

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,

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

b) Define Leibnitz's linear differential equation and solve

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

DX

$$DX \quad X+Y-2$$

2. Find the differential coefficients of the following function.

a) $X + \sin X$

b) $\sin^m ax \cos^n \beta x$

 $X + \cos X$

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 45° at the line
 $2X-5Y+7=0$

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

4. $L + \frac{5X^2-4}{X \rightarrow 1} \quad \frac{3X^2+1}{3X^2+1}$

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

$$\int_a^b \frac{\log x}{X} dx = ?$$

6. Draw graph of function $Y = ax^2 + bx + c$, where a, b and c are constants and $a \neq 0$.

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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

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

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. $L+ \frac{x^2+5x+6}{x-2} - \frac{\quad}{x+2}$ solve.

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

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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 $A (\text{adj } A) = |A| I$.

(b) If $A = \begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$. Show that $A^2 - 7A - 2I = 0$

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

(b) If $x = a \cos \theta + b \sin \theta$ and $y = a \sin \theta - b \cos \theta$. 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 whose focus is (1, 2) and directrix is $x + y - 2 = 0$.

3. Integrate $x^2 e^x dx$.

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 whose vertices are (4, 7), (2, -3) and (-1, 3).

May 2011

[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 $\frac{3x+1}{(x-1)^2(x+3)} dx$

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 :

(6 X 5 = 30)

1. Define Square matrix and Diagonal matrix with examples.

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

3. Integrate $\int_1^2 (x^2+3x+1)dx$

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)

October 2011

[KZ 806]

Sub. Code: 3806

DOCTOR OF PHARMACY (PHARM. D) DEGREE EXAMINATION

FIRST YEAR

PAPER VI – REMEDIAL MATHEMATICS

Q.P. Code : 383806

Time : 3 hours
(180 Min)

Maximum : 100 marks

Answer ALL questions in the same order.

I. Elaborate on :

Pages Time Marks
(Max.) (Max.) (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:

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

4 10 6

Show that $A^2 = A$.

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,

$(\cos \alpha, \sin \alpha)$ and $(\cos \beta, \sin \beta)$

4 10 6

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

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

4 10 6

$F(t) = e^{2t} + 4t^3 - 2\sin 3t + 3\cos 2t$

9. Evaluate : $\int_1^2 (x^2 + 3x + 1) dx$

4 10 6

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

4 10 6

[LA 806]

APRIL 2012

Sub. Code: 3806

DOCTOR OF PHARMACY (PHARM. D) DEGREE EXAMINATION
FIRST YEAR

PAPER VI – REMEDIAL MATHEMATICS

Q.P. Code : 383806

Time : 3 hours
(180 Min)

Maximum : 100 marks

Answer ALL questions in the same order.

I. Elaborate on :

Pages Time Marks
(Max.) (Max.) (Max.)

1. Integrate $\int \frac{dx}{x^2+5x+6}$ 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: $\cos 20^\circ \cos 40^\circ \cos 80^\circ = 1/8$ 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 $\int_0^1 \{x^2 - 3x^{2/3} + (1/x^2)\} dx$ 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

[LB 806]

OCTOBER 2012
PHARM. D DEGREE EXAMS
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS
Q.P. Code : 383806

Sub. Code: 3806

Time : 3 hours
(180 Min)

Maximum : 100 marks

Answer ALL questions in the same order.

I. Elaborate on :

Pages Time Marks
(Max.)(Max.)(Max.)

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

Obtain a matrix B such that $AB = BA = I$. [Hint: $B=A^{-1}$]. 17 40 20

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

II. Write short notes on

1. Find the value of $\begin{vmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{vmatrix}^2$ 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 $\cos^2 \theta + \frac{1}{1+\cot^2 \theta} = 1$. 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. $\int_0^2 (50q - 4q^2) dq$. 4 10 6

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

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

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

[LC 806]

APRIL 2013
PHARM. D DEGREE EXAMS
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS
Q.P. Code : 383806

Sub. Code: 3806

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 $\left\{ \frac{\sin(\alpha+\beta)}{\sin(\alpha+\beta)} \right\}$, given that $\tan\alpha = 2 \tan\beta$

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

(ii) $\cos 48^\circ \cos 12^\circ - \sin 48^\circ \sin 12^\circ$

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

[LD 806]

OCTOBER 2013
PHARM. D DEGREE EXAMS
FIRST YEAR
PAPER VI – REMEDIAL MATHEMATICS
Q.P. Code : 383806

Sub. Code: 3806

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:
$$\frac{d^2y}{dx^2} + a^2y = \sec ax.$$

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 $\cos^4 A - \sin^4 A = 1 - 2 \sin^2 A$.
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 $y = xp + \alpha/c$.

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

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

II. Write notes on :

(10x3=30)

1. Find the determinant, $A = \begin{vmatrix} 2 & 5 & 1 \\ 1 & 4 & 1 \\ 1 & 1 & 2 \end{vmatrix}$
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) $\cos 45^\circ \cos 60^\circ - \sin 45^\circ \sin 60^\circ$.
(ii) $\cos 48^\circ \cos 12^\circ - \sin 48^\circ \sin 12^\circ$.
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: $(D^2+7D+12) y = e^{2x}$.

[LF 806]

OCTOBER 2014

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

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

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

3. If $\sin A = \frac{3}{5}$ $\cos B = \frac{12}{13}$. 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. $\int_1^3 (x^2 + 3x - 18) dx$

2. Differentiate $x^2 e^x$

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

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

[LG 806]

APRIL 2015

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. Solve by Cramer's rule

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

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

b) $y = x \cdot \cos x$ 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)

[LH 806]

OCTOBER 2015

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 $A = \begin{vmatrix} 1 & -2 \\ 3 & -4 \end{vmatrix}$ 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 $\frac{d^2y}{dx^2}$.

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

5. Solve: $(16D^2 - 24D + 9)y = 0$

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

[LI 806]

APRIL 2016

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 the Inverse of $\begin{bmatrix} 3 & 1 & -1 \\ 2 & -2 & 0 \\ 1 & 2 & -1 \end{bmatrix}$
2. Solve: $\frac{dy}{dx} + y \cot x = 2 \cos x$.
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 $\tan A = \frac{5}{6}$ and $\tan B = \frac{1}{11}$. Show that $(A + B) = \frac{\pi}{4}$
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. $(D^2 - 9D + 20) y = 0$

[LJ 806]

OCTOBER 2016

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. Solve. $2x + y + z = 5$, $x + y + z = 4$, $x - y + 2z = 1$.
2. If $\cos A = \frac{-12}{13}$ and $\cos B = \frac{24}{7}$. Find $\sin(A+B)$ and $\cos(A+B)$.
3. Solve. $\frac{dy}{dx} + y \cot x = e^x \operatorname{cosec} x$.
4. a) Solve. $\frac{dy}{dx} = \frac{2x}{y}$
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. $\int_0^{\frac{\pi}{2}} \frac{\cos^2 x}{1 + \sin x} \, dx$.

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. $\frac{dy}{dx} = \frac{1 + \cos x}{1 + \cos y}$
3. a) Integrate. $\int_0^{\frac{\pi}{2}} \sin^2 x \, dx$.
 b) Evaluate. $\int \frac{\cos^2 x}{1 - \sin x} \, dx$.
4. If $\cos A = \frac{4}{5}$ and $\sin B = \frac{5}{13}$. 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. $\frac{dy}{dx} + y \sin x = 0$
3. If $x = at^2$ and $y = 2$ at. Find $\frac{dy}{dx}$.
4. Evaluate. $\int_1^2 (x^2 + 5x + 6) \, dx$.
5. Differentiate. $\frac{1 - \sin x}{1 + \sin x}$.
6. Find the area of the triangle (1, -2) (2, 3) and (-4, 5)

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 $A = \begin{bmatrix} 3 & 1 & 2 \\ 4 & 9 & 8 \\ 2 & 5 & 6 \end{bmatrix}$ 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: $\int x \cdot \sin 2x \cdot dx$.

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:

$$\begin{bmatrix} 2 & 4 \\ 3 & 1 \\ 4 & 5 \end{bmatrix} \quad \begin{bmatrix} 3 & 2 \\ 1 & 1 \\ 5 & 3 \end{bmatrix} \quad \text{and} \quad \begin{bmatrix} 1 & 3 \\ 2 & 3 \\ 4 & 6 \end{bmatrix}$$

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

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

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

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

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

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

[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 : $\sec^2 A + \operatorname{cosec}^2 A = \sec^2 A \cdot \operatorname{cosec}^2 A$.
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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Time : Three hours

Maximum : 70 Marks

I. Elaborate on:

(4 x 10 = 40)

1. Find A^{-1} , if $A = \begin{pmatrix} 1 & 1 & 1 \\ 1 & 1 & -1 \\ 1 & -1 & 0 \end{pmatrix}$
2. If $\cos \alpha = \frac{12}{13}$ and $\cos \beta = \frac{24}{7}$ 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 $P[at^2, 2at]$, $Q \left[\frac{a}{t^2}, \frac{-2a}{t} \right]$ and $S[a, 0]$ be any three points, show that $\frac{1}{SP} + \frac{1}{SQ}$ is same all values of t.
4. Integrate $\int \frac{dx}{x^2 + 5x + 6}$.

II. Write notes on:

(6 x 5 = 30)

1. If $A = \begin{pmatrix} 3 & 8 & 11 \\ 6 & -3 & 8 \end{pmatrix}$, $B = \begin{pmatrix} 1 & -6 & 15 \\ 3 & 8 & 17 \end{pmatrix}$ 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 $\int x^3 e^x dx$.
5. Differentiate: (i) $2x^2 + 3x^{-3} + 5e^x$ (ii) $3^x - \cot x + 2$.
6. Solve the differential equation $e^{x-y} dx + e^{y-x} dy = 0$.
