - d) hydrazine hydrate
- 13 Amphetamine is an example of :
- a) CNS stimulant
  - b) CNS depressant
  - c) antipyretic
  - d) analgesic
- 14 Which of the following is the strongest base?
- a) ammonia
  - b) methyl amine
  - c) dimethyl amine
  - d) trimethyl amine
- 15 Carbylamine reactions are useful to identify :
- a) 1° amines
  - b) 2° amines
  - c) 3° amines
  - d) quaternary ammonium salts
- 16 Alkaline hydrolysis followed by acid hydrolysis of amide yields :
- a) ester
  - b) amine
  - c) carboxylic acid
  - d) alkane
- 17 IUPAC name of  $\text{HCHO}$  is :
- a) formaldehyde
  - b) formalin
  - c) methanol
  - d) methanol
- 18 When the isomerism is due to the difference in the arrangement of atoms within the molecule, without any reference to space, the phenomenon is said to be :
- a) functional isomerism
  - b) optical isomerism
  - c) structural isomerism
  - d) geometrical isomerism

- 19 1-butene and 2-butene are examples of :
- chain isomerism
  - functional isomerism
  - positional isomerism
  - tautomerism
- 20 Which is the principal functional group among the following :
- alkene
  - amide
  - ketone
  - ester

### Section B

#### ESSAY (Answer any two questions)

2 x 10= 20 Marks

- 1 Explain Markownikoff's and anti-Markownikoff's orientations with examples.
- 2 Explain  $\text{SN}_1$  and  $\text{SN}_2$  reactions with examples.
- 3 Explain aldol condensation and Perkin condensation.

### Section C

#### SHORT NOTES (Answer any seven questions)

7x5= 35 Marks

- 4 Write the preparation and uses of glycerol and iodoform.
- 5 Explain  $\text{E}_1$  reaction and its mechanism with the help of one example.
- 6 Explain mechanism of electrometric effect with one example.
- 7 Write notes on basicity and effect of substituent's on the basicity of amines.
- 8 Explain acidity and effect of substituents on the acidity of carboxylic acids.
- 9 Write any five qualitative test for primary, secondary and tertiary amines.
- 10 Write the IUPAC rules for naming carboxylic acids.
- 11 Classify organic compounds with examples.
- 12 Define structural isomerism. Explain the types of structural isomers with examples.

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**JSS UNIVERSITY, MYSURU****Second Semester - B. Pharm (SS) - Examination May 2017****Subject: Biochemistry****Time: 3 hours****Max. Marks: 75**

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

**Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

- 1 The energy generated in the conversion of glyceraldehyde-3-phosphate to 1,3-bisphosphoglycerate is :
  - a) 1 ATP
  - b) 2 ATP
  - c) 3 ATP
  - d) 4 ATP
- 2 Pentoses and NADPH are produced in :
  - a) glycolysis
  - b) gluconeogenesis
  - c) HMP pathway
  - d) citric acid cycle
- 3 The synthesis of glucose or glycogen from non-carbohydrate sources is :
  - a) glycogenesis
  - b) gluconeogenesis
  - c) glycogenolysis
  - d) glycolysis
- 4 The compound that can uncouple the electron transport from oxidative phosphorylation is :
  - a) 2,4-dinitrophenol
  - b) azide
  - c) piercidin
  - d) dimercaprol

- 5 The synthesis of ketone bodies occurs in:
- a) liver
  - b) kidney
  - c) lungs
  - d) gastrointestinal tract
- 6 The precursor for the synthesis of vitamin D is :
- a) fatty acid
  - b) cholesterol
  - c) phospholipids
  - d) triglycerides
- 7 The biosynthesis of 5-HT takes place from :
- a) phenyl alanine
  - b) tryptophan
  - c) methionine
  - d) histamine
- 8 Phenylketonuria is the metabolic disorder of :
- a) arginine
  - b) tryptophan
  - c) phenyl alanine
  - d) valine
- 9 Gout is the metabolic disorder associated with overproduction of :
- a) adenine
  - b) guanine
  - c) uric acid
  - d) histamine
- 10 The substance obtained in the process of transcription is :
- a) DNA
  - b) RNA
  - c) protein
  - d) enzymes
- 11 The reserve bank of genetic information is :
- a) DNA
  - b) RNA
  - c) brain cells
  - d) proteins
- 12 The initiation of protein synthesis is inhibited by :
- a) tetracycline
  - b) streptomycin
  - c) puromycin
  - d) erythromycin

- 13 Which of the following is an essential fatty acid?
- a) linoleic acid
  - b) palmitic acid
  - c)  $\beta$ -hydroxy butyric acid
  - d) octanoic acid
- 14 Essential amino acid which is basic in nature :
- a) tryptophan
  - b) phenyl alanine
  - c) lysine
  - d) valine
- 15 ATP is synthesized by :
- a) oxidative phosphorylation
  - b) reductive phosphorylation
  - c) oxidation
  - d) reduction
- 16 The animal polysaccharide is :
- a) starch
  - b) inulin
  - c) glycogen
  - d) cellulose
- 17 The non-protein organic low molecular weight and dialyzable substance associated with enzyme function is known as :
- a) apoenzyme
  - b) coenzyme
  - c) protein
  - d) lipid
- 18 Antimetabolite produces its action by :
- a) competitive inhibition
  - b) noncompetitive inhibition
  - c) uncompetitive inhibition
  - d) allosteric inhibition



- 19 Lock and key mechanism of enzymes was proposed by :
- Emil Fishcer
  - Koshland
  - Krebs
  - Henseleit
- 20 The enzyme SGPT is a biomarker in :
- kidney diseases
  - liver diseases
  - gastrointestinal diseases
  - lung diseases

#### Section B

##### ESSAY (Answer any two questions)

2 x 10= 20 Marks

- Describe glycolysis with its energetics.
- Explain the general metabolic reactions of amino acids.
- Explain the structure and functions of DNA.

#### Section C

##### SHORT NOTES (Answer any seven questions)

7x5= 35 Marks

- Write a note oxidative phosphorylation.
- Explain the mechanism of electron transport chain (ETC).
- Explain the  $\beta$ -oxidation of fatty acids.
- Explain the disorders of lipid metabolism.
- Explain translation.
- Write the relationship between free energy, enthalpy and entropy.
- Write the significance of adenosine triphosphate (ATP).
- Explain Lineweaver–Burk plot.
- Write on allosteric enzyme regulation.

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**JSS UNIVERSITY, MYSURU****Second Semester - B. Pharm (SS) - Examination May 2017****Subject: Pathophysiology****Time: 3 hours****Max. Marks: 75**

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

**Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLACK /BLUEBALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

- 1 Increase in the number of cell is :
  - a) hypertrophy
  - b) hyperplasia
  - c) atrophy
  - d) dysplasia
- 2 Function of centriole is :
  - a) to produce adenosine tri phosphate (ATP)
  - b) to produce protein
  - c) to produce liposomes
  - d) cell division
- 3 The process in which a eukaryotic cell nucleus splits in two, followed by division of the parent cell into two daughter cells is:
  - a) mitosis
  - b) meiosis
  - c) necrosis
  - d) apoptosis
- 4 Which type of asthma commonly occurs in children?
  - a) intrinsic bronchial asthma
  - b) extrinsic bronchial asthma
  - c) chronic bronchitis
  - d) bronchiolitis

- 5 In iron deficiency anaemia, total iron binding capacity is :
- a) low
  - b) normal
  - c) high
  - d) borderline
- 6 Deposits of amyloid around islets are absent in:
- a) gestational diabetes
  - b) maturity - onset diabetes of the young (MODY)
  - c) type I diabetes
  - d) type II diabetes
- 7 High levels of nitrogen containing compounds (such as urea, creatinine) in the blood is seen in :
- a) carcinoma
  - b) glioma
  - c) sarcoma
  - d) leukaemia and lymphoma
- 8 Erythropoietin is produced by :
- a) liver
  - b) lungs
  - c) bone marrow
  - d) kidney
- 9 The most common causative organism of urinary tract infection :
- a) Helicobacter pylori
  - b) Haemophilus influenza
  - c) Escherichia coli
  - d) Pseudomonas
- 10 Type of diabetes mellitus that can occur at any age group due to autoimmune destruction of beta cells :
- a) maturity- onset diabetes of the young (MODY)
  - b) type I
  - c) type II
  - d) gestational diabetes
- 11 Metabolic arthritis is also called :
- a) rheumatoid arthritis
  - b) osteoarthritis
  - c) gout
  - d) articular arthritis
- 12 Major complication of typhoid fever is :
- a) liver damage
  - b) intestinal perforation
  - c) nephritis
  - d) bronchitis

- 13 Tubercle bacilli may enter the circulation through erosion in blood vessel and spread to various tissues and organs. This condition is called :
- a) progressive primary tuberculosis
  - b) progressive secondary tuberculosis
  - c) primary miliary tuberculosis
  - d) secondary miliary tuberculosis
- 14 The low level of serum ferritin indicates :
- a) megaloblastic anaemia
  - b) iron deficiency anaemia
  - c) sideroblastic anaemia
  - d) haemolytic anaemia
- 15 The most common cause of heart failure is :
- a) right ventricular systolic dysfunction
  - b) left atrium dysfunction
  - c) right atrium dysfunction
  - d) left ventricular systolic dysfunction
- 16 Absence seizures is also known as :
- a) grand mal seizure
  - b) petit mal seizure
  - c) myoclonic seizure
  - d) atonic seizure
- 17 Folate circulate in plasma as :
- a) polyglutamide
  - b) methyl tetrahydrofolate
  - c) diglutamide
  - d) ethyltrihydrofolate
- 18 Tonic - clonic convulsions are often called :
- a) absence attacks
  - b) grand mal attacks
  - c) myoclonic seizure
  - d) atonic seizure

- 19 Test useful for detection of human immunodeficiency virus (HIV) during window period :
- a) Western blot
  - b) ELISA
  - c) CD4 cell count
  - d) p24 antigen capture assay
- 20 Normal serum creatinine level is :
- a) 0.6 to 1.2 mg/dL
  - b) 2 to 2.6 mg/dL
  - c) 4.6 to 5.2 mg/dL
  - d) 6 to 12 mg/dL

### Section B

#### ESSAY (Answer any two questions)

2 x 10= 20 Marks

- 1 What are the causes of cell injury? Explain cellular adaptation. (5+5)
- 2 Explain the causes, symptoms and pathophysiology of acute renal failure. (3+3+4)
- 3 Define and classify anaemia. Describe megaloblastic anaemia. (5+5)

### Section C

#### SHORT NOTES (Answer any seven questions)

7x5= 35 Marks

- 4 Write the pathophysiology of atherosclerosis.
- 5 Explain the symptoms and pathophysiology of congestive cardiac failure.
- 6 Write a note on peptic ulcer.
- 7 What is gout? Explain its pathophysiology.
- 8 Define cancer. Explain the pathogenesis of cancer.
- 9 Explain inflammatory bowel diseases.
- 10 Explain the pathogenesis of tuberculosis.
- 11 Explain the pathogenesis of urinary tract infection.
- 12 Write the symptoms and pathogenesis of meningitis.

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## JSS UNIVERSITY, MYSURU

Third Semester B. Pharm (SS) Examination - May 2017

Subject: Pharmaceutical Organic Chemistry-II

Time: 3 hours

Max. Marks: 75

*Your answers should be specific to the questions asked.**Draw neat labeled diagrams wherever necessary***Section A:** Multiple Choice Questions

20 Marks

**Section B:** Long Essay

20 Marks

**Section C:** Short Essay

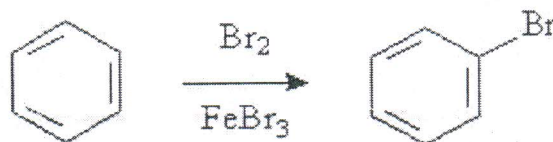
35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

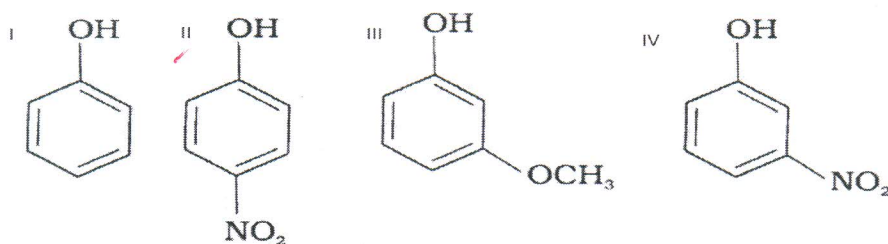
**Multiple Choice Questions****20 x 1 = 20 Marks**

1. In electrophilic aromatic substitution reactions, the electron withdrawing substituents (e.g. nitro) are :
  - a) ortho/para directing and activating
  - b) ortho/para directing and deactivating
  - c) meta directing and activating
  - d) meta directing and deactivating
2. With respect to the electrophilic aromatic substitution of benzene which of the following is NOT TRUE:
  - a) a non-aromatic intermediate is formed
  - b) a proton is lost in the final step
  - c) benzene acts as an electrophile
  - d) resonance forms are important
3. The intermediate in the following reaction is a :



- a) radical
- b) carbanion
- c) carbocation
- d) transition state

4. Which of the following is NOT a correct description of benzene?
- the molecule is planar
  - the molecule is aromatic
  - the CCC bond angles are all  $120^\circ$  and each carbon is  $sp^2$  hybridized
  - ☒ the molecule contains three double bonds and three single bonds
5. Phenol is converted to salicylaldehyde by using :
- ☒ Reimer Tiemann reaction
  - Frie's rearrangement
  - Kolbe's reaction
  - Wurtz's reaction
6. Which of the following is least basic?
- p-nitro aniline
  - aniline
  - methyl amine
  - p-toluidine
7. Which the following phenols is more acidic more acidic?



- I
  - II
  - III
  - IV
8. Which of the following describes amino group as a substituent in electrophilic aromatic substitution :
- weakly activating and ortho, para directing
  - strongly activating and ortho, para directing
  - weakly deactivating, meta directing
  - strongly activating, meta directing
9. Iodine value is the measure of :
- degree of unsaturation of a fat
  - degree of rancidity of a fat
  - measure the number of -OH groups in the fats
  - measure the amount of volatile fatty acids in a fat

10. Rancidity is indicated by :
- increase in acetyl value
  - increase in iodine value
  - decrease in peroxide value
  - increase in acid value
11. Drying oils have :
- high saponification value
  - high iodine value
  - low acetyl value
  - low iodine value
12. Number of milligrams of potassium hydroxide required to neutralize fatty acid resulting from complete hydrolysis of 1 g of fat is called :
- ester value
  - acid value
  - saponification value
  - iodine value
13. Phenanthrene reacts with bromine in the presence of ferric bromide to give :
- 2- bromo phenanthrene
  - 6- bromo phenanthrene
  - 9- bromo phenanthrene
  - 9, 10 dibromo phenanthrene
14. Polynuclear hydrocarbon ring system is not present in which of the following drugs ?
- naphazoline
  - tramadol
  - ~~c) tolinaftate~~
  - ~~d) propranolol~~
15. Naphthalene on Friedel-Crafts reaction with acetyl chloride and  $\text{AlCl}_3$  in nitrobenzene gives :
- 1 - acetyl naphthalene
  - 2 - acetyl naphthalene
  - 4 - acetyl naphthalene
  - 8 - acetyl naphthalene
16. Which of the following drugs has naphthalene ring system?
- atenolol
  - tramadol
  - ~~c) tolinaftate~~
  - d) fexofenadine
17. Cyclobutane on reaction with bromine in the presence of diffused sunlight gives :
- bromocyclobutane
  - 1 - bromobutane
  - ~~c) 1,1 dibromocyclobutane~~
  - d) 1,4 dibromopropane



18. Which of the following statement is NOT true regarding Baeyer's strain theory :
- ☒ a) could explain the stability of cyclopentane
  - b) as angle strain increases stability decreases
  - c) angle strain in cyclohexane is zero
  - d) cyclopropane undergoes ring opening reactions because of high angel strain
19. Which of the following is considered as the limitation of Baeyer's strain theory?
- ☒ a) could not explain the stability of cyclopentane
  - b) as angle strain increases stability decreases
  - ☒ c) considers all the ring carbons of cyclohexane remain in one plane
  - d) could not explain the ring opening reactions of cyclopropane and cyclobutane
20. Which of the following cycloalkanes stability cannot be explained by Baeyer's strain theory?
- a) cyclopropane
  - b) cyclobutane
  - c) cyclopentane
  - ☒ d) cyclohexane

### Section B

#### ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain the mechanism of Friedel-Craft's acylation, nitration and sulphonation of benzene.
2. Explain the mechanism of Kolbe's reaction. Explain the conversion of benzene into phenol by cumene-phenol process. Distinguish between primary, secondary and tertiary amines. (3+3+4)
3. What are fats and oils? Explain the principle, method of determination and significance of acid value. (2+3+3+2)

### Section C

#### SHORT NOTES (Answer any SEVEN questions)

7x5= 30 Marks

4. Explain the mechanism of halogenation of benzene.
5. Explain why alkyl amines are more basic than aromatic amines. Describe the effect of substituents on the basicity of aniline.
6. Explain the principle and method involved in the determination of saponification value.
7. Write the oxidation and reduction reactions of naphthalene.
8. Explain the halogenation, nitration and Friedel-Craft's acylation reactions of anthracene.
9. Write one method of preparation of diphenyl methane and triphenyl methane.
10. Explain the stability of cyclopropane, cylobutane and cyclopentane. Explain how it affects the reactivity.
11. Explain the substitution and addition reaction of cyclopropane and cyclobutane.
12. Write a note on Coulson and Moffitt's modification.

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**JSS UNIVERSITY, MYSURU****Third Semester B. Pharm (SS) Examination – May 2017****Subject: Physical Pharmaceutics - I****Time: 3 hours****Max. Marks: 75***Your answers should be specific to the questions asked.**Draw neat labeled diagrams wherever necessary***Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

1. The Noyes-Whitney equation predicts an increase of dissolution rate when the :
  - a) viscosity of the medium is increased
  - b) particle size is reduced
  - c) liquid medium is agitated
  - d) saturated solubility of solid is decreased
2. The effect of rise in temperature on the solubility of most gases in liquid :
  - a) decrease in solubility
  - b) increase in solubility
  - c) no change in solubility
  - d) not possible to predict
3. Fractional distillation cannot be used to separate :
  - a) miscible volatile liquids with close boiling points
  - b) azeotropic mixtures
  - c) mixture with different boiling points
  - d) mixture with different proportions of liquids
4. Example for two component system with both upper and lower critical solution temperature :
  - a) phenol - water system
  - b) methanol-cyclohexane system
  - c) triethylamine- water system
  - d) nicotine - water system



5. Which one of the following is NOT a property of liquids?
- a) they can flow
  - b) they have no definite shape
  - c) they are incompressible
  - d) they have no definite volume
6. The law of conservation of mass states that matter cannot be :
- a) changed
  - b) created or destroyed
  - c) burned
  - d) dissolved
7. Which state of matter has no definite shape and no definite volume?
- a) gas
  - b) ionic solid
  - c) molecular solid
  - d) liquid
8. Which one of the following statements best describes the particles in a gas?
- a) they are very close together and are able to vibrate
  - b) they are moving very fast and are far apart
  - c) they are moving very slow and are far apart
  - d) they are stationary and not able to vibrate
9. The particle size in sub-sieve range can be found by gravity and expressed by :
- a) Van't Hoff factor
  - b) Ohm's law
  - c) Stoke's law
  - d) Graham's law
10. The specific surface is :
- a) surface area per unit weight
  - b) surface area per unit volume
  - c) surface area per unit volume or unit weight
  - d) surface area per volume of liquid
11. Flow properties of powder is excellent if angle of repose is :
- a)  $<25^{\circ}$
  - b)  $25 - 30^{\circ}$
  - c)  $>25^{\circ}$
  - d)  $>40^{\circ}$

19. If the solution causes shrinkage of RBC, it is said to be :

- a) hypertonic
- b) hypotonic
- c) isotonic
- d) isomeric

20. The pH of buffer solution can be calculated by using :

- a) Valkyne's equation
- b) Henderson–Hasselbalch equation
- c) Sorenson's pH scale
- d) Michaelis–Menten equation

### Section B

#### ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Define distribution law. What are its limitations? Explain the applications of the distribution law. (2+4+4)
2. Explain refractive index and dielectric constant. Write their application in pharmacy.
3. Define Stokes diameter. Write the theory and principle involved in determination of particle size of powder by Andreasen apparatus.

### Section C

#### SHORT NOTES (Answer any SEVEN questions)

7x5= 30 Marks

4. What are ideal solutions? State Raoult's law. Describe the deviations from the law with suitable examples.
5. Write a note on optical rotation. Write its applications.
6. Define the types of densities. Explain the differences amongst them.
7. List the methods to determine the complexes. Explain any one method.
8. Write a note on chelate complexes with the suitable examples. Write its applications.
9. What is the influence of protein binding on drug action? Explain with examples.
10. Derive a buffer equation for an acid buffer with suitable example.
11. Explain the methods for determination of pH of a solution.
12. Describe the terms isotonic, hypertonic and hypotonic with examples.

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**JSS UNIVERSITY, MYSURU****Third Semester B. Pharm (SS) Examination – May 2017****Subject: Microbiology****Time: 3 hours****Max. Marks: 75***Your answers should be specific to the questions asked.**Draw neat labeled diagrams wherever necessary***Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

1. The distance between the front lens of the objective and the object on the slide is called :
  - a) magnification
  - b) working distance
  - c) resolving power
  - d) numerical aperture
2. Penicillin was discovered by :
  - a) Robert Koch
  - b) Alexander Fleming
  - c) John Tyndal
  - d) Louis Pasteur
3. Enrichment media is a :
  - a) solid media
  - b) gel media
  - c) liquid media
  - d) semisolid media
4. Lophotrichous means :
  - a) have a single polar flagella
  - b) single polar flagella at both poles
  - c) presence of two or more flagella only at one end of cell
  - d) containing flagella all over the surface of the bacteria

5. Which of the following organisms is an acid fast organism :
  - a) *Escherichia coli*
  - b) *Bacillus subtilis*
  - c) Coliform bacteria
  - d) *Mycobacterium tuberculosis*
6. Bubble point pressure test is a technique employed for :
  - a) measuring the pressure
  - b) determining the pore size of filters
  - c) monitoring the elevated temperature
  - d) measuring the melting point
7. Destruction or inhibition of microorganisms in living tissues is known as :
  - a) disinfection
  - b) sanitization
  - c) antisepsis
  - d) sterilization
8. Radiation method of sterilization is also called as :
  - a) cold sterilization
  - b) hot sterilization
  - c) moist heat sterilization
  - d) filtration sterilization
9. Phenol coefficient indicates :
  - a) purity of the disinfectant
  - b) quality of the disinfectant
  - c) efficiency of the disinfectant
  - d) activity of the disinfectant
10. In virulent cycle, there is intracellular multiplication of phages followed by lysis and release of progeny virions. This is called as :
  - a) lytic cycle
  - b) growth cycle
  - c) lysogenic cycle
  - d) bacterial cycle
11. Test for sterility is intended for detecting the :
  - a) presence of viable organisms
  - b) absence of viable organisms
  - c) presence of non-viable organisms
  - d) absence of non-viable organisms



12. The substance which would prevent sepsis, either by killing microorganisms or by inhibiting their growth is called as :
- a) preservative
  - b) disinfectant
  - c) sanitizer
  - d) antiseptic
13. NCTC is elaborated as :
- a) National Cell Type Culture
  - b) National Collection of Type Culture
  - c) National Collection of Transformation culture
  - d) National Collection of T cells
14. Test microorganism used for microbiological assay of vitamin B12 is :
- a) *Lactobacillus leichmannii*
  - b) *Lactobacillus casei*
  - c) *Lactobacillus viridescens*
  - d) *Lactobacillus plantarum*
15. The lowest concentration of antimicrobial compound that inhibits the growth of a particular test organism is called as :
- a) minimum inhibition concentration
  - b) zone of inhibition
  - c) minimum effective concentration
  - d) dilution concentration
16. The efficiency of filter in removing particulate and microbial contamination is evaluated by :
- a) dioctyl phthalate (DOP) test
  - b) microbial limit test
  - c) preservative efficiency test
  - d) membrane filtration test
17. Dimethylsulfoxide (DMSO) is having the function of :
- a) preservative
  - b) freezing agent
  - c) antimicrobial agent
  - d) surfactant
18. Trypsinisation is the process of treating tissues with :
- a) tryptophan
  - b) trypsin
  - c) tryptase
  - d) fats



19. Chemical preservatives used in pharmaceutical formulations :
- a) propyl gallate
  - b) sodium chloride
  - c) thiomersal
  - d) sodium phosphate
20. Total aerobic microbial count present in test substances is determined as per IP by the following methods EXCEPT :
- a) membrane filtration
  - b) total plate count
  - c) most probable number
  - d) turbidometric method

### Section B

#### ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain the bacterial growth curve. Describe the nutritional requirements for the growth of bacteria. (5+5)
2. Explain the principle, procedure, merits, demerits and applications of moist heat sterilisation.
3. Describe the morphology, reproduction and cultivation of fungi.

### Section C

#### SHORT NOTES (Answer any SEVEN questions)

7x5= 30 Marks

4. Explain the methods of isolation of pure culture.
5. Write the principle and procedure of Gram's staining technique.
6. Explain the tests carried out for evaluating the bacteriostatic activity of disinfectants.
7. Explain the principle and methods of microbial assay.
8. Write the sources of contamination in aseptic area.
9. Explain the methods for prevention of contamination.
10. Explain the types of microbial contaminants.
11. Define and classify spoilage. Explain the types of spoilages.
12. Write the applications of cell cultures in pharmaceutical industries and research.

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**JSS UNIVERSITY, MYSURU****Third Semester B. Pharm (SS) Examination – May 2017****Subject: Pharmaceutical Engineering****Time: 3 hours****Max. Marks: 75***Your answers should be specific to the questions asked.**Draw neat labeled diagrams wherever necessary***Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

1. Pressure at a point in a static mass of liquid depends on :
  - a) depth below the free liquid surface
  - b) shape and size of bounding container
  - c) specific weight of liquid and depth below the free liquid surface
  - d) specific weight of liquid, depth below the free liquid surface and shape and size of bounding container
2. Which one of the following is NOT true in case of construction of hammer mill?
  - a) hammers are flat or sharp edges
  - b) hammers are rigid or swing type
  - c) metal sheets with holes or slots are used
  - d) woven type of screen are used
3. Which one of the following indicate nominal size of aperture?
  - a) area of mesh as percentage
  - b) distance between two adjacent wires
  - c) number of meshes per linear length
  - d) wire having specified diameter that gives suitable aperture
4. Brushing method hastens the movement of which of the following materials?
  - a) coarse materials
  - b) dry materials
  - c) light material
  - d) sticky materials

5. Protamine zinc insulin is an example for:
  - a) amorphous solid
  - b) crystalline solid
  - c) hydrate solid
  - d) solvate solid
6. What is the source of heat in most of the evaporators?
  - a) coal
  - b) hot water
  - c) oil bath
  - d) steam
7. Supersaturation solubility is achieved by which of the following methods of crystallization?
  - a) adding solute to saturated solution
  - b) adding solvent to saturated solution
  - c) replacing crystals from saturated solution
  - d) removing solute from saturated solution
8. Which type of mean radius is used in the calculation of heat flow, when heat flows through a thin walled circular pipe?
  - a) arithmetic
  - b) geometric
  - c) harmonic
  - d) logarithmic
9. Which part in the distillation apparatus represents heat exchanger?
  - a) adopter
  - b) condenser
  - c) receiver
  - d) still
10. Which law satisfies batch type distillation of binary system for separation?
  - a) Dalton's law
  - b) Raoult's law
  - c) Rayleigh law
  - d) Stokes law
11. Which product is NOT dried by spray drier?
  - a) bacterial and viral culture
  - b) fruit juice
  - c) lactose
  - d) serum

12. Drying takes long time in which one of the following equipment?
- a) drum drier
  - b) spray drier
  - c) tray drier
  - d) fluidized bed drier
13. One of the following equations is used for explaining the theory of filtration:
- a) Darcy's equation
  - b) Stefan-Boltzmann equation
  - c) Stokes equation
  - d) Dalton's equation
14. Which is the filter made of polypropylene?
- a) cartridge filter
  - b) meta filter
  - c) rotary drum filter
  - d) plate and frame filter
15. For sedimentation type, the centrifuge has which one of the following conditions?
- a) basket is non-perforated
  - b) basket is perforated
  - c) containing filter aid
  - d) containing filter medium
16. Which of the following is an under-driven centrifuge?
- a) horizontal continuous centrifuge
  - b) perforated basket centrifuge
  - c) semi-continuous centrifuge
  - d) conical disc centrifuge
17. Industrial safety refers to the safety of one of the following:
- a) machines
  - b) materials
  - c) methods
  - d) men
18. The problem with dust of capsicum and podophyllum can be prevented by one of the following methods:
- a) application of barriers creams to eyes
  - b) covering the nose with mask
  - c) protecting the hair using head guards
  - d) wearing goggles to eyes



19. In which conveyor, friction losses are low?
- belt conveyor
  - bucket conveyor
  - pneumatic conveyor
  - screw conveyor
20. The term 'conveying' is used for the transportation of which of the following substances?
- fluids
  - gases
  - liquids
  - solids

### Section B

#### ESSAY (Answer any TWO questions)

2x10=20 Marks

- What is size reduction? Explain the factors affecting size reduction process. (8+2)
- Classify evaporators. Describe construction and working of a climbing film evaporator. (3+3+4)
- Explain the principle and procedure of molecular distillation. What are its applications?

### Section C

#### SHORT NOTES (Answer any SEVEN questions)

7x5= 30 Marks

- Describe the principle, working and advantages of double cone blender.
- Explain the salient features of vacuum crystallizer.
- Describe the drying rate curve for a nonporous granular solid.
- Explain the principle behind centrifugal separation. Write any five applications of centrifugation.
- Explain the working of semi-continuous centrifuge with a diagram.
- Describe the construction and working of rotary drum filter.
- Explain chemical hazards with suitable examples.
- Describe the types of corrosion and their prevention.
- Explain the working of pneumatic conveyor with the help of a diagram.

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**JSS UNIVERSITY, MYSURU****Third Semester B. Pharm (SS) Examination – May 2017****Subject: Pharmaceutical Jurisprudence****Time: 3 hours****Max. Marks: 75**

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

**Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

1. Schedule X is :
  - a) list of drugs whose import manufacture, sale, labelling and packing are governed by special provisions
  - b) requirements and guidelines on clinical trials for import and manufacture of new drugs
  - c) list of drugs that are exempted from certain provisions relating to manufacturing of drugs
  - d) list of drugs that are exempted from certain provisions applicable to import of drugs
2. First schedule of Drugs and Cosmetics (D&C) Act 1940 refers to pertains to the name of books under :
  - a) Siddha system of medicine
  - b) Ayurvedic system of medicine
  - c) Ayurvedic and Siddha system of medicine
  - d) Allopathic system of medicine
3. Loan license refers to :
  - a) providing manufacturing facilities to others
  - b) availing manufacturing facilities owned by another for manufacturing of products.
  - c) distribution of products one firm by other firm
  - d) availing other's license for manufacturing of products
4. The schedule that deals with life period of drugs is:
  - a) Schedule O
  - b) Schedule P
  - c) Schedule Q
  - d) Schedule U

5. Pack sizes for eye ointment shall be :
- a) 10 g, 20 g, 30 g
  - b) 5 g, 10 g, 15 g
  - c) 3 g, 5 g, 10 g
  - d) 1 g, 5g, 10 g
6. For the efficient functioning, the D & C Act provides for the following agencies :
- a) analytical, advisory and disciplinary
  - b) analytical, disciplinary and executive
  - c) advisory, analytical and executive
  - d) advisory, disciplinary and executive
7. Central drugs laboratory (CDL) is established in :
- a) Chennai
  - b) Mumbai
  - c) Kasauli
  - d) Kolkata
8. The warning "if irritation persists or increases discontinue the use and consult the physician" is present in the label of :
- a) ophthalmic preparation
  - b) patent & proprietary medicine
  - c) drugs for external use
  - d) parenteral medicine
9. Cannabis (hemp) means :
- a) any plant of the genus cannabis
  - b) flowering and fruiting tops of the cannabis plant
  - c) any plant of the genus erythroxylon
  - d) crude cocaine or any extract of coca leaf that can be used directly and indirectly for manufacture of cocaine
10. Number of ex-officio members in Pharmacy Council of India :
- a) 3
  - b) 4
  - c) 5
  - d) 6
11. Medicinal and Toilet Preparation Act extends to :
- a) whole of India
  - b) whole of India except Jammu and Kashmir
  - c) whole of India excluding union territories
  - d) only to union territories

12. Sale of opium to state governments or manufacturing chemists can be made only from government opium factory located in :
  - a) Neemuch
  - b) Delhi
  - c) Jaipur
  - d) Ghazipur
13. According to DPCO retail price of formulation can be calculated by the following formula
  - a)  $RP = (CC+PM+ED+PC) \times (1+MAPE)/100 + MC$
  - b)  $RP = (PM+ED+PC+MC) \times (1 +MAPE)/100 + CC$
  - c)  $RP = (MC+CC+PM+PC) \times (1+MAPE)/100 + ED$
  - d)  $RP = (PM+PC+ED+MC) \times (1+MAPE)/100 + CC$
14. Definition of advertisement as per the Drug and Magic Remedies Act :
  - a) Talisman, mantra, kavacha and any other charm claiming to posses miraculous power
  - b) Any notice, circular, label, wrapper or otherwise such document
  - c) Any article which affects or alters the structure or organic function of the body of human being or animals
  - d) Substances intended for the diagnosis, cure, mitigation, treatment or prevention of disease in human being or animals
15. Retailer means :
  - a) dealer or stockist appointed by manufacturer
  - b) dealer carrying on the retail business of sale of drugs to customers
  - c) dealer or stockist appointed by manufacturer or an importer for stocking his drugs for sale to a dealer
  - d) person carrying on the business of purchase or sale of drugs
16. Advertisements sent confidentially should bear on top printed in indelible ink the words :
  - a) for the use of registered medical practitioner (RMP) or registered pharmacist only
  - b) for the use of registered pharmacist only
  - c) for the use of RMP or a hospital or a laboratory
  - d) confidential
17. Joseph Bhole committee is also called as :
  - a) Drugs Advisory Committee
  - b) Drugs Consultative Committee
  - c) Health Survey and Planning Committee
  - d) Health Survey and Development committee
18. Guardians means a person having care of :
  - a) major
  - b) major and minor
  - c) minor or lunatic
  - d) lunatic



19. Envelop bearing serial number assigned to pregnant women and name of the RMP by whom pregnancy was terminated shall be marked as :
- Confidential
  - RMP
  - SECRET
  - Guardian
20. Pharmacist in relation to his job refers to :
- scope of pharmaceutical services, conduct of pharmacy, handling of drugs, handling of prescription, apprenticeship
  - price structure, fair trade practice, purchase of drugs, hawking of drugs, advertisements and display
  - limitation of professional activity, clandestine arrangements, liaison with public
  - professional vigilance, law abiding citizens, relationship with professional organization, decorum and propriety

### Section B

#### ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain the conditions for the grant of licence to manufacture drugs other than those specified in Schedule C & C1 under Drugs & Cosmetics Act 1940. (4+6)
2. Write the qualifications for appointment as a drug inspector. Explain the powers and duties of drug inspector. (4+6)
3. Write the constitution and functions of Pharmacy Council of India.

### Section C

#### SHORT NOTES (Answer any SEVEN questions)

7x5= 30 Marks

4. Explain subsequent registers.
5. Write a note on Schedule N.
6. Explain import of drugs for examination, test or analysis.
7. What classes of advertisements are prohibited under Drugs and Magic Remedies Act?
8. Write a note on price lists. Expand and explain the term MAPE. How is it calculated?
9. Explain the facilities to be maintained for experimentation of animals as per CPCSEA guidelines.
10. Write the recommendations of Chopra Committee.
11. Explain the code of ethics for pharmacist in relation to his trade.
12. Write the objectives of Medical Termination of Pregnancy Act. Explain the maintenance of records.

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**JSS UNIVERSITY, MYSURU**

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**Fourth Semester B. Pharm (SS) Examination – May 2017****Subject: Pharmaceutical Organic Chemistry –III****Time: 3 hours****Max. Marks: 75***Your answers should be specific to the questions asked.**Draw neat labeled diagrams wherever necessary***Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

1. Bromo-2-butanol has \_\_\_\_\_ number of stereoisomers.
  - a) 2
  - b) 3
  - c) 4
  - d) 6
2. Which of the following is an optically inactive compound?
  - a) 3-bromo-2-butanol
  - b) mesotartaric acid
  - c) 2,3-dihydroxybutanoic acid
  - d) glyceraldehyde
3. A chiral molecule has :
  - a) one different substituent
  - b) two different substituents
  - c) three different substituent
  - d) four different substituents
4. Measurement of optical activity is done by :
  - a) polarimeter
  - b) spectrofluorometer
  - c) spectrophotometer
  - d) optometer



5. In the E-Z nomenclature of alkenes Z stands for:
- a) Zodiac
  - b) Zest
  - c) Zussamen
  - d) Zee
6. In cyclohexane, the most stable conformation is :
- a) chair
  - b) boat
  - c) half chair
  - d) half boat
7. D & L are a pair of \_\_\_\_\_ isomers.
- a) E-Z
  - b) relative
  - c) non-relative
  - d) absolute
8. Which of the following compounds will exhibit cis-trans isomerism?
- a) 2-butene
  - b) 2-butyne
  - c) 2-butanol
  - d) butanal
9. Alkylation of furan is carried out using the catalyst :
- a) Raney nickel in the presence of hydrogen
  - b) palladium in the presence of hydrogen
  - c) borontrifluoride
  - d) acetyl chloride
10. Furan under goes which of the following reactions?
- a) Diels - Alder reaction
  - b) Fischer's indole synthesis
  - c) Riemer Tiemann's reaction
  - d) Beckman's reaction
11. The following is the starting compound for Paal Knorrs synthesis of thiophene:
- a) 1,4-diketone
  - b) butanoic acid
  - c) sodium succinate
  - d) maleic acid

12. Which of the following naturally occurring compound contains thiophene?
- a) cholesterol
  - b) ergostersol
  - c) vitamin K
  - d) biotin
13. Nicotinamide is a naturally occurring derivative of:
- a) pyridine
  - b) pyrimidine
  - c) benzene
  - d) foran
14. The following is the product of Madelung's synthesis:
- a) furan
  - b) indole
  - c) pyridine
  - d) quinolone
15. Which one of the following is an aza derivative of anthracene?
- a) quinolone
  - b) acridine
  - c) pyridine
  - d) imidazole
16. Skraup's synthesis is a method used for the synthesis of :
- a) furan
  - b) pyridine
  - c) quinoline
  - d) benzene
17. The reverse Meerwein-Ponndorf reaction is called as :
- a) Birch reduction
  - b) Oppenauer oxidation
  - c) Wolff Kishner reduction
  - d) Dakin oxidation
18. When acetone undergoes Wolff Kishners reduction, the product formed is?
- a) propane
  - b) propene
  - c) propanol
  - d) propanoic acid

19. Birch reduction of naphthalene gives:
- anthracene
  - cyclohexadiene
  - 1,4-dihydrocyclohexadiene
  - 1,4-dihydronaphthalene
20. Lithium aluminium hydride is used to convert aldehydes to :
- alcohols
  - acids
  - esters
  - alkanes

### Section B

#### ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain enantiomers with examples. Explain the Cahn-Ingold-Prelog system of nomenclature of enantiomers. (3+7)
2. Explain the isomers of n-butane with energy level diagram. Add a note on their stability. (5+5)
3. Explain any two methods of synthesis of furan. Write any three reactions of furan. (4+ 6)

### Section C

#### SHORT NOTES (Answer any SEVEN questions)

7x5= 30 Marks

4. Explain DL nomenclature with examples.
5. Explain the term stereospecific reactions with examples.
6. Write any three reactions of thiophene.
7. Write any two methods of synthesis and two reactions of isoquinoline.
8. Write any two reactions of pyridine. Write the structure of any two pyridine derivatives of medicinal interest.
9. Write any one method for the synthesis of thiazole. Write any two reactions of thiazole.
10. Explain the mechanism of Schmidt rearrangement.
11. Explain the mechanism of Dakin oxidation with example.
12. Write a note on lithium aluminium hydride reduction reactions.

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**JSS UNIVERSITY, MYSURU****Fourth Semester B. Pharm (SS) Examination – May 2017****Subject: Medicinal Chemistry – I****Time: 3 hours****Max. Marks: 75***Your answers should be specific to the questions asked.**Draw neat labeled diagrams wherever necessary***Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

1. Intramolecular hydrogen bonding is present in :
  - a) water
  - b) antipyrine
  - c) alcohol
  - d) salicylic acid
2. The ratio of rate constants of dissolved solute and undissolved solute at equilibrium at a given temperature is called :
  - a) solubility
  - b) partition coefficient
  - c) ionisation constant
  - d) hydrogen bonding
3. The positional isomer of phenobarbital is :
  - a) amobarbital
  - b) pentobarbital
  - c) thiopental sodium
  - d) barbitol
4. Conversion of uracil to 5-fluorouracil is an example of :
  - a) monovalent bioisostere
  - b) divalent bioisostere
  - c) trivalent bioisostere
  - d) tetravalent bioisostere

5. The drug which blocks both alpha and beta adrenergic receptor :
  - a) prazosin
  - b) atenolol
  - c) metoprolol
  - d) carvedilol
6. The synthetic catecholamine is :
  - a) epinephrine
  - b) norepinephrine
  - c) isoprenaline
  - d) dopamine
7. An example of phenyl ethanol amine derivative which is a sympathomimetic :
  - a) adrenaline
  - b) xylometazoline
  - c) oxymetazoline
  - d) naphazoline
8. The receptor responsible for smooth muscle stimulant :
  - a)  $\alpha$  1
  - b)  $\alpha$  2
  - c)  $\beta$  1
  - d)  $\beta$  2
9. The drug used to treat glaucoma :
  - a) pilocarpine
  - b) carbachol
  - c) bethanechol
  - d) both a & b
10. The drug which is used in preanaesthetic medication :
  - a) carbochol
  - b) edrophonium chloride
  - c) physostigmine
  - d) glycopyrrolate
11. Tropicamide acts as a :
  - a) cholinomimetic
  - b) muscarinic antagonist
  - c) anticholinesterase
  - d) nicotinic antagonist
12. Atropine belongs to the drug class :
  - a) primary antimuscarinics
  - b) secondary antimuscarinics
  - c) tertiary antimuscarinics
  - d) quaternary antimuscarinics



13. Which of the following is a long acting barbiturate ?
- a) pentobarbital
  - b) amobarbital
  - c) phenobarbital
  - d) thiopental sodium
14. The agent which produces mild depression and calms anxiety without inducing sleep is :
- a) hypnotic
  - b) sedative
  - c) antianxiety
  - d) tranquilizer.
15. If NH group is incorporated in ureide structure it gives :
- a) barbiturates
  - b) hydantoin
  - c) oxazolidines
  - d) succinimide
16. The position of chlorine in chlorpromazine is :
- a) 2
  - b) 5
  - c) 7
  - d) 9
17. The general anaesthetic which has slowest induction time is :
- a) nitrous oxide
  - b) enflurane
  - c) halothane
  - d) methoxyflurane
18. The most potent narcotic antagonist is :
- a) naloxane
  - b) naltrexone
  - c) nalorphine
  - d) pethidine

19. Which of the following is NOT an opioid receptor?
- $\mu$  receptor
  - kappa receptor
  - delta receptor
  - sigma receptor
20. The nonsteroidal anti-inflammatory drug (NSAID) which is a pyrazolidinedione derivative :
- aspirin
  - paracetamol
  - mefenamic acid
  - phenylbutazone

### Section B

#### ESSAY (Answer any TWO questions)

2x10=20 Marks

- Define and explain bioisosterism with examples. (2+8)
- Write a note on sympathomimetic agent and explain any two compounds (4+6)
- Explain the cholinergic receptors and biosynthesis of acetyl choline. (5+5)

### Section C

#### SHORT NOTES (Answer any SEVEN questions)

7x5= 30 Marks

- Write a note on partition coefficient.
- Explain the structure activity relationship (SAR) of beta blockers.
- Write a note on atropine sulphate,
- Explain the synthesis and SAR of diazepam.
- Write a note on chlorpromazine hydrochloride.
- Write a note on phenothiazines
- Explain SAR of morphine.
- Write the synthesis of halothane and methohexital sodium.
- Write a note on ibuprofen.

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**JSS UNIVERSITY, MYSURU****Fourth Semester B. Pharm (SS) Examination – May 2017****Subject: Physical Pharmaceutics- II****Time: 3 hours****Max. Marks: 75***Your answers should be specific to the questions asked.**Draw neat labeled diagrams wherever necessary***Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

1. Aspirin decomposition with moisture follows \_\_\_\_\_ reaction.  
a) first order  
b) second order  
c) zero order  
d) mixed order
2. Energy of activation required for collision is :  
a) 1-3 kcal  
b) 10-30 kcal/mol  
c) 100 -300 kcal / mol  
d) 1000 kcal/mol
3. Shelf life is determined by :  
a) t 50 value  
b) t 60 value  
c) t 80 value  
d) t 90 value
4. India falls under which type of climatic zone for stability testing?  
a) tropical  
b) subtropical  
c) temperate  
d) desert

5. Viscoelasticity is NOT shown by :
- a) cervical fluid
  - b) blood
  - c) sputum
  - ☒ d) lacrimal fluid
6. Reverse phenomenon of dilatant is :
- ☒ a) pseudoplastic
  - b) plastic
  - c) thixotropic
  - d) Newtonian
7. Flocculated suspension exhibits \_\_\_\_\_ system:
- a) Newtonian
  - b) pseudoplastic
  - ☒ c) plastic
  - d) dilatants
8. Unit of viscosity is :
- ☒ a) Newton
  - b) Stokes
  - c) centipoise
  - d) Pascal
9. Methyl cellulose is a polymer of \_\_\_\_\_ type.
- a) anionic
  - b) cationic
  - c) non-ionic
  - ☒ d) amphiphilic
10. Sediment which is difficult to redisperse is called :
- a) flocculated
  - ☒ b) deflocculated
  - c) complex formed
  - d) phase inverted
11. Oil: water: gum ratio for volatile oil emulsion is :
- a) 4:2:1
  - ☒ b) 3:2:1
  - c) 2:2:1
  - d) 1:2:1

12. Maximum conductivity is shown by :
- a) oil in water emulsion
  - b) water in oil emulsion
  - c) multiple emulsion
  - ☒ d) flocculated suspension
13. Units of surface tension is :
- ☒ a) Poise
  - b) Stoke
  - c) dynes/cm
  - d) Pascal
14. Best wetting happens when contact angle between surface and surfactant is :
- a) 0
  - b) 90
  - ☒ c) 180
  - d) 360
15. Hydrophile-lipophile balance (HLB) scale is also called as :
- ☒ a) Griffin scale
  - b) Gibbs scale
  - c) Langmuir scale
  - d) Freundlich scale
16. The following one is ampholytic surfactant :
- a) sodium lauryl sulphate
  - b) lecithin
  - c) cetrimide
  - ☒ d) polyethylene glycol
17. An example for colloid systems is :
- a) gels
  - b) ointments
  - c) emulsions
  - ☒ d) soap solutions
18. Thermodynamically unstable system is :
- a) lyophilic colloid
  - ☒ b) lyophobic colloid
  - c) association colloid
  - d) hydrophilic colloid



19. Ultracentrifuge can be used for finding :

- a) molecular weight
- b) viscosity
- c) Tyndall effect
- d) zeta potential

20. Gold number is used for evaluation of :

- a) flocculated suspension
- b) oil in water emulsion
- c) thixotropic gel
- d) protective colloid

### Section B

#### ESSAY (Answer any TWO questions)

*Asphorina* 2x10=20 Marks

1. Explain how expiry dates of pharmaceutical dosage forms are determined. (4+6)
2. Describe thixotropic and its determination.
3. Explain the theories of emulsification.

$$K = Ae^{-E_a/RT}$$

$$t_{90} = 0.105 \frac{K}{K}$$

### Section C

#### SHORT NOTES (Answer any SEVEN questions)

35.  
7x5= 35 Marks

4. What is photolytic degradation? How could it be prevented?

5. Explain the working procedure of a rotational viscometer. ✓ *cut and prob*

6. How to make controlled flocculation?

7. How is stalagmometer used for determining the surface tension?

8. Classify surfactants. Write their applications. — *surface active agents*

9. Write a note HLB scale and its importance. ✓

10. Explain dispersed systems. — *colloidal dispersions*

11. Write a note on optical properties of colloids.

12. Define colloids and enlist the application of colloids. ✓

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*Therap. -  
depression toxicity.*

*solubility  
stability  
long specific.*

*Soluble 4  
Susp 4  
D 4-8  
W 7-9  
W 3-8  
M 1-3  
anti-bam.*

*solu  
Sh  
J lota  
glu 8  
W 7-9  
W 3-8  
M 1-3*

**JSS UNIVERSITY, MYSURU****Fourth Semester B. Pharm (SS) Examination – May 2017****Subject: Pharmacology- I****Time: 3 hours****Max. Marks: 75***Your answers should be specific to the questions asked.**Draw neat labeled diagrams wherever necessary***Section A: Multiple Choice Questions**

20 Marks

**Section B: Long Essay**

20 Marks

**Section C: Short Essay**

35 Marks

**Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

1. Which route of drug administration is used with potent and lipophilic drugs in a patch formulation and avoids first-pass metabolism?
  - a) topical
  - b) transdermal
  - c) oral
  - d) sublingual
2. The volume of distribution of a drug will be greater if the drug :
  - a) is more ionized inside cells than in plasma
  - b) is administered very rapidly
  - c) is highly ionized in plasma
  - d) has poor lipid solubility
3. The volume of body fluid (blood) from which a drug is removed per unit time is called :
  - a) half-life of drug
  - b) volume of distribution
  - c) drug clearance
  - d) drug biotransformation
4. Which of the following processes proceeds in the second phase of biotransformation?
  - a) acetylation
  - b) reduction
  - c) oxidation
  - d) hydrolysis

5. A partial agonist is best described as an agent that :
  - a) has low potency but high efficacy
  - b) has affinity but lacks efficacy
  - c) interacts with more than one receptor type
  - d) cannot produce the full effect, even at high doses
6. Therapeutic index (TI) is a ratio used to evaluate the :
  - a) safety and usefulness of a drug for indication
  - b) effectiveness of a drug
  - c) bioavailability of a drug
  - d) elimination of a drug
7. The description of molecular events initiated with drug binding and ending with a physiologic effect is called :
  - a) receptor down regulation
  - b) signal transduction pathway
  - c) drug receptor binding
  - d) intrinsic activity
8. G-protein-coupled receptors (GPCRs) that activate an inhibitory  $G\alpha$  subunit alter the activity of adenylyl cyclase to :
  - a) increase the coupling of receptor to G protein
  - b) initiate the conversion of GTP to GDP
  - c) generate intracellular inositol triphosphate
  - d) decrease the production of cAMP
9. Which of the following is CORRECT regarding the autonomic nervous system?
  - a) afferent neurons carry signals from the CNS to the effector organs
  - b) sympathetic neurons release acetylcholine in the effector organs
  - c) the neurotransmitter at the sympathetic ganglion is acetylcholine
  - d) it is voluntary
10. Which of the following is a systemic effect of a muscarinic agonist?
  - a) bradycardia
  - b) increased blood pressure
  - c) mydriasis
  - d) reduced urinary frequency
11. Most local anesthetic agents consist of :
  - a) lipophylic group (frequently an aromatic ring)
  - b) intermediate chain (commonly including an ester or amide)
  - c) amino group
  - d) All of the above

12. Which of the following drugs is both a muscarinic and nicotinic blocker?
- a) atropine
  - b) benztropine
  - c) hexamethonium
  - d) succinylcholine
13. Indicate the reversible cholinesterase inhibitor, which penetrates the blood-brain barrier :
- a) physostigmine
  - b) edrophonium
  - c) neostigmine
  - d) piridostigmine
14. The potency of inhaled anesthetics is defined as:
- a) blood/gas partition coefficient
  - b) cerebrovascular resistance
  - c) minimum alveolar concentration
  - d) diffusion hypoxia
15. Which of the following drugs is most useful for the treatment of absence seizures?
- a) topiramate
  - b) levetiracetam
  - c) lamotrigine
  - d) zonisamide
16. Which of the following agents is a short-acting ganglion blocker?
- a) homatropine
  - b) trimethaphan
  - c) hexamethonium
  - d) pancuronium
17. Which of the following is a glutamate receptor antagonist that can be used in combination with an acetylcholinesterase inhibitor to manage the symptoms of Alzheimer's disease?
- a) rivastigmine
  - b) ropinirole
  - c) memantine
  - d) donepezil
18. Which of the following opioids is so lipophilic that it is marketed in a skin patch used to treat chronic pain?
- a) morphine
  - b) naltrexone
  - c) fentanyl
  - d) methadone



19. Baclofen is used to treat muscle spasticity because of which of the following effect?
- a) it is a receptor agonist at GABAB receptors
  - b) it blocks acetylcholine receptors
  - c) it enhances the release of GABA vesicles
  - d) it is an antagonist as glutamate receptors
20. Indicate a peripheral dopa decarboxylase inhibitor:
- a) tolcapone
  - b) clozapine
  - c) carbidops
  - d) selegiline

### Section B

#### ESSAY (Answer any TWO questions)

2x10=20 Marks

1. Explain the merits and demerits of different routes of drug administration with suitable examples.
2. Classify receptors. Write the mechanism of enzyme linked receptors. (2+8)
3. Classify sympathomimetics. Write the anatomical distribution and physiological role of adrenergic receptors with suitable illustrations. Write the mechanism of action of dobutamine. (3+4+3)

### Section C

#### SHORT NOTES (Answer any SEVEN questions)

7x5= 30 Marks

4. Write notes on hepatic and renal clearance of drugs with examples.
5. Describe the factors modifying drug action.
6. Classify neuromuscular blockers. Write the mechanism of action of d-tubocurarine.
7. Explain how the structure of local anesthetics plays a role in their potency.
8. Write the mechanism of action, adverse effects and therapeutic uses of phenobarbitone.
9. Classify antiepileptics. Explain the therapeutic uses of carbamazepine.
10. Classify antipsychotics with examples.
11. Classify opioid analgesics. Write the mechanism of action of morphine.
12. Define and classify nootropics.

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**JSS UNIVERSITY, MYSURU****Fourth Semester B. Pharm (SS) Examination – May 2017****Subject: Pharmacognosy- I****Time: 3 hours****Max. Marks: 75***Your answers should be specific to the questions asked.**Draw neat labeled diagrams wherever necessary***Section A: Multiple Choice Questions****20 Marks****Section B: Long Essay****20 Marks****Section C: Short Essay****35 Marks****Section A****Note:**

1. Answer ALL the questions in the OMR Sheet given by using BLUE/BLACK BALL POINT PEN ONLY
2. Choose the ONE CORRECT ANSWER from the 4 choices given for each question.
3. Maximum time for answering Section – A is 20 minutes.
4. At the end of 20 minutes, submit the OMR sheet to the Invigilator.

**Multiple Choice Questions****20 x 1 = 20 Marks**

1. Example of natural vegetative propagation DOES NOT include :
  - a) corals
  - b) bulbs
  - c) corms
  - d) rhizomes
2. Pest control can be done by :
  - a) chemical methods
  - b) fungi and virus
  - c) insects
  - d) weeds
3. Polyploidy is induced through:
  - a) irradiation
  - b) mutagenic chemicals
  - c) colchicine
  - d) ethylene
4. Seed banking is :
  - a) planting used to maintain genetic diversity of wild, agricultural or forestry species
  - b) storage of seeds in a temperature and moisture controlled environment
  - c) stored for short periods of time in vitro for short periods of time
  - d) plants are under horticulture care

5. The term pharmacognosy was coined by :
  - a) Bentham & Hooker
  - b) Pelletier
  - c) Seydler
  - d) Berg
6. Crude drug NOT belonging to volatile oil class:
  - a) peppermint
  - b) castor oil
  - c) clove
  - d) garlic
7. Which of the following parameter is NOT the chemical method of evaluation?
  - a) ash value
  - b) extractive value
  - c) anti-fertility activity
  - d) moisture content
8. Palisade ratio is defined as :
  - a) number of veinlet terminations per square millimeter
  - b) average number of stomata per mm of epidermis of the leaf
  - c) percentage of number of stomata from total number of epidermal cells
  - d) average number of palisade cells from each epidermal cell
9. Chinese system of medicine is based on :
  - a) Yin and Yang theory
  - c) five elements theory
  - c) tridhoshha
  - d) Umar-e-tabia
10. Choose the right skeleton for cinchona alkaloids :
  - a) indole
  - b) quinolone
  - c) isoquinoline
  - d) tropane
11. Choose the right test for identification of anthraquinones :.
  - a) Marquis test
  - b) Liebermann-Burchard test
  - c) Borntrager's test
  - d) Murexid test

12. Which of the following is opium?
- a) the dried alcoholic extract of the unripe capsules
  - b) the dried latex exudate of the unripe incised capsules
  - c) the dried aqueous extract of the ripe capsules
  - d) an aqueous extract of the ripe seeds
13. Chemical test for tannins :
- a) Combined umbelliferone test
  - b) Liebermann-Burchard test
  - c) Mayer's test
  - d) Goldbeater's skin test
14. The general chemical formula of carbohydrates is :
- a)  $(CH_2O)_n$
  - b)  $(CH_2O)_{2n}$
  - c)  $(CHO)_n$
  - d)  $C_nH_{2n}O$
15. The biological source for Indian gum is :
- a) *Cyamopsis tetragonolobus*
  - b) *Astragalus gummifer*
  - c) *Acacia arabica*
  - d) *Acacia Senegal*
16. Artificial invert sugar is an adulterant for honey and it is detected by :
- a) Tollen's test
  - b) Fiehe's test
  - c) biuret test
  - d) ninhydrin test
17. Drug containing anthraquinone alkaloid?
- a) benzoin
  - b) senna
  - c) liquorice
  - d) rauwolfia
18. The crude drug that belongs to the family solanaceae :
- a) belladonna
  - b) tea leaf
  - c) opium
  - d) mentha



19. Crude drug that belongs to the family apocynaceae :
- arjuna
  - rauwolfia
  - dioscorea
  - ruta
20. Following drugs are organised drugs EXCEPT :
- vinca
  - digitalis
  - benzoin
  - petrocarpus

### Section B

#### ESSAY (Answer any TWO questions)

2x10=20 Marks

- Write a note on polyploidy, mutation and hybridization. (3+4+3)
- What are the types of drug evaluation of crude drug? Describe the physical methods of evaluation of crude drugs. (4+6)
- Define and classify glycosides with examples. Write the specific tests for anthraquinones. (2+5+3)

### Section C

#### SHORT NOTES (Answer any SEVEN questions)

7x5= 30 Marks

- Describe the factor affecting temperature, rainfall and soil and soil fertility for cultivation of plant.
- Define pharmacognosy. Explain the morphological and pharmacological classification of crude drugs.
- Write a note on traditional systems of medicine.
- Write the biological source of tragacanth and honey. Explain their chemical nature, uses and specific tests.
- Describe the pharmacognosy of bees wax and wool fat.
- Write the biological source, chemical nature and uses of acacia and agar.
- Define and classify resins with examples. Write the chemical constituents and uses of ginger.
- Write the biological source, chemical nature and uses of nutmeg.
- Explain the microscopical characters of clove. Write the uses of clove.

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**JSS UNIVERSITY, MYSURU****First Year B.Pharm (RS1) Examination - April/May 2017****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) Explain sp<sup>2</sup> hybridisation in alkenes. (7+8)  
b) Explain Markownikoff and anti-Markownikoff rule with examples and mechanism.
2. Describe the principle, reactions, procedure and apparatus involved in the limit test for arsenic. (4+3+4+4)
3. Describe the kinetics, order of reactivity and stereochemistry of SN1 and SN2 reactions. (5+5+5)

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

4. Define and classify structural isomerism with examples.
5. Explain the principles of redox titrations.
6. Write the methods of preparation of alkenes.
7. Explain the principle involved in assay of strong acid.
8. Describe the halogenation of alkanes.
9. Define limit test. Explain the principle involved in the limit test for sulphates IP.
10. Describe the conversion of carboxylic acid to its derivatives.
11. Explain Volhard's method with an example.

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

12. Write the IUPAC name for acetone and formaldehyde.
13. Define accuracy and precision.
14. Arrange the following carbocations in descending order: allyl, isopropyl, tertiary butyl, methyl.
15. Define normality and molarity.
16. Classify non-aqueous solvents with examples.
17. Write a note on adsorption indicators.
18. Define aldol condensation.

**JSS UNIVERSITY, MYSURU**

**First Year B.Pharm (RS1) Examination - April/May 2017**

**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 methods of classification of crude drugs.
2. Describe the pharmacognosy of ergot.
3. Write a note on adulteration. Explain evaluation methods for crude drugs. (5+10)

**II. SHORT ESSAY (Answer any six questions)**

**6x5=30 Marks**

4. Write the pharmacognosy of podophyllum.
5. Write the identification tests for acacia and tragacanth.
6. Write the biological source, constituents and uses of senna and digitalis.
7. Write a note on surgical catguts.
8. Describe the source, chemical constituents and method of preparation of cod liver oil.
9. Explain the microscopy of belladonna with a neat labelled diagram.
10. Write a note on anti-hepatotoxic drug.
11. Write the chemical tests for the identification of benzoin.

**III. SHORT ANSWERS (Answer any five questions)**

**5x2=10 Marks**

12. Applications of silk and rayon in surgical dressings.
13. Write the source and uses of spirulina.
14. Name the chemical constituents of liquorice.
15. Define felling and coppicing.
16. Name two drugs containing indole alkaloids.
17. Write the source and uses of bentonite.
18. Constituents and uses of garlic (lehsun).

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**JSS UNIVERSITY, MYSURU****Second Year B.Pharm (RS1) Examination - April/May 2017****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 prescription. Explain the parts and processing of prescription. (2+6+7)
2. Define suspension. What are the ideal characteristics of a suspension? (2+4+5+4)  
Differentiate flocculated and deflocculated suspension. Explain the formulation of suspension with example.
3. a) Write a note on suppository bases. (10+5)  
b) Write the types and merits of suppositories.

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

4. Explain the methods of production of granules.
5. Write the tests to detect the types of emulsion.
6. Explain chemical incompatibility with examples.
7. Formulation of throat paints.
8. Write notes on:  
a) Oral inhalations b) Osmotic pumps.
9. If 1500g solution contains 75g of a drug substance, calculate the percentage strength (w/w) of the solution.
10. Calculate dose of a drug for a child of 3 years when the adult dose is 30 mg.
11. Explain the salient features of latest edition of Indian Pharmacopeia.

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

12. Explain the types of syrups with suitable examples.
13. What are auto-injection systems?
14. Write the pharmaceutical applications of microparticles.
15. Explain the formulation of creams.
16. Write a note on enemas.
17. What are gargles? Write an example.
18. Write the types of emulsion with examples.

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**JSS UNIVERSITY, MYSURU****Second Year B.Pharm (RS1) Examination - April/May 2017****Subject: Pharmaceutical 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****(5+5+5)**

1. Explain the following reactions with mechanism:
  - a) Meerwein Ponndorf Verley reduction.
  - b) Beckmann's rearrangement.
  - c) Claisen - Schmidt condensation.
2. Write notes on:
  - a) Resolution of racemic mixture
  - b) Stereochemistry of biphenyl compounds
  - c) Synthesis and uses of diazonium salts.
3. Explain the synthesis and chemical reactions of quinoline and indole.

**(5+5+5)****II. SHORT ESSAY (Answer any six questions)****6x5=30 Marks**

4. Write the basicity of aromatic amines.
5. Write the synthesis and chemical reactions of naphthalene.
6. Explain the stereo-selective and stereo-specific reactions.
7. Write the reaction of nitration, sulphonation, halogenations and Friedel-Crafts reaction of benzene.
8. Explain nucleophilic substitution with mechanism.
9. Explain Clemmensen reduction.
10. Write the preparation and chemical reaction of acridine.
11. Conformational analysis of cyclopentane.

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

12. Hückel's rule.
13. Saponification value.
14. Synthesis and use of diphenyl methane.
15. Optical activity.
16. Synthesis and uses of furan.
17. Basicity of pyrrole.
18. Sequence rule.

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## JSS UNIVERSITY, MYSURU

Second Year B.Pharm (RS1) Examination - April/May 2017

Subject: Industrial 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. Describe the method of electrophoresis in the isolation of phytoconstituents from crude drugs. Add a note on identification using spectral methods. (10+5)
2. Describe WHO guidelines for the assessment of herbal medicine and cosmetics.
3. Explain the industrial isolation and estimation of diosgenin and curcumin.

**II. SHORT ESSAY (Answer any six questions)**

**6x5=30 Marks**

4. Describe the basic primary metabolic pathway leading to secondary metabolites.
5. Explain the industrial isolation and estimation of gymnemic acid.
6. Describe the role of aloe vera and turmeric in cosmetics.
7. Describe the utilization of radioactive isotopes in the investigation of biogenetic pathways.
8. Preparation and standardization of lehya.
9. Write notes on naturally occurring hallucinogens and teratogens.
10. Protoplast culture.
11. Biological sources, general methods of isolation, purification and uses of pepsin.

**III. SHORT ANSWERS (Answer any five questions)**

**5x2=10 Marks**

12. Explain edible vaccine.
13. Write about precursor for morphine biogenesis.
14. Define probiotics and prebiotics.
15. Unani system of medicine.
16. Define callus culture.
17. Write the applications of gas chromatography.
18. Define immobilization of enzymes.

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## JSS UNIVERSITY, MYSURU

Second Year B.Pharm (RS1) Examination - April/May 2017

**Subject: Pharmaceutical Jurisprudence**

*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 manufacture of manufactured drugs. Explain the procedure for the cultivation of poppy plants. (2+13)
2. What are the salient features of drug price control order (DPCO)? Mention the condition for fixing of the price for bulk drugs and formulations. (7+8)
3. What are the conditions for issuing licence to manufacture drug other than those specified in Schedule C, C1 and X?

**II. SHORT ESSAY (Answer any six questions)**

**6x5=30 Marks**

4. Licenses for sale of drugs.
5. Duties of drugs inspector.
6. Import and export of narcotic drugs.
7. Describe Schedule Y.
8. Loan license.
9. How does the code of ethics help the profession of pharmacy?
10. Offences and penalties as per Medicinal and Toilet Preparations Act.
11. Registration of pharmacists in India.

**III. SHORT ANSWERS (Answer any five questions)**

**5x2=10 Marks**

12. Objectives of Medicinal and Toilet Preparations Act.
13. Salient features of Sales Promotion Employees Act.
14. Qualification of drugs inspector.
15. Abbreviated new drug application (ANDA)
16. Prohibited advertisements.
17. Responsibilities of Pharmacy Council of India (PCI).
18. Handling of experimental animals.

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## JSS UNIVERSITY, MYSURU

Third Year B.Pharm (RS1) Examination - April/May 2017

### 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) Write the principle, working and application of freeze drying in pharmacy. (9+6)  
b) Explain the types of corrosion and its control.
2. a) What is size reduction? Explain the mechanisms of size reduction with mills used. (8+7)  
b) Explain the theory of mixing. Add a note on double cone blender.
3. a) Explain the theory of crystallization and principle underlying operation of tank crystallizer. (8+7)  
b) Explain the importance of humidity and airflow pattern in pharmaceutical industry.

**II. SHORT ESSAY (Answer any six questions)**

6x5=30 Marks

4. Explain the mechanism of heat transfer.
5. Classify evaporators. Describe steam jacketed kettle.
6. Explain fractional distillation with example.
7. Explain the construction and working of screw conveyer and write its applications.
8. Describe the construction, working and application of meta filter.
9. Write notes on venturimeter and orifice meter.
10. Write the differences between edge runner mill and end runner mill.
11. Name the size reduction mills. Add a note on hammer mill.

**III. SHORT ANSWERS (Answer any five questions)**

5x2=10 Marks

12. Explain the terms black body and grey body.
13. Define critical moisture content and equilibrium moisture content.
14. Differentiate the mechanisms of attrition and impact in size reduction.
15. Define fine powder as per IP.
16. Write the applications of filtration in pharmacy.
17. What are the pharmaceutical applications of crystallization?
18. Explain the usefulness of humidity chart.

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## JSS UNIVERSITY, MYSURU

Third Year B.Pharm (RS1) Examination - April/May 2017

**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. Classify bacteria on the basis of nutritional requirements. Add a note on raw materials used for preparation of culture media. (4+6)
2. Describe the steps involved in sterility testing. Write a note on its interpretation. (6+4)
3. Explain the types of antigen and antibody reactions. Add a note on their applications. (8+2)

**II. SHORT ESSAY (Answer any six questions)**

**6x5=30 Marks**

4. Describe bacterial growth curve.
5. Write the procedure, merits and demerits of membrane filtration.
6. Write the procedure of Rideal Walker's co-efficient test.
7. Write in detail the production of BCG vaccine.
8. Describe the production of vitamin B<sub>12</sub>.
9. Write a note on structure of plasmid vectors.
10. What is immobilization? Explain the techniques used for immobilization of enzymes.
11. Classify disinfectants with examples.

**III. SHORT ANSWERS (Answer any five questions)**

**5x2=10 Marks**

12. Differentiate between chemostat and turbidostat.
13. What are monoclonal antibodies?
14. Properties of an ideal fermentor.
15. Classify immunity.
16. Differentiate between disinfection and antiseptis.
17. Mention any four gaseous sterilants.
18. Mention pharmaceutical uses of fungi.

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## JSS UNIVERSITY, MYSURU

Third Year B.Pharm (RS1) Examination - April/May 2017

### Subject: Pharmaceutical 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) Define ICH and good manufacturing practice (GMP). Explain the six sigma concept. (8+7)  
b) Explain Q1-Q11 ICH technical documents.
2. a) Explain the plant layout of pharmaceutical sterile area. (7+8)  
b) Explain the process of sanitation, environment and contamination control in sterile dosage form.
3. a) Define returned and recalled goods. Describe the handling of returned and recalled goods (8+7)  
b) How are critical market complaints evaluated?

**II. SHORT ESSAY (Answer any six questions)**

**6x5=30 Marks**

4. Classify plastic containers. Add a note on the quality control tests for plastic container.
5. Explain documentation with respect to quality audits.
6. Explain the process of pharmaceutical waste disposal.
7. What are the regulatory aspects of pharmaceutical products in India?
8. Explain the application of computers in quality assurance laboratory.
9. Explain the National Accreditation Board for Testing and Calibration Laboratories (NABL) certification procedure for drug industry.
10. Explain intellectual property rights.
11. Write a note on purchase specifications for pharmaceutical equipment.

**III. SHORT ANSWERS (Answer any five questions)**

**5x2=10 Marks**

12. Define standard operating procedure (SOP) and quality review.
13. Quality control for closures.
14. Describe good laboratory practices.
15. General agreement on tariffs and trade (GATT) policy.
16. Format and contents of batch formula record.
17. Responsibility of quality control personnel.
18. Environmental control in sterile manufacturing area.

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**JSS UNIVERSITY, MYSURU****Third Year B.Pharm (RS1) Examination - April/May 2017****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 pharmacokinetics. Explain the kinetics of drug given as intravenous (IV) bolus, which follows one compartment model. (2+12)
2. Define excretion of drugs. Explain the processes involved in the urinary excretion of drugs with a diagram. Explain briefly the factors affecting renal excretion of drugs. (2+7+6)
3. Describe the procedure to measure bioavailability of drugs using pharmacokinetic methods.

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

4. Enumerate pharmaceutical factors affecting drug absorption. Explain any two of them.
5. Write a note on kinetics of protein binding of drugs.
6. Explain Latin square cross-over design used in bioequivalence studies.
7. Explain mammillary and catenary model.
8. Explain how the gastric emptying and intestinal transit time affect drug absorption.
9. Write a note on pre-systemic metabolism of drugs.
10. Explain the influence of pharmaceutical ingredients on the absorption of drugs.
11. Factors affecting protein binding of drugs.

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

12. Define absolute and relative bioavailability.
13. Define central and peripheral compartments.
14. Write the concept of loading and maintenance doses in constant rate intravenous infusion.
15. What is biotransformation? Write its importance.
16. Why are bioavailability studies carried on healthy human volunteers?
17. Name the non-renal routes of drug excretion.
18. Define the term clearance.



**JSS UNIVERSITY, MYSURU****Fourth Year B.Pharm (RS1) Examination - April/May 2017****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. a) Classify  $H_1$  receptor antagonists. Write the synthesis of triprolidine hydrochloride. (5+5)  
b) Explain the structure activity relationship (SAR) of  $H_1$  receptor antagonist. (5)
2. Classify anti-neoplastic agents. Explain mechanism of action of alkylating agents. Write any two drugs with synthesis. (2+3+10)
3. Describe the adverse effect of glucocorticoids. Write the synthesis of any two derivatives of oestrogens. (5+10)

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

4. Write the structure and uses of sulpha methoxazole and dapsone.
5. Explain solid phase synthesis.
6. Explain anti-thyroid drugs.
7. Classify anti-tubercular drugs. Write the synthesis of isoniazid.
8. Classify local anti-infective agents. Write the synthesis of halozone.
9. SAR and synthesis of any one azole anti-fungal agent.
10. Outline the structure and synthesis of acyclovir. Write its mechanism of action.
11. Write a note on anticancer antibiotics and their mechanism of action.

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

12. Structure and uses of norfloxacin.
13. Name any two  $\beta$  - lactamase resistant penicillins.
14. Write the alkaloids used in cancer treatment.
15. Applications of combinatorial chemistry.
16. Write the structure of any two antiprotozoal agents.
17. Structure of any two prostaglandins.
18. Write the structure and uses of meperidine hydrochloride.

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**JSS UNIVERSITY, MYSURU****Fourth Year B.Pharm (RS1) Examination - April/May 2017****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 anticancer agents with examples. Explain the mechanisms of action and adverse effects of alkylating agents and antimetabolites. (5+5+5)
2. Explain two therapeutically useful pharmacological actions of glucocorticoids. Explain the mechanism of action, uses and adverse effects of glucocorticoids. (6+3+3+3)
3. Classify the drugs used in the treatment of peptic ulcer. Explain the mechanism of action of proton pump inhibitors and antihistaminics. Mention their uses. (4+8+3)

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

4. Explain the mechanisms of bacterial protein synthesis.
5. With the diagram of the lifecycle of the plasmodium, indicate the sites of action of antimalarial drugs.
6. Mechanism of action of gliclazide.
7. Classify nonsteroidal anti-inflammatory drugs (NSAIDs). Explain the mechanism of action of NSAIDs.
8. Principles of bio-assay.
9. Explain the mechanism involved in T-cell inhibition of cyclosporine.
10. Classify anti-histaminic drugs with examples. What is triple response?
11. General principles of treatment of poisoning.

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

12. Use of British anti-Lewisite (BAL) in arsenic poisoning.
13. Explain why pyridoxine is sometimes administered to a patient receiving isoniazid.
14. Why is chloroquine alone not sufficient for effective radical cure of vivax malaria?
15. Name the enzymes inhibited by ciprofloxacin. Mention one use of ciprofloxacin.
16. Combinations of zidovudine, zalcitabine and indinavir in HIV therapy.
17. What are the disadvantages of systemic antacids?
18. Why is ranitidine preferred to cimetidine in peptic ulcer?

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**JSS UNIVERSITY, MYSURU****Fourth Year B.Pharm (RS1) Examination - April/May 2017****Subject: Formulative and 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 and classify parenteral dosage forms. Describe the additives used in the preparation of parenteral dosage forms. (5+10)
2. Describe the manufacturing and quality control tests for pharmaceutical aerosol.
3. Explain the importance and objectives of stability studies. Add a note on accelerated stability studies. (10+5)

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

4. Chemical properties of drug and their influence on formulation.
5. Write a note on evaluation of tablets.
6. Explain the quality control and stability testing of capsules.
7. Explain microencapsulation by spray drying and spray congealing.
8. Additives used in eye ointment.
9. Explain shampoo preparation and its evaluation.
10. Significance of pilot plant scale-up study.
11. Explain lyophilisation. What are its uses in parenteral preparations?

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

12. Microencapsulation by co-acervation phase separation method.
13. Write a note on base absorption.
14. Explain the climatic zones as per ICH guidelines.
15. Formulation of face powder.
16. Advantages of buccal drug delivery systems.
17. Types of glass and its composition.
18. Film defects and rectification.

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## JSS UNIVERSITY, MYSURU

Fourth Year B.Pharm (RS1) Examination - April/May 2017

### 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. Explain the theory, principles and instrumentation of nuclear magnetic resonance spectroscopy (NMR) spectrometer with a labeled diagram. (5+5+5)
2. Describe the detectors used in gas chromatography technique.
3. Describe the different types of indicator electrodes (metallic and membrane) used in potentiometric analysis.

**II. SHORT ESSAY (Answer any six questions)**

6x5=30 Marks

4. State and explain Beer-Lamberts law. Write its deviations in applicability.
5. Explain the methodology and factors affecting ion-exchange process in ion-exchange chromatography.
6. Explain the steps involved in analytical method development.
7. Explain the fragmentation rules and patterns in mass spectroscopy.
8. Write the calibration procedure for pH meter.
9. Explain the theory and principles of electrophoresis separation.
10. Explain the principles of fluorescence and phosphorescence phenomena with help of Jablonski diagram.
11. Explain the sample handling techniques for solids in infrared (IR) spectroscopy.

**III. SHORT ANSWERS (Answer any five questions)**

5x2=10 Marks

12. Define chromophore and auxochrome.
13. Write examples of quenching agents.
14. What is chemical shift?
15. Write the importance of calibration of instruments in analytical work.
16. Types of electrophoresis techniques.
17. Write the functional group and finger print regions of IR spectrum.
18. Define specific conductance and write its units.

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**JSS UNIVERSITY, MYSURU**  
**Fourth Year B.Pharm (RS1) Examination - April/May 2017**  
**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 Pharmacy and Therapeutic Committee (PTC) with respect to its composition and functions.
2. Explain drug information services, emphasizing the procedure of answering a drug information query and resources for the same.
3. Describe the pathophysiology and pharmacotherapy of diabetes mellitus.

**II. SHORT ESSAY (Answer any six questions)**

**6x5=30 Marks**

4. Define and classify hospitals.
5. Write a note on budget and its components.
6. Explain the methods of record maintenance in a community pharmacy.
7. Describe the phases of clinical trials.
8. Patient medication counseling.
9. Write a note on the pathophysiology of pneumonia.
10. Explain parts of prescribed medication order.
11. Enumerate and explain the daily activities of a clinical pharmacist.

**III. SHORT ANSWERS (Answer any five questions)**

**5x2=10 Marks**

12. Define hospital formulary and list its contents.
13. What is therapeutic drug monitoring? What is its need?
14. Pharmacist intervention.
15. What are the types of epilepsy?
16. Classify hypertension.
17. What is angina pectoris?
18. What is medication non-adherence?

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## JSS UNIVERSITY, MYSURU

Fourth Year B.Pharm (RS1) Examination - April/May 2017

**Subject: Pharmaceutical Marketing 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. Explain the stages of new product development.
2. Describe product life cycle (PLC).
3. Describe the duties and future prospectus of professional sales representatives (PSR).

**II. SHORT ESSAY (Answer any six questions)**

**6x5=30 Marks**

4. Explain the importance and reasons for branding.
5. Advantages and disadvantages of distribution through wholesaler.
6. Explain scope of marketing.
7. What are the socio-psychological characteristics of the consumer?
8. Explain the prescription habits of the physician.
9. Write the importance of communication.
10. Explain the qualitative aspects of pharmaceutical market.
11. Explain the role of retailer in distribution of pharmaceutical services.

**III. SHORT ANSWERS (Answer any five questions)**

**5x2=10 Marks**

12. Define retail pharmacist.
13. Define market segmentation.
14. What are the secondary functions of management?
15. Define patent and trademark.
16. Define pharmaceutical market.
17. What is product development?
18. What is medical exhibition?

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**JSS UNIVERSITY, MYSURU****Final Year B.Pharm Examination - April/May 2017****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 urinary tract anti-infectives? Write examples. Write the synthesis of nalidixic acid and nitrofurantoin. (2+5+8)
2. Define and classify antimalarial agents with examples. Outline the synthesis of chloroquine and amodiaquine. (2+5+8)
3. Classify antineoplastic agents. Write a note on alkylating agent. Outline the synthesis of mechlorethamine. (4+6+5)

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

4. Define and classify antifungal agents. Write synthesis of miconazole.
5. What is quantitative structure–activity relationship (QSAR)? Write important parameters for drug designing.
6. Write a note on cephalosporins.
7. Write structure and uses of benzalkonium chloride, isopropyl alcohol, sodium benzoate and benzoyl peroxide.
8. Write a note on antifungal antibiotics.
9. Explain the structure activity relation (SAR) of penicillins.
10. What are antiviral agents? Explain types of viruses.
11. Write a note on prodrug.

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

12. What are anti-protozoal agents? Write structure of any two agents.
13. Write structure and uses of fluorouracil and mercaptopurine
14. Write structures of two anti-tubercular agents.
15. Write the structure and uses of benzyl benzoate and dimercaprol.
16. Write the structure and uses of erythromycin
17. Outline the synthesis of isoniazid (INH).
18. Write two examples of phenolic local anti-infective agents.

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**JSS UNIVERSITY, MYSURU****Final Year B.Pharm Examination - April/May 2017****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. Technology involved in the manufacture of the soft gelatin capsules. Add a note on the quality control tests for soft gelatin capsules. (8+7)
2. Write the methods of preparation of sterile powders. Explain the principle, and method involved in lyophilization technique for parenteral products. (4+4+7)
3. Explain the determination of shelf-life of a product by accelerated stability testing. Write a note on zero order kinetics. (10+5)

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

4. Influence of chemical properties of drugs on formulation.
5. Write a note on film coating.
6. Explain the filling process of hard gelatin capsules.
7. State the requirements of ophthalmic formulations.
8. Write a note on buccal patches.
9. Write a note on co-acervation and phase separation method of preparation of microspheres.
10. Explain the importance of preformulation studies. Add a note on the parameters to be considered in preformulation.
11. Write the formulation and preparation of shampoos.

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

12. Write a note on picking and sticking.
13. What is the importance of photo-stability testing?
14. What are pulsatile release pharmaceuticals?
15. Tests to determine pyrogens.
16. Propellants used in aerosols.
17. Mention the advantages of microencapsulation.
18. Why is plastic widely used in packaging of pharmaceuticals?

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**JSS UNIVERSITY, MYSURU****Final Year B.Pharm Examination - April/May 2017****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 importance and steps involved in patient counseling in pharmaceutical area. (5+10)
2. Describe pharmacokinetic and pharmacodynamic drug interactions with suitable examples. (8+7)
3. What are the drug distribution systems in a hospital pharmacy? Describe the dispensing and distribution system in a hospital pharmacy for in- patients. (5+10)

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

4. Write a note on over-the-counter (OTC) drugs.
5. Classify hospital based on clinical and non-clinical basis.
6. Define economic order quantity (EOQ) and its importance.
7. Note on pharmacovigilance.
8. What are the constraints in the development of clinical pharmacy?
9. What are the factors contributing to medication errors?
10. Development of protocols for rational use of drugs.
11. Good storage practices in a hospital pharmacy.

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

12. Define pharmaceutical care.
13. What is meant by satellite pharmacy? Write its importance.
14. Role of community pharmacist in smoking cessation.
15. Differentiate hospital pharmacy and community pharmacy.
16. What are controlled substances?
17. What are the objectives and principles of inventory control?
18. Define adverse drug reactions.

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