Hi-Tech Institute Ghaziabad **Model paper-2** **Branch/Section:ME//EE/CS/CE**	
Subject Name: APPLIED MATHS-1 **SEMESTER: 1 - SEM-2023-2024**	**Max. Marks:50** **Time: 2:30 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 five parts of the following: [1x10=10]

A.	a)Find d/dx of : secx+tanx/secx-tanx secx+tanx/secx-tanx का d/dx ज्ञात कीजिए b)If 2+3i/2-3i =A+iB then find A and B यदि 2+3i/2-3i =A+iB है तो A और B ज्ञात कीजिए	**1** **1**
B.	a) Find (j.k.i) +(j.i.k) खोजें (j.k.i) +(j.i.k) b) If f(x)= 1-x/1+x then f.f(cos ∅) will be यदि f(x)= 1-x/1+x तो f.f(cos∅) होगा	**1** **1**
C.	a) A^x- B^x/x evaluate prperly b)If y=(x-1).(x^2+2x+5) find 3times derivative of y lim x∼0 Ax- Bx/x उचित मूल्यांकन करें b)यदि y=(x-1).(x2+2x+5) y का 3 गुना व्युत्पन्न खोजें lim x∼0	**1** **1**
D.	a) Find the maximum value of : x^3 +x^2-8x+1 x3 +x2-8x+1 का अधिकतम मान ज्ञात कीजिए b) Find the value of m1.m2 if m1 and m2 are perpendicular to each other. यदि m1 और m2 एक दूसरे के लंबवत हैं तो m1.m2 का मान ज्ञात करें।	**1**
E	If F(x)=3x-4x3 find F(sin θ)यदि F(x)=3x-4x3 तो F(sin∅) ज्ञात कीजिए Solve x^5+ 1=0 by Demoivre thorem. डेमोइवर थोरम द्वारा x5+ 1=0 को हल करें।	**1** **1**
F	Find the value of a) $\tan^{-1}$ 1/2+$\tan^{-1}$ 1/3 b) In triangle ABC ,a=16 b=24, c=20 then cos $A/2$ will be त्रिभुज ABC में, a=16 b=24, c=20 तो cos[A/2] होगा	**1** **1**

QUESTION NO.-2

Answer any Two parts of the following: [5 x 2 = 10]

A.	Prove that (1+i)n +(1-i)n =$2(^{n/2+1})\cos \pi n/4$	**5**
B.	Prove that $\tan(B - C/2)$ =b-c/ b+c	**5**
C.	1^2+2^2 +3^2 +…….n^2 /n^3 Lim n∼∞	**5**

QUESTION NO.-3

Answer any Two parts of the following: [5 x 2 = 10]		
A.	If z_1 and z_2 are two complex number then prove that $[Z1 + Z2]2 = I\ Z1I^2 + IZ2I^2$ यदि z_1 और z_2 दो सम्मिश्र संख्याएँ हैं तो सिद्ध कीजिए$[Z1 + Z2]2 = I\ Z1I^2 + IZ2I^2$	**5**
B.	If $x= 1-t^3$ and $y= 1-t^2$ then find dy/dx and d^2y/dx^2 at t=1	**5**
C.	6x+y-3z=5 X+3y-2z=5 and 2x +y +4z =8 by Cramer rule. (क्रैमर नियम)	**5**

QUESTION NO.-4 Answer any Two parts of the following: [5 x 2 = 10]		
A.	If A is any vector then find the value of (Ai)I +(Aj)j+(Ak)k	**5**
B.	Find the sum of 3+4+8+9+13+14+18+19+…….upto 20 terms	**5**
C.	Find the middle term in the expansion of $[x-1/x]^{12}$	**5**

QUESTION NO.-5 Answer any Two parts of the following: [5 x 2 = 10]		
A.	Find the value of $c_1+2c_2+3c_3+.....+nc_n$	**5**
B.	If siny =xsin(a+y) then prove that $\sin^2(a+y)/\sin a$	**5**
C	d/dx [$2+3\cos x/sinx$ at $x=\pi/4$	**5**