

Roll No. ....

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Total No. of Questions : 10]

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**B. Pharmacy (Sem. - 2<sup>nd</sup>)  
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  $\int \frac{dx}{1+e^x}$ .

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 balls. Five balls are drawn at random. What is 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  $\int \frac{dx}{1 + \cos x}$ .

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- 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**

(4 x 5 = 20)

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

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

**Section - C**

(3 x 10 = 30)

Q7) A has 2 shares in a lottery in which there are 3 prizes and 5 blanks, B has 3 shares in a lottery in which there are 4 prizes and 6 blanks. Show that A's chance of success is to B's is 27 : 35.

Q8) The mean weight of 500 male students in a certain college is 151 IB and the standard deviation is 15 IB. Assuming the weight are normally distributed, find how many students weight is

- (a) Between 120 & 155 IB,
- (b) More than 185 IB.

**Q9)** Calculate correlation coefficient from the following results :

X	Y
5	12
9	14
10	16
12	25
6	9
4	8
5	7
7	5
2	4

**Q10)** In an intelligence test, administered to 1000 students, the average score was 42 and standard deviation 24. Find (a) the number of students exceeding a score 50, (b) the number of students lying between 30 & 54, (c) the value of score exceeding by the top 100 students.

