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Total No. of Pages : 03

Total No. of Questions : 10

B.Pharma (2011 to 2016) (Sem.–3)

PHARMACEUTICAL MATHEMATICS

Subject Code : BPHM-301

M.Code : 46221

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) If a matrix has 8 elements, what are the possible orders it can have?

b) If $A = \begin{bmatrix} 1 & 0 \\ 3 & 4 \end{bmatrix}$ find the value of $2A^2 + 3I$, where I is a unit matrix of order 2.

c) Find the value of determinant $\begin{vmatrix} 1 & 0 & 2 \\ 2 & 1 & 1 \\ 0 & 4 & 2 \end{vmatrix}$.

d) If A is a square matrix of order 3 and $|A| = 3$ find the determinant value of 2A.

e) Find $\frac{dy}{dx}$ where $y = x^2 \cos 3x$.

f) Find the value of limit $\underset{x \to 2}{Lt} \frac{x^3 - 8}{x - 2}$.

g) Evaluate the integral : $\int \frac{dx}{(2x+5)^3}$.

h) Evaluate the integral $\int \sin 2x \sin 3x \, dx$.

i) Find the median of 5, 4, 1, 7, 3, 10, 15.

j) Find the value of x if mean of 3, 4, x, 5, 1 is 4.

k) Variance of a data containing 10 entries is 36, find its standard deviation.

l) Write the formula for coefficient of variation.

m) Define Binomial distribution.

n) Find the value of cos 75°

o) Express 2 cos 4x sin 2x as an algebraic sum of sines or cosines.

SECTION-B

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

3. Differentiate $x^{\sin x}$ with respect to x.

4. Evaluate $\int x^2 \log x dx$.

5. Prove that $\frac{1+\sin\theta-\cos\theta}{1+\sin\theta+\cos\theta}=\tan\left(\frac{\theta}{2}\right)$.

6. Find the median of the following distribution :

Class interval	0-10	10-20	20-30	30-40	40-50
Frequency	5	7	10	8	5

SECTION-C

7. Solve the following by Cramer's rule :

$$6x + y - 3z = 5$$

$$x + 3y - 2z = 5$$

$$2x + y + 4z = 8$$

8. a) Find $\frac{dy}{dx}$ if $x = 1 + \sin t, y = t^2 + 1$

   b) Evaluate the integral $\int \frac{dx}{(x+2)(x-3)}$

9. Calculate the standard deviation of the following data :

X :	4	8	11	17	20	24	32
F :	3	5	9	5	4	3	1

10. a) Draw normal distribution curve and state any three properties of the curve.

    b) Prove that $\cos 20° \cos 40° \cos 80° = \frac{1}{8}$

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.