

Roll No.

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Total No. of Pages : 02

Total No. of Questions : 10

B.Pharmacy (Sem.-3)
MATHS (PHARMACEUTICAL MATHEMATIC)
Subject Code : PHM-233
Paper ID : [D0156]

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. Answer briefly :**

a) Define Square and Identity matrix.

b) Find the determinant of $\begin{bmatrix} 2 & 3 \\ 4 & -2 \end{bmatrix}$.c) Find the value of $\sin 75^\circ$.d) Find the derivative of $x \sin x$ w. r. t x .e) Evaluate : $\lim_{x \rightarrow 2} x^2 + 2x + 2$.f) Evaluate : $\int x \cos x \, dx$.g) Evaluate : $\int (x^2 + x) \, dx$

h) Define Mean.

i) What are measures of dispersion?

j) Define Standard deviation.

k) Define standard Error.

l) Define Binomial Distribution.

m) Define Poisson distribution.

- n) Define Upper Triangular Matrix.
 o) Find the second derivative of $1+\log x$.

SECTION-B

2. Evaluate the determinant by using the properties :
$$\begin{bmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{bmatrix}$$
3. In triangle ABC, if a,b,c are in A.P., prove that $\cot \frac{A}{2} \cot \frac{C}{2} = 3$.
4. Find the second derivative w.r.t x if $x = a(t + \sin t)$, $y = a(1 + \cos t)$.
5. Integrate : $\int e^x x^2 dx$.
6. A distribution consists of three components with the frequencies 200, 250 and 300 having mean 25, 10 and 15 and S.D 3, 4 and 5. Show that the mean of the combined distribution is 16, and its S.D is 7.2 approximately.

SECTION-C

7. Calculate the mean and standard deviation of following :

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|-----------|---|---|---|----|----|----|----|
| Size | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Frequency | 3 | 6 | 9 | 13 | 8 | 5 | 4 |

8. The probability that a pen manufactured by a company will be defective is $1/10$. If 12 such pens are manufactured, find the probability that :
- Exactly two will be defective,
 - At-least two will be defective,
 - None will be defective.
9. Solve : $5x + 2y + 5z = 23$, $4x + 4y + 2z = 19$, $3x + 2y + 4z = 18$ by the matrix inversion method.
10. a) Evaluate : $\int \frac{x^2 - x + 1}{\sqrt{x^2 + x + 1}} dx$.
- b) Differentiate : $(\cos x)^{\sin x} + (\sin x)^{\cos x}$ w. r. t x.