Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)
Diploma in Engineering, Semester-I, January 2026
25DBS11002 - Applied Mathematics-I
(Common to All)

Time: 3 Hrs | Full Marks:70 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ANY FIVE*** questions

		CO #	Blooms Level
a.	If $sin\theta = \frac{3}{5}$, then find $\cos\theta$ and $\cot\theta$.	CO1	K1
b.	Find the roots of $x^2 - 7x + 12 = 0$.	CO1	K1
c.	Write down the all formula of all trigonometric functions using p, b and h.	CO2	K2
d.	Find the limit $\lim_{x\to 1} \frac{3x^2+4x-6}{4x^2+7x-7}$.	CO2	K2
e.	Find the derivative of e^{sinx}.	CO1	K1
f.	Solve. $\frac{3x+6}{4} = \frac{6x+5}{9}$.	CO2	K2

PART – B **(15 x 4 = 60 Marks)**

Answer **ANY TWO (a, b OR c, d)** from all the questions below

		Marks	CO #	Blooms Level
2. a.	Given $\tan A = \frac{4}{3}$, find the other trigonometric ratios of the angle A.	8	CO2	K2
b.	Prove that $secA(1 - sinA)(secA + tanA) = 1$	7	CO3	K3
	(OR)			
c.	Prove that $i.\frac{sin(A+B)}{cosA.cosB} = tanA + tanB$ ii. $\frac{COS(A+B)}{cosA.cosB} = 1 - tanA.tanB$	8	CO2	K2
d.	Find $sin75^0, cos105^0$.	7	CO3	K3
3.a.	Find the derivative of $5x^5, e^{4x+5}, \log(1+x), \sqrt{sinx}$.	8	CO3	K3
b.	Find the Limit of i. $\lim_{x\to 0} \frac{sinx}{x}$ ii. $\lim_{x\to 1} \frac{2x^3-3x+2}{x^2+4x+7}$ iii. $\lim_{x\to \infty} \frac{7x^2-3x+8}{9x^2+7x+2}$.	7	CO2	K2
	(OR)			
c.	Find $\frac{dy}{dx}$. $Where \quad y = 8sin10x \;\; ii. y = 3e^{8x} \;\; iii. y = 7a^{2x} \; iv. ax^2 + bx + c.$	8	CO3	K3
d.	Find the Limit of i. $\lim_{x\to \infty} \frac{2x^2-3x+1}{9x^2+8x+7}$ ii. $\lim_{x\to 2} \frac{2x^3-3x^2+3}{9x^2+8x+1}$ iii. $\lim_{x\to 3} \frac{2x^3-3}{9x^2+7}$.	7	CO2	K2
4.a.	If $z_1 = 2 + 3i$, $z_2 = 3 + 4i$, then find $z_1 + z_2$, $z_1 - z_2$, $z_1.z_2$, $\frac{z_1}{z_2}$.	8	CO3	K3
b.	Find the modulus and argument of $z = 1 + i$.	7	CO2	K2
	(OR)			
c.	Find n when P(n+1,4) =2 P(n,4)	8	CO3	K3
d.	Find the number of permutations and combinations if $n = 12$ and $r = 2$.	7	CO2	K2
5.a.	Solve. $\frac{5x+7}{(x-2)(x+1)} = \frac{3}{4}$	8	CO2	K2
b.	Solve by using Elimination method $2x + 3y - 8 = 0, 3x + y - 5 = 0$.	7	CO3	K3
	(OR)			
c.	Find two consecutive positive integers, the sum of whose square is 365.	8	CO3	K3
d.	Evaluate $(104)^4$ using the binomial theorem.	7	CO2	K2

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