September - 2009

[KV 806]   **Sub. Code: 3806**

DOCTOR OF PHARMACY (PHARM. D) DEGREE EXAMINATION
(Regulations 2008 - 2009)
(Candidates admitted from 2008-2009 onwards)
FIRST YEAR
Paper VI – REMEDIAL MATHEMATICS
Q.P. Code : 383806

Time : Three hours   **Maximum : 70 marks**
Answer All questions

I. Essay Questions :   **(2X 20 = 40)**

1. a) Define matrix,

Given A= $\begin{pmatrix} 1 & 2 \\ 2 & 1 \end{pmatrix}$ B= $\begin{pmatrix} 2 & 1 \\ 2 & 4 \end{pmatrix}$ C= $\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$

   b) Define Lelbnitz's linear differential equation and solve

$$X \log X \frac{DY}{DX} + Y = 2 \log X$$

DX   X+Y-2

2. Find the differential coefficients of the following function.

a) $\dfrac{X + \operatorname{Sin} X}{X + \operatorname{Cos} X}$ b) $\operatorname{Sin}^m ax \cos^n \beta x$

II. Write Short Notes :   **(6 X 5 = 30)**

1. Define column matrix, determinants and multiplication of two matrices.

2. Find the equation of two straight lines through (1-1) inclined at 45º at the line
    2X-5X+7=0

3. Differentiate the function 6X-4Y=12, to obtain DY/DX.

4. $\displaystyle L+ \dfrac{}{X \to 1} \quad \dfrac{5X^2-4}{3X^2+1}$

5. What is fundamental formulae of integration and evaluate the integral

$$\int_a^b \frac{Logx}{X} \, dx = ?$$

6. Draw graph of function Y= ax² + bx + c, where a, b and c are costants and a≠o.

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DOCTOR OF PHARMACY (PHARM. D) DEGREE EXAMINATION
(Regulations 2008 - 2009)

(Candidates admitted from 2008-2009 onwards)
FIRST YEAR

Paper VI – REMEDIAL MATHEMATICS
Q.P. Code : 383806

Time : Three hours   Maximum : 70 marks
Answer All questions

I. Essay Questions :   **(2X 20 = 40)**

1. a) Define matrix,

$$A= \begin{pmatrix} 2 & 5 & 9 \\ 6 & 1 & 3 \\ -2 & 2 & -3 \end{pmatrix} \quad B= \begin{pmatrix} -2 & -2 & -4 \\ 0 & 4 & 6 \\ 1 & 3 & 5 \end{pmatrix}$$

   b) Show that

$$\begin{pmatrix} a+b & b+c & c+a \\ b+c & c+a & a+b \\ c+a & a+b & b+c \end{pmatrix} = 2\begin{pmatrix} a & b & c \\ b & c & a \\ c & a & b \end{pmatrix}$$

2. a) If $x^2y +xy^2 =25$ verify

$$\frac{dy}{dx} \quad \frac{dx}{dy} = 1.$$

   b) If $y=x^2+x\log x$, prove that, $dy/dx =x^2$ $(1+\log x)$ $x^{\log x-1}2(\log x)$.

II. Write Short Notes :   **(6 X 5 = 30)**

1. Give the methods for evaluation of limits.

2. Define and explain about scalar matrix.

3. Find dy/dx of the function : $x^2+5x^2y+yx=5$.

4. Draw graph of function $Y=2x^2$.

5. Define lablace trans form and solve $\sin^2 (at)^3$.

6. $L+ \quad \dfrac{x^2+5x+6}{x+2}$ solve.
   $x \to 2$

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DOCTOR OF PHARMACY (PHARM. D) DEGREE EXAMINATION
(Regulations 2008 - 2009)

(Candidates admitted from 2008-2009 onwards)
FIRST YEAR

Paper VI – REMEDICAL MATHEMATICS

Q.P. Code : 383806

Time : Three hours   **Maximum : 70 marks**

Answer All questions

I. Essay Questions :   **(2X 20 = 40)**

1. (a) For the Square Matrix A = $\begin{pmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{pmatrix}$

   Prove that A (adj A) = |A| I.

   (b) If A = $\begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$.   Show that A^2-FA-2I=0

2. (a) Find the equation of the circle passing through the points (1, 1), (2, -1) & (3, 2).
   (b) If x=acosθ+bsinvθ and y=asinθ-bcosθ. Prove that $x^2+y^2 = a^2+b^2$.

II. Write Short Notes :   **(6 X 5 = 30)**

1. Find the ad joint of $\begin{pmatrix} 3 & 1 & 2 \\ 2 & 2 & 5 \\ 4 & 1 & 0 \end{pmatrix}$

2. Find the equation of the parabola whole focus if (1, 2) and directive is x+y-2=0.
3. Integrate x^2e^2xdx.
4. Verify the Euler's theorem.
   if u=$x^3+y^3+3x^2y+3xy^2$.
5. Solve $(D^2-6D+a)y=e^{3x}$.
6. Find the area of the triangle whole vertices are (4, 7), (2,-3) and (-1, 3).

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[KY 806]   **Sub. Code: 3806**

DOCTOR OF PHARMACY (PHARM. D) DEGREE EXAMINATION

(Regulations 2008 - 2009)

(Candidates admitted from 2008-2009 onwards)

FIRST YEAR

PAPER VI – REMEDICAL MATHEMATICS

Q.P. Code : 383806

Time : Three hours   **Maximum : 70 marks**

Answer All questions

I. Essay Questions :   **(2X 20 = 40)**

1.a. Find the Inverse of
$$\begin{vmatrix} 1 & -1 & 2 \\ -3 & 0 & 4 \\ 1 & 2 & 5 \end{vmatrix}$$

b. If $A = \begin{vmatrix} 1 & 0 & -2 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{vmatrix}$, $B = \begin{vmatrix} 3 & 1 & 0 \\ -2 & 0 & 3 \\ 2 & 0 & 1 \end{vmatrix}$

Find (i) AB- BA   (ii) (A+B) (A-B)

2.a. Integrate $\dfrac{3x+1}{(x-1)^2(x+3)}$ dx

b. If $\cos\alpha = -12/13$ and $\cos\beta = 24/7$, where α lies in the second quadrant and β lies in fourth quadrant, find the values of

(i) $\sin(\alpha+\beta)$

(ii) $\cos(\alpha+\beta)$

(iii) $\tan(\alpha+\beta)$

(PTO)

II. Write Short Notes :

1. Define Square matrix and Diagonal matrix with examples.

2. Differentiate: $\dfrac{(x+3)(x-2)}{(x-1)(x-3)}$

3. Integrate $\displaystyle\int_{1}^{2} (x^2+3x+1)dx$

4. Prove that,
   $\tan 13A - \tan 9A - \tan 4A = (\tan 13A \, \tan 9A \, \tan 4A)$

5. Using Euler's theorem, if $u = \log(\tan x + \tan y + \tan z)$, prove that $\sum \sin 2x \, (\partial u/\partial x) = 2$

6. Find the area of the triangle whose vertices are:
   i) (3,8), (-4,2), and (5,-1)

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[KY 806]

October 2011

DOCTOR OF PHARMACY (PHARM. D) DEGREE EXAMINATION
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS
Q.P. Code : 383806

Time : 3 hours   **Maximum : 100 marks**
(180 Min)

Answer ALL questions in the same order.

I. Elaborate on :

	Pages (Max.)	Time (Max.)	Marks (Max.)
1. Find the inverse of $\begin{vmatrix} 1 & -1 & 2 \\ -3 & 0 & 4 \\ 1 & 2 & 5 \end{vmatrix}$	17	40	20
2. Solve the differential equation $(D^2 - 4D + 4)\, y = 8\,(x^2 + e^{2x} + \sin 2x)$	17	40	20

II. Write notes on:

	Pages	Time	Marks
1. If $A = \begin{vmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{vmatrix}$ Show that $A^2 = A$.	4	10	6
2. Define i) Square matrix, (ii) Diagonal matrix, (iii) Transpose matrix.	4	10	6
3. Prove that $\tan 13A - \tan 9A - \tan 4A = \tan 13A\ \tan 9A\ \tan 4A$	4	10	6
4. Find the distance between the points, $(a\cos\alpha,\ a\sin\alpha)$ and $(a\cos\beta,\ a\sin\beta)$	4	10	6
5. Differentiate : $\dfrac{(x+3)(x-2)}{(x-1)(x-3)}$	4	10	6
6. Integrate: $\int \log x\ dx$	4	10	6
7. Solve: $(D^2 + D + 1)\,y = 0$	4	10	6
8. Find laplace transform $F(t) = e^{2t} + 4t^3 - 2\sin 3t + 3\cos 2t$	4	10	6
9. Evaluate : $\int^2 (x^2 + 3x + 1)\,dx$	4	10	6
10. Solve $(D^2 + 6D + 9)\,y = 0$	4	10	6

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DOCTOR OF PHARMACY (PHARM. D) DEGREE EXAMINATION
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS
Q.P. Code : 383806

Time : 3 hours   **Maximum : 100 marks**
(180 Min)

Answer ALL questions in the same order.

I. Elaborate on :

	Pages (Max.)	Time (Max.)	Marks (Max.)
1. Integrate $\int \dfrac{dx}{x^2+5x+6}$	17	40	20
2. If $A = \begin{vmatrix} 2 & -1 \\ 4 & 3 \end{vmatrix}$ find $A^3 - 3A + 2A - 4I$	17	40	20

II. Write notes on:

1. Find the value of a, b, c, d, e that satisfy the matrix relationship $\begin{vmatrix} a-1 & b+3 & 3 \\ 2 & 5 & e+2 \end{vmatrix} = \begin{vmatrix} c-2 & -5 & 3 \\ d+4 & -3+c & 2 \end{vmatrix}$	4	10	6
2. Find the inverse of $\begin{vmatrix} 3 & -1 \\ -4 & 2 \end{vmatrix}$	4	10	6
3. Prove that: $\cos 20° \cos 40° \cos 80° = 1/8$	4	10	6
4. Find the area of triangle $(3,8), (-4,2),$ and $(5, -1)$	4	10	6
5. Find the equation of the line through the points $(-1, -2)$ and $(-5, 2)$	4	10	6
6. Differentiate $\sin^2(3x+ 4)$	4	10	6
7. Differentiate $\{ax^3+bx^2 +cx+d\}$	4	10	6
8. Evaluate $\int_0 \{x^2 - 3x^{2/3} + (1/x^2)\}\, dx$	4	10	6
9. Solve : $(D^2+ 4D +13) y = \cos 3x$	4	10	6
10. Find the laplace transforms : $e^{-3t}(2 \cos 5t – 3 \sin 5t)$	4	10	6

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PHARM. D DEGREE EXAMS
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS
Q.P. Code : 383806

Time : 3 hours　　　　　　　　　　　　　　　　**Maximum : 100 marks**
　　(180 Min)

Answer ALL questions in the same order.

I. Elaborate on :　　　　　　　　　　　　　　　**Pages　Time　Marks**
　　　　　　　　　　　　　　　　　　　　　　　　(Max.)(Max.)(Max.)

1. If the matrix A is given by $A = \begin{matrix} 1 & 1 & 1 \\ 2 & -1 & 3 \\ 3 & 2 & -1 \end{matrix}$

   Obtain a matrix B such that AB = BA = I. [Hint: B=A⁻¹].　　17　　40　　20

2. Solve $\dfrac{dy}{dx}$ + y cot x = Cosec x.　　　　　　　　17　　40　　20

II. Write short notes on

1. Find the value of $\begin{vmatrix} i & 0 & 0 \\ 0 & i & 0 \\ 0 & 0 & i \end{vmatrix}^{2}$　　　　　　4　　10　　6

2. Find the inverse of $\begin{pmatrix} a & b \\ c & d \end{pmatrix}$　　　　　　4　　10　　6

3. Find the equation of a straight line passing through the
   Points (3,6) and (-2,5).　　　　　　　　　4　　10　　6

4. Prove that $\cos^{2}\theta + \dfrac{1}{1+\cot^{2}\theta} = 1.$　　　　4　　10　　6

5. Differentiate with respect to x　$(x^{3} + x^{2} +3)/ x^{2}.$　4　　10　　6

6. Evaluate $\int (x + 1/x)^{2}$ dx.　　　　　　　　4　　10　　6

7. $\int_{0}^{5}(50q - 4q^{2})dq.$　　　　　　　　　4　　10　　6

8. L [$4t^{2} - e^{-2t} - \cos 2t$].　　　　　　　4　　10　　6

9. Evaluate $\dfrac{dy}{dx} = \dfrac{1+y^{2}}{1+x^{2}}.$　　　　　4　　10　　6

10. Solve $d^{2}y/dx^{2} - 9y = e^{3x}.$　　　　　4　　10　　6

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PHARM. D DEGREE EXAMS
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS
Q.P. Code : 383806

Time : 3 hours   **Maximum : 100 marks**

I. Elaborate on :   **(2x20=40)**

1. If $A = \begin{vmatrix} -1 & 4 \\ 2 & -3 \end{vmatrix}$ $B = \begin{vmatrix} -4 & 1 \\ 0 & 3 \end{vmatrix}$

Verify that $(A+B)^t = A^t + B^t$

2. Let $P(at^2, 2at)$ and $Q(a/t^2, -2a/t)$ and $S(a,0)$ be any three points, show that

$$\left\{ \frac{1}{SP} + \frac{1}{SQ} \right\}$$ Is same for all values of t.

II. Write notes on :   **(10x6=60)**

1. Find the Determinants $A = \begin{vmatrix} -1 & 2 & 3 \\ 0 & 1 & 2 \\ -2 & 3 & 0 \end{vmatrix}$

2. Show that $(0, -1)$, $(2,1)$, $(0,3)$ and $(-2,1)$ are the vertices of a square.

3. Find the value of $\left\{ \dfrac{\sin(\alpha+\beta)}{\sin(\alpha+\beta)} \right\}$,given that $\tan\alpha = 2\tan\beta$

4. Evaluate : i) $\sin 78° \cos 18° - \cos 78° \sin 18°$

   (ii) $\cos 48° \cos 12° - \sin 48° \sin 12°$

5. Differentiate $(\log x)^x$ using logarithmic differentiation.

6. Differentiate $Y = (x+1)(2x+3)$

7. Integrate $x\, e^x\, dx$

8. Solve: $\sin x \cos y\, dy + \cos x \sin y\, dx = 0$

9. Find laplace transform: $\sin\alpha t \cos\beta t$.

10. Solve $(D^2 - 13D + 12)y = e^{-2x}$

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PHARM. D DEGREE EXAMS
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS
Q.P. Code : 383806

Time : 3 hours   **Maximum : 70 marks**

I. Elaborate on :   (2x20=40)

1. Prove that $\begin{vmatrix} 1/a^2 & bc & b+c \\ 1/b^2 & ca & c+a \\ 1/c^2 & ab & a+b \end{vmatrix} = 0$.

2. Solve: $\dfrac{d^2y}{dx^2} + a^2y = \sec a\, x$.

II. Write notes on :   (10x3=30)

1. If $A = \begin{vmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{vmatrix}$ and $B = \begin{vmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{vmatrix}$

   Then show that $|AB| = |A|\ |B|$

2. Find the angle between the straight lines $3x – 2y + 9 = 0$ and $2x + y – 9 = 0$.
3. Find the equation of the circle passing through the points (0,1),(2,3) and (-2,5).
4. Integrate:

$$\int \frac{dz}{z \log z}$$

5. Prove that $\cos^4A - \sin^4A = 1 – 2\sin^2A$.
6. Evaluate:

$$\int_0^1 x\, e^x\, dx$$

7. Write any two properties of definite integral?
8. Find the Laplace transform $F(t) = \sin^2 3t$.
9. Solve: $(D^2 + 4)\, y = x \sin x$.
10. Find the general solution of $y = xp + \alpha/c$.

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PHARM. D DEGREE EXAMS
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS
Q.P. Code : 383806

Time : 3 hours   **Maximum : 70 marks**

I. Elaborate on :   **(2x20=40)**

1. 1. If $A = \begin{vmatrix} 5 & 2 \\ 7 & 3 \end{vmatrix}$ and $B = \begin{vmatrix} 2 & -1 \\ -1 & 1 \end{vmatrix}$ then prove that $(AB)^T = B^T.A^T$.

2. If $u = \sin^{-1}\left[\dfrac{x+y}{\sqrt{x}+\sqrt{y}}\right]$. Using Euler's theorem, show that $x.\dfrac{\partial u}{\partial x} + y.\dfrac{\partial u}{\partial y} = \dfrac{1}{2}\tan u$.

II. Write notes on :   **(10x3=30)**

1. Find the determinant, $A = \begin{matrix} 2 & 5 & 1 \\ 1 & 4 & 1 \\ 1 & 1 & 2 \end{matrix}$

2. Show that the straight lines $2x + y - 9 = 0$ and $2x + y - 10 = 0$ are parallel?

3. Show that $\cos^4 A - \sin^4 A = 1 - 2\sin^2 A$.

4. Evaluate: (i) $\cos 45°\cos 60° - \sin 45°\sin 60°$.

    (ii) $\cos 48°\cos 12° - \sin 48°\sin 12°$.

5. Find the derivative of $x^{\sin x}$ by using logarithmic differentiation?

6. Find dy/dx if $y = x^3 - 6x^2 + 7x + 6$.

7. Integrate: $x\, e^x\, dx$.

8. Solve $dy/dx = 1 + x + y + xy$.

9. Find the Laplace transform for e^{3t+5}.

10. Solve: $(D^2 + 7D + 12)\, y = e^{2x}$.

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PHARM. D DEGREE EXAMINATION
(2009-2010 Regulation)
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS

Q.P. Code : 383806

Time : Three hours   **Maximum : 70 marks**

I. Elaborate on :   **(4 x 10 = 40)**

1. Find the Inverse of a Matrix $\begin{bmatrix} 1 & -2 & 3 \\ 0 & -1 & 4 \\ -2 & 2 & 1 \end{bmatrix}$

2. a) Evaluate $\int \dfrac{dx}{(x-1)(x-2)}$ by partial fractions

   b) Evaluate $\int x^2 e^x dx$

3. If $\sin A = \dfrac{3}{5}$ $\cos B = \dfrac{12}{13}$. Find i. sin (A + B),   ii. Cos (A - B)

4. Find the equation of the circle passing through the points (1, 1), (2 , -1) and (3, 2)

II. Write notes on :   **(6 x 5 = 30)**

1. $\displaystyle\int_{1}^{3} (x^2+3x-18)\, dx$

2. Differentiate $x^2 e^x$

3. Find the angle between the lines 2x + y -7 = 0 and x -2 y + 4 = 0

4. Find the area of the triangle whose vertices are (4, 7), (2,-3) and (-1,3)

5. If $A = \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$ Find A^2 - 6A – 2I

6. (D^2+5D+6) y = e^{2x}

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PHARM. D DEGREE EXAMINATION
(2009-2010 Regulation)
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS

Q.P. Code : 383806

Time : Three hours   **Maximum : 70 marks**

I. Elaborate on :   **(4 x 10 = 40)**

1. Solve by Cramer's rule

   $x + 2y - z = -3$, $3x + y + z = 4$, $x - y + 2z = 6$

2. a) Find $\frac{dy}{dx}$, if $x = a \cos^3 t$, $y = b \sin^3 t$

   b) $y = x.\cos x$ Prove that $x^2 y_2 - 2xy_{1+}(x^2+2)y = 0$

3. Find the equation of the circle passing through the points (5,3), (2,4), (-3,-1)

4. a) $\frac{dy}{dx} - \frac{3}{x}y = x^3 e^{2x}$

   b) $\int_0^{\pi/2} \frac{\sin^2 x}{1+\cos x} dx$

II. Write notes on :   **(6 x 5 = 30)**

1. Find the angle between the lines $2x+y-7 = 0$ and $x-2y+4 = 0$

2. Evaluate $\int \frac{2x-3}{x^2+3x-18} dx$

3. Solve $\tan x \sec^2 y dy + \tan y \sec^2 x dx = 0$

4. $A = \begin{bmatrix} 1 & 2 \\ 1 & 1 \end{bmatrix}$ $B = \begin{bmatrix} 0 & -1 \\ 1 & 2 \end{bmatrix}$ Find AB and BA.

5. Find the Laplace Transform of $t^2 + 3t + 5$

6. Find the area of the triangle whose vertices are (2,3), (4,-5), and (-1,3)

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PHARM. D DEGREE EXAMINATION
(2009-2010 Regulation)
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS

Q.P. Code: 383806

Time : Three hours   **Maximum : 70 marks**

I. Elaborate on :   **(4 x 10 = 40)**

1. If A = $\begin{vmatrix} 1 & -2 \\ 3 & -4 \end{vmatrix}$ then compute $A^2 – 5A + 3I$.

2. If sin A=1/3, cos B= -3/4 and A and B are second quadrant. Find (i) sin (A-B) and (ii) cos (A-B).

3. Evaluate:

$$\int \frac{dx}{x^2 + 3x + 2}$$

4. Find the equation of the line which passes through the point of intersection of the two lines 2x+y=8 and 3x-2y+7=0 and is parallel to the line 4x+y-11=0.

II. Write notes on :   **(6 x 5 = 30)**

1. Find the determinant, A = $\begin{vmatrix} 3 & 1 & 2 \\ 4 & 8 & 5 \\ -1 & 0 & -3 \end{vmatrix}$

2. Integrate: $x \sin (x^2) \, dx$.

3. If $y = -6x^2 + 7x + 6$. Find $\dfrac{d^2y}{dx^2}$.

4. Show that $\tan x + \cot x = \sec x \cdot \operatorname{cosec} x$

5. Solve: $(16D^2 – 24D + 9)y = 0$

6. Prove: $\cos^4 A - \sin^4 A = 2\cos^2 A – 1$.

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PHARM. D DEGREE EXAMINATION
(2009-2010 Regulation)
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS
Q.P. Code: 383806

Time : Three hours   **Maximum : 70 Marks**

I. Elaborate on :   **(4 x 10 = 40)**

1. Find the Inverse of $\begin{bmatrix} 3 & 1 & -1 \\ 2 & -2 & 0 \\ 1 & 2 & -1 \end{bmatrix}$

2. Solve: $\dfrac{dy}{dx} + y \cot x = 2 \cos x$.

3. a) $y = x^2 \sin x$.   Prove that $x^2 y_2 - 4x y_1 + (x^2 + 6) y = 0$

   b) Differentiate. $x^2 \log x \sin x$.

4. a) If $\tan A = \dfrac{5}{6}$ and $\tan B = \dfrac{1}{11}$. Show that $(A + B) = \dfrac{\pi}{4}$

   b) Elaborate. $\int x \cos x \, dx$

II. Write notes on :   **(6 x 5 = 30)**

1. If $A = \begin{bmatrix} 0 & 2 \\ 1 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & -2 \\ 4 & -1 \end{bmatrix}$ Find AB and BA.

2. Evaluate. $\int x e^x \, dx$.

3. Differentiate. $x^3 e^x \log x$.

4. Find the Laplace Transform $t^2 + 3t + 5$.

5. Find the equation of the line passing through the point (-1, -2) and (-5, 2).

6. Solve. $(D^2 - 9D + 20) y = 0$

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PHARM. D DEGREE EXAMINATION
(2009-2010 Regulation)
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS

Q.P. Code: 383806

Time : Three hours   **Maximum : 70 Marks**

I. Elaborate on: **(4 x 10 = 40)**

1. Solve. $2x + y + z = 5$, $x + y + z = 4$, $x - y + 2z = 1$.

2. If $\cos A = \dfrac{-12}{13}$ and $\cos B = \dfrac{24}{7}$.   Find $\sin (A+B)$ and $\cos (A+B)$.

3. Solve. $\dfrac{dy}{dx} + y \cot x = e^x \csc x$.

4. a) Solve. $\dfrac{dy}{dx} = \dfrac{2x}{y}$

   b) Differentiate. $x^2 e^x$.

II. Write notes on: **(6 x 5 = 30)**

1. If $A = \begin{vmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{vmatrix}$ Prove that $A^2 - 4A - 5I = 0$.

2. Integrate. $\int x \log x \, dx$.

3. Differentiate: $x^2 \sin x \log x$.

4. Solve. $(D^2 - 4D + 3) y = 0$

5. Find the equation of the line passing through the points $(-1, -2)$ and $(-5, 2)$.

6. Integrate. $\int_o^{\frac{\pi}{2}} \dfrac{\cos^2 x}{1 + \sin x} \, dx$.

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PHARM. D DEGREE EXAMINATION
(2009-2010 Regulation)
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS

Q.P. Code : 383806

Time : Three hours   **Maximum : 70 Marks**

I. Elaborate on: **(4 x 10 = 40)**

1. Using cramers rule solve.
   $2x - y + 3z = 9,\ x + y + z = 6,\ x - y + z = 2$

2. a) Solve. $(D^2 - 5D + 6)\,y = e^{4x}$

   b) Solve. $\dfrac{dy}{dx} = \dfrac{1 + \cos x}{1 + \cos y}$

3. a) Integrate. $\displaystyle\int_0^{\frac{\pi}{2}} \sin^2 x\ dx.$

   b) Evaluate. $\displaystyle\int \dfrac{\cos^2 x}{1 - \sin x}\ dx.$

4. If $\cos A = \dfrac{4}{5}$ and $\sin B = \dfrac{5}{13}$. Find $\sin(A+B)$ and $\cos(A-B)$

II. Write notes on: **(6 x 5 = 30)**

1. If $A = \begin{bmatrix} 2 & 1 \\ 3 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -1 \\ -3 & -4 \end{bmatrix}$ Verify $(AB)^T = B^T A^T$.

2. Solve. $\dfrac{dy}{dx} + y \sin x = 0$

3. If $x = at^2$ and $y = 2\,at$. Find $\dfrac{dy}{dx}$.

4. Evaluate. $\displaystyle\int_1^2 (x^2 + 5x + 6)\,dx.$

5. Differentiate. $\dfrac{1 - \sin x}{1 + \sin x}$.

6. Find the area of the triangle $(1, -2)\ (2, 3)$ and $(-4, 5)$

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PHARM. D DEGREE EXAMINATION
(2009-2010 Regulation)
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS

Time : Three hours   **Maximum : 70 Marks**

I. Elaborate on: (4 x 10 = 40)

1. If A= $\begin{bmatrix} 3 & 1 & 2 \\ 4 & 9 & 8 \\ 2 & 5 & 6 \end{bmatrix}$ and B= $\begin{bmatrix} 9 & 2 & 5 \\ 0 & 3 & -1 \\ 4 & -6 & 2 \end{bmatrix}$
Find (i) AB   (ii) BA   (iii) 3(A+B) and   (iv) 3A+3B.

2. If A and B be acute angle with cos A=5/13 and sin B=3/5. Find sin (A+B), sin (A-B), cos (A+B) and cos (A-B).

3. Evaluate: $\int x.\sin 2x.dx$.

4. Find the equation of the straight line which passes through the point of intersection of the two lines 5x-6y-1= 0 and 3x+2y+5 = 0 and is perpendicular to the line 3x-5y+11= 0.

II. Write notes on: (6 x 5 = 30)

1. Add the Matrix:
$\begin{bmatrix} 2 & 4 \\ 3 & 1 \\ 4 & 5 \end{bmatrix}$ $\begin{bmatrix} 3 & 2 \\ 1 & 1 \\ 5 & 3 \end{bmatrix}$ and $\begin{bmatrix} 1 & 3 \\ 2 & 3 \\ 4 & 6 \end{bmatrix}$

2. Integrate: $e^{\cos x} . \sin x . dx$

3. Find: $\dfrac{dy}{dx} = \dfrac{3x^2 + 4x - 4}{2y - 4}$

4. Evaluate: $\dfrac{5 \sin^2 30 + \cos^2 45 + 4 \tan^2 60}{2 \sin 30 . \cos^2 45 + \tan 45}$

5. Solve: $\dfrac{d^2y}{dx^2} + 4 \dfrac{dy}{dx} + 4y = 2 e^{-3x}$.

6. Prove that $\cos^4 A - \sin^4 A = 2\cos^2 A - 1$.

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[LM 806]   **MAY 2018**   Sub. Code: 3806

PHARM. D DEGREE EXAMINATION
(2009-2010 Regulation)
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS
Q.P. Code: 383806

Time : Three hours   **Maximum : 70 Marks**

I. Elaborate on: **(4 x 10 = 40)**

1. If A= $\begin{pmatrix} 1 & 2 & 2 \\ 2 & 2 & 2 \\ 2 & 2 & 1 \end{pmatrix}$ then prove that $A^2 - 4A - 5I = 0$

2. Find the equation of circle passing through the points (0, 1), (2, 3) and having the center on the line $x - 2y + 3 = 0$.

3. Prove that: $\tan 3A - \tan 2A - \tan A = \tan A \tan 2A \tan 3A$.

4. Evaluate: $\int x\cos 2x \, dx$.

II. Write notes on: **(6 x 5 = 30)**

1. Solve for x if $\begin{vmatrix} x & 5 \\ 7 & x \end{vmatrix} + \begin{vmatrix} 1 & -2 \\ -1 & 1 \end{vmatrix} = 0$.

2. Find $\frac{dy}{dx}$ if $xy = c^2$.

3. Prove that : $\sec^2 A + \csc^2 A = \sec^2 A.\csc^2 A$.

4. Solve : $(D^2 + 7D + 12)y = e^{2x}$.

5. Determine the equation of straight line passing through $(-1, 2)$ and having slope $\frac{2}{7}$.

6. Find $L(t^3 + t^2 - 3t + 7)$.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[LO 806]   **MAY 2019**   **Sub. Code: 3806**

PHARM. D DEGREE EXAMINATION
(2009-2010 Regulation)
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS

Q.P. Code : 383806

Time : Three hours   **Maximum : 70 Marks**

I. Elaborate on: **(4 x 10 = 40)**

1. Find A^{-1}, if $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & -1 \\ 1 & -1 & 0 \end{bmatrix}$

2. If $\cos\alpha = \dfrac{12}{13}$ and $\cos\beta = \dfrac{24}{7}$ where α lies in the second quadrant and β lies in the fourth quadrant. Find the values of: (i) $\cos(\alpha + \beta)$ (ii) $\sin(\alpha + \beta)$ (iii) (i) $\tan(\alpha + \beta)$.

3. Let $P\left[at^2, 2at\right]$, $Q\left[\dfrac{a}{t^2}, \dfrac{-2a}{t}\right]$ and $S[a, 0]$ be any three points, show that $\left[\dfrac{1}{SP} + \dfrac{1}{SQ}\right]$ is same all values of t.

4. Integrate $\displaystyle\int \frac{dx}{x^2 + 5x + 6}$.

II. Write notes on: **(6 x 5 = 30)**

1. If $A = \begin{bmatrix} 3 & 8 & 11 \\ 6 & -3 & 8 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -6 & 15 \\ 3 & 8 & 17 \end{bmatrix}$ then find 7A+5B.

2. Prove that $\tan^2\theta - \sin^2\theta = \tan^2\theta\,\sin^2\theta$.

3. Prove that (1, 2) (1, 5) and (4, 2) are the vertices of a right angled isosceles triangle.

4. Evaluate $\displaystyle\int x^3\,e^x\,dx$.

5. Differentiate: (i) $2x^2 + 3x^{-3} + 5e^x$ (ii) $3^x - \cot x + 2$.

6. Solve the differential equation $e^{x-y}dx + e^{y-x}dy = 0$.

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