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Total No. of Pages : 03

Total No. of Questions : 10

B.Pharmacy (Sem.-1,3)
REMEDIAL MATHEMATICS
Subject Code : PHM-112
M.Code : 46012

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**I. Write short notes on :**

- a) Solve the equation $x^2 + x + 7 = 0$.
- b) For what values of x and y the following pair of matrices A and B equal

$$A = \begin{bmatrix} 3x+7 & 5 \\ y+1 & 2-3x \end{bmatrix} \text{ and } B = \begin{bmatrix} 0 & y-2 \\ 8 & 4 \end{bmatrix}$$

- c) Find the value of x so that the determinant $\begin{vmatrix} 3x+7 & 5 \\ 1 & 2-3x \end{vmatrix}$ is zero.
- d) If $\tan x = 3/5$ find the value of $\sin 2x$.
- e) Show that $\frac{1+\cos x}{1-\cos x} = \cot^2 \frac{x}{2}$.
- f) Find the x and y intercepts of the line $3x + 4y - 7 = 0$.
- g) Find the angle between the line $x + y + 1 = 0$ and $-x + 2y + 5 = 0$.

- h) In a moderately skewed distribution, the median is 20 and the mean is 22.5. Using these values, find the approximate value of the mode.
- i) Define mean and median.
- j) Differentiate the function $f(x) = x^2 \sin x$ with respect to x .
- k) If $x^2 + \sin xy = 7$, find $\frac{dy}{dx}$.
- l) Solve the integral $\int \cos x e^{\sin x} dx$.
- m) Solve $\int x e^x dx$.
- n) Find the derivative of $f(x) = x^{3/2} + \sin x$ with respect to x .
- o) Find the value of $\tan 225^\circ$.

SECTION-B

2. Solve the following system of equations by using Cramer's law

$$3x - 2y + 3z = 8, 2x + y - z = 1, 4x - 3y + 2z = 4.$$

3. Show that $2\sin^2 \beta + 4 \cos (\alpha + \beta) \sin \alpha \sin \beta + \cos 2 (\alpha + \beta) = \cos 2\alpha$.
4. Find the foot of perpendicular of the point (2, 3) on the line $x + y - 11 = 0$
5. Solve the integral $\int \frac{2x-3}{(x^2-1)(2x+3)} dx$.
6. Differentiate $\sqrt{\frac{(x-3)(x^2+4)}{3x^2+4x+5}}$ with respect to x .

SECTION-C

7. Find inverse of the matrix $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{bmatrix}$.

8. The weight of coffee in 70 jars is shown in the following table :

Weight (in grams)	200-201	201-202	202-203	203-204	204-205	205-206
Frequency	13	27	18	10	1	1

Determine the mean, median, variance and standard deviation of the above distribution.

9. a) Find $\frac{dy}{dx}$ if $x = a(\theta - \sin \theta)$, $y = a(1 + \cos \theta)$.

b) Solve the integral $\int \frac{\sqrt{\tan x}}{\sin x \cos x} dx$.

10. a) Find the equation the line perpendicular to the line $2x - y + 7 = 0$ and pass through the point (1,1)

b) Show that $\sin 20^\circ \sin 40^\circ \sin 60^\circ \sin 80^\circ = \frac{3}{16}$.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.