

Roll No.

Total No. of Pages : 03

Total No. of Questions : 10

**B.Pharmacy (Sem.-2)**  
**ADVANCED MATHAMATICS**  
**Subject Code : PHM-122**  
**Paper ID : [D0108]**

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) Solve  $\int \frac{dx}{1+e^s}$

b) Explain integrating factor of following differential equation :

$$x \frac{dy}{dx} + \cos^2 y = \tan y \frac{dy}{dx}$$

c) Solve  $(D^4 - m^4)y = 0$ , where  $D \frac{d}{dx}$ .

d) Write the definition of Laplace Transform.

e) Explain median with its merits and demerits.

f) Evaluate  $L(7e^{2t} + 9e^{-3t})$ .

g) What are the measures of dispersion?

h) A bag contains 8 white and 4 red ball. Five balls are drawn at random. What in the Probability that 2 of them are red and 3 white?

- i) Evaluate  $L^{-1}\left(\frac{P}{2P^2 + 8}\right)$
- j) Explain the limitations of F-test.
- k) Solve  $\int \frac{dx}{1 + \cos x}$
- l) Solve  $(D^4 - 16)y = 0$ .
- m) Explain mode with its merits and demerits.
- n) Evaluate  $L(2e^{2t} - e^{-3t})$
- o) Explain the normal distribution curve.

### SECTION-B

- Q2) Solve  $\frac{dy}{dx} = \sin(x + y) + \cos(x + y)$ .
- Q3) Find the Laplace Transformation of  $(te^{-t} \sin 2t)$ .
- Q4) Solve the following differential equation :

$$(y^2 - x^2) \frac{dy}{dx} = 3xy$$

- Q5) Evaluate  $L^{-1}\left(\frac{e^{-3P}}{P^2}\right)$ .
- Q6) Find the Coefficient of Skewness, if Number of observations = 20

$$\sum x = 1452, \sum x^2 = 14428, \text{ Mode} = 63.7$$

**SECTION-C**

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 deviation 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  $t = 0$ .