

Hi-Tech Institute Ghaziabad  
Model paper-2  
Branch/Section: ME//EE/CS

Subject Name: APPLIED MATHS-3  
SEMESTER: 3<sup>rd</sup> - SEM-2023-2024

Max. Marks: 50  
Time: 1:30 Hrs.

Faculty Name: ISTAKBAL KHAN

Instructions:

- ❖ Be precise to your answer.
- ❖ Assume missing data suitably, if any

Note: All questions are compulsory सभी प्रश्न अनिवार्य हैं।

QUESTION NO.-1

Answer any Two parts of the following:

[ 5 x 2 = 10 ]

A.	Find Laplace $\{t^2 \cos at\}$	5
B.	Find the value of $\sqrt{-\frac{1}{2}}$ and $\sqrt{\frac{3}{2}}$	5
C.	Find the Fourier series $f(x) = x$ where $0 < x < 2\pi$	5

QUESTION NO.-2

Answer any Two parts of the following:

[ 5 x 2 = 10 ]

A.	Find the solution of $\int_0^1 x^2 (1-x)^3 dx$	5
B.	यदि फॉर्सी सिक्के को 12 बार उड़ाया जाता है : तब प्रायिकता ज्ञान कीजिये (A) 4 times Head (B) Maximum 4 times Head. (Probability)	5
C.	52 पत्तों की ताश की गड्डी से एक ताश का पत्ता निकाला जाता है। पत्ते के राजा (king) या दूकम (club) की Probability क्या है?	5

QUESTION NO.-3

Answer any Two parts of the following:

[ 5 x 2 = 10 ]

A.	Find Laplace $\left\{ \frac{\sin at}{t} \right\}$	5
B.	Find Laplace Inverse $\frac{1}{(p^2 - 6p + 10)}$	5
C.	यदि $u = x \sin^{-1}\left(\frac{y}{x}\right)$ then Prove that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = u$	5

## QUESTION NO.-4

[ 5 x 2 = 10 ]

Answer any Two parts of the following:

A.	Define fourier series. फोरियर श्रृंखला को परिभाषित कीजिये?	5
B.	Define Beta and Gamma function also Prove that $B(m, n) = B(n, m)$	5
C.	Solve $\sqrt{-\frac{3}{2}}$	5

## QUESTION NO.-5

[ 5 x 2 = 10 ]

Answer any Two parts of the following:

A.	Prove that $\text{Curl} \cdot \text{grad} \phi = 0$	5
B.	Find the value of $L^{-1} \left[ \frac{s}{s^2+4} + \frac{6}{s-2} + \frac{1}{s+7} \right]$	5
C.	Three fair coins are tossed together. Find the probability (संभावना) to get a head of each coin (सर्व सिरकन)	5