

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.

$$\text{a) } X + \sin X \quad \text{b) } \sin^m ax \cos^n \beta x$$

$$X + \cos X$$

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 .

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

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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Time : Three hours

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

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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 adjoint 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 $A = \begin{bmatrix} 1 & 1 & 1 \\ 2 & -1 & 3 \\ 3 & 2 & -1 \end{bmatrix}$

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 $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$

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. $\int_0^5 (50q - 4q^2) dq$.

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 $y = xp + \alpha/c$.
