

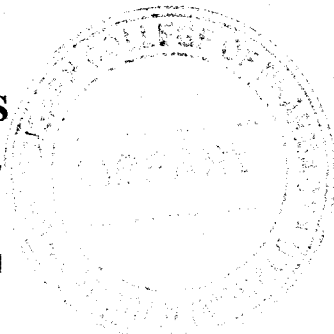
Roll No.

Total No. of Questions : 10]

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B.Pharmacy (Sem. - 2nd)
ADVANCED MATHEMATICS
SUBJECT CODE : PHM - 1.2.2
Paper ID : [D0108]

[Note : Please fill subject code and paper ID on OMR]



Time : 03 Hours

Maximum Marks : 80

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Three** questions from Section - C.

Section - A

Q1)

(15 x 2 = 30)

- a) Solve $x\sqrt{(1+y^2)} dx + y\sqrt{(1+x^2)} dy = 0$.
- b) Solve $3e^x \cos^2 y dx + (1 - e^x) \cot y dy = 0$.
- c) Solve $dy/dx + \frac{1}{x}y = x^n$.
- d) Solve $\frac{dy}{dx} = \frac{y}{x} + \tan \frac{y}{x}$.
- e) Define the equations reducible to homogeneous equations.
- f) Find $L \left\{ \frac{e^{-at} t^{n-1}}{(n-1)!} \right\}$.
- g) Find $L \{ (\sin at - at \cos at) \}$.
- h) Find $L^{-1} \left\{ \frac{p}{p^2 + 2} + \frac{6p}{p^2 - 16} + \frac{3}{p-3} \right\}$.
- i) State second translation theorem for inverse Laplace transforms.
- j) Find $L^{-1} \left\{ \frac{e^{-5p}}{(p-2)^4} \right\}$.

- k) Compare collection of data by census method and sample method in four points.
- l) The following data relate to the plan outlay of a country for three plans
- | | | | |
|--------------------------|-----|------|------|
| Five year plan : | I | IV | VII |
| Outlay (Rs.'000 crore) : | 196 | 2060 | 8820 |
- Represent the data by circle diagram.
- m) Draw a pie chart to represent the following data
- | | | | | | |
|---------------------|-----------------|----------------|----------------|----------------|--------------|
| Age of drivers : | <u>under 20</u> | <u>20 - 40</u> | <u>40 - 60</u> | <u>over 60</u> | <u>Total</u> |
| Percent of totals : | 15 | 60 | 20 | 5 | 100 |
- n) Write student and paired t - test.
- o) Define Binomial distribution.

Section - B

(4 x 5 = 20)

Q2) Solve $(1 + y^2) dx = (\tan^{-1}y - x) dy$.

Q3) Use convolution theorem to find $L^{-1} \left\{ \frac{p}{(p^2 + 4)^3} \right\}$.

Q4) Find the median of the following data :

Income (in Rs.) :	100	150	80	200	250	180
No. of Persons :	24	26	16	20	6	30

Q5) The scores of 8 students in an examination in mathematics and statistics are given below.

Student No. :	1	2	3	4	5	6	7	8
Marks in Maths :	70	48	58	55	54	50	60	52
Marks in Stat. :	62	47	53	60	55	68	51	48

Find rank correlation coefficient and compare the two values.

Q6) How many tosses of a coin are needed so that the probability of getting at least one head is 0.875.

Section - C

(3 x 10 = 30)

Q7) From the following data given below calculate a coefficient of skewness based on percentile.

Marks	:	less than 10	less than 20	less than 30	less than 40	less than 50
No. of students	:	4	10	30	40	47

Q8) Determine the relationship between the semi-inter quartile range and standard distribution in a standard normal probability curve.

Q9) Solve $[tD^2 + (1 - 2t)D - 2]y = 0$ if $y(0) = 1$, $y'(0) = 2$.

Q10) Solve $(D - 2)x - (D + 1)y = 6e^{3t}$
 $(2D - 3)x + (D - 3)y = 6e^{3t}$
if $x = 3$, $y = 0$ when $t = 0$.

