Roll No. | | | | | | | | | | | | | Total No. of Pages : 03

Total No. of Questions : 10

B.Pharmacy (Sem.–1)

# REMEDIAL MATHEMATICS

Subject Code : PHM-112

Paper ID : [D0102]

Time : 3 Hrs. Max. Marks : 80

**INSTRUCTIONS TO CANDIDATES :**

1. **SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.**

## SECTION-A

**1. Solve the following :**

a) Solve the equation: $5x^2+15 = 0$

b) If $A=\begin{bmatrix}1 & 3\\ 3 & 4\end{bmatrix}$ and $A^2 - kA - 5I_2 = O$, them the value of k is?

c) Solve for x : $\begin{vmatrix}x & 3\\ 5 & 2x\end{vmatrix} = \begin{vmatrix}5 & -4\\ 5 & 3\end{vmatrix}$

d) Find the Median of the given data 4,6,7,11,18.

e) Find the mean of first ten odd natural numbers.

f) Calculate the value of mode for the following series :

10,12,17,12,10,12,16,11

g) Prove that : $\frac{cot^2\theta}{(1-cosec\theta)^2} = \frac{1+sin\theta}{1-sin\theta}$

h) If 4 sin $\theta = 3$, find the value of $\frac{sec\theta + 3tan\theta}{2sec\theta - 7tan\theta}$

i) Find the relation that must exist between x and y so that (x,y) is equidistant from (6,-1) and (2,3)

j) Find the equation of the locus of a point which moves so that its distance from (3,2) is twice its distance from (1,1).

k) Find the equation of the line which passes through (2,5) and cuts off equal intercepts on the axes.

l) Differentiate with respect to x : $x^3 + 2x^2 + 7$

m) If $y = e^{3\log x}$ find $\frac{dy}{dx}$

n) Integrate the function with respect to x the function $x^2 + 7x + 5$

o) Evaluate $\int \frac{1 - \tan x}{1 + \tan x} dx$

## SECTION-B

2. Solve the linear equations, if consistent, x + 3y = 2, 2x + 6y = 7 with the help of determinants.

3. The following table gives the distribution of marks secured by some students in a certain examination :

| **Marks** | 0-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 |
|---|---|---|---|---|---|---|---|
| **No. of Students** | 42 | 38 | 120 | 84 | 48 | 36 | 31 |

Find the median marks.

4. Prove that $\frac{\sec 8A - 1}{\sec 4A - 1} = \frac{\tan 8A}{\tan 2A}$.

5. Find the equation of the line passing through (-4,-5) and perpendicular to the line joining (1,2) and (5,6).

6. If $e^x + e^y = e^{x+y}$, show that $\frac{dy}{dx} + e^{y-x} = 0$.

## SECTION-C

7. Find $A^{-1}$ if $A = \begin{bmatrix} 1 & 2 & -3 \\ 2 & 3 & 2 \\ 3 & -3 & -4 \end{bmatrix}$

8. Find the mean for the following frequency distribution by Step- Deviation Method

| **Class- Interval** | 84-90 | 90-96 | 96-102 | 102-108 | 108-114 |
|---|---|---|---|---|---|
| **Frequency** | 8 | 12 | 15 | 10 | 5 |

9. Find the equations of the lines which pass through (4,5) and make equal angles with the lines 5x-12y+6 = 0 and 3x = 4y+7

10. Evaluate :

    a) $\int x \cos^2 x dx$

    b) Differentiate with respect to x the function

$$y = \frac{1 + 2\sec x}{2 + 5\sec x}$$