TED (21) 1002 | 2102220003A | Reg.No.....

(Revision-2021) | Signature.....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2021

MATHEMATICS - I

[Maximum marks: 75] (Time: 3 Hours)

PART A

I. Answer all the following questions in one word or one sentence.

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	Find the conjugate of 4+3i	M1.01	U
2	Write the equation to a straight line having slope = ½ and y- intercept = -3	M1.02	U
3	Evaluate $\tan^2 60^0+\tan^2 45^0$	M2.02	R
4	Write the formula for tan(A+B) =	M2.03	U
5	Write the expression for sin3A	M2.03	R
6	Evaluate $\lim_{x\to 0} \frac{2+3x}{4-5x}$	M3.01	U
7	Find $\frac{dy}{dx}$ if y=sinx + e^x	M3.03	U
8	Find $\frac{dy}{dx}$ if x.y=c	M4.02	A
9	If y= e^x, find $\frac{d^2y}{dx^2}$	M4.03	A

PART B

II. Answer any eight questions from the following.

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	Find the modulus and amplitude of $1+\sqrt{3}i$	M1.01	U
2	Find the equation to a straight line passing through two given points(2, - 1) and (-6, 3)	M1.02	U
3	If tanθ=3, θ is acute, find sinθ and cosθ	M2.02	R
4	If tanA=1/2, tanB=1/3, A and B are acute angles, Show that A+B=45^0	M2.02	U
5	Prove that sinA=0.6, A is acute find sin2A	M2.03	U
6	Evaluate $\lim_{\theta\to 0} \frac{sin5\theta}{2\theta}$	M3.02	R

7	Differentiate $y= e^x .secx$ w.r.to x	M3.04	A
8	Find $\frac{dy}{dx}$ if $x^3 + y^3 = a^3$	M4.02	R
9	If x=acost, y=bsint, find$\frac{dy}{dx}$	M4.02	U
10	Find the second derivative of y=x.sinx	M4.03	A

PART C

III. Answer all questions. Each question carries seven marks

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
1.	Multiply (i) (2+3i)(1-4i) (ii) (2-i)(3+i) (4+3 marks)	M1.01	R
2.	OR (i)Find the equation to a straight line parallel to 3x-2y=5 and passing through the point(1,-2) (ii)Find the angle between the lines having slope 2 and 1/3 (4+3 Marks)	M1.04 M1.03	U
3.	Find the modulus and amplitude of (i) -1-2i (ii) -2+3i (4+3marks)	M1.01	R
4.	OR (i) Find the equation to a straight line having slope 1/3 and passing through the point(-2,4) (ii)Find the slop of the line joining the points (2,-3) and (6,2) (4+3marks)	M1.02	U
5.	If tanA =5/12, A lies in the third quadrant, Find all other T-functions.	M2.02	R
6.	OR Show that $\tan 15^0+\cot 15^0=4$ without using tables (4+3marks)	M2.03	U
7.	Evaluate (i) $\lim_{x\to 2} \frac{x^5 - 32}{x^3 - 8}$	M3.02	R

8.	(ii) $\lim_{x\to 2} \frac{3x^2+5}{x^2-2}$ (5+2marks) OR Differentiate w.r.to x (i) y=x^2.logx (ii) y=$\frac{cosx}{x+sinx}$ (4+3 marks)	M3.04	U
9.	Evaluate (i) $\lim_{x\to 0} \frac{3sin2x.cosx}{5x}$ (ii) $\lim_{x\to 1} \frac{x-1}{x^2-1}$ (4+3 marks) OR	M3.02	U
10.	Find the derivative of secx and cosecx using quotient rule. (4+3 marks)	M3.04	A
11.	Differentiate w.r.to x (i) y=$(x^2+1)^{10}$.sec5x (ii)y= $\frac{\sin(\log x)}{x}$ (4+3 marks) OR	M4.01	U
12.	(i)If x=asecθ, y=btanθ, find $\frac{dy}{dx}$ (ii)If y=asinx+b.cosx, prove that $\frac{d^2y}{dx^2}$ +y=0 (4+3 marks)	M4.02 M4.03	A

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