



Term Evaluation (Odd) Semester Examination September 2025

Roll no.....

Name of the Course: Diploma in Engineering

Semester: I

Name of the Paper: Applied Mathematics-I

Paper Code: DTMA-101

Time: 1.5 hours

Maximum Marks: 50

Note:

- (i) Answer all the questions by choosing any one of the sub-questions.
- (ii) Each question carries 10 marks.

Q1.

(CO1) (10 Marks)

- a. Change the rational function form into a partial fraction form $\frac{3x+1}{(x-1)^2(x+2)}$.

OR

- b. Find the 12th term of the Arithmetic Progression (AP): 2, 7, 12.... and also, find the sum of its first seven terms.

Q2.

(CO1) (10 Marks)

a.

- i. How many 10-digit numbers can be formed from the digits 1, 2, 3, 4, 5, 6 if the digits can be repeated?
- ii. If ${}^nC_9 = {}^nC_8$ find ${}^nC_{17}$.

OR

- b. The fourth term of a Geometric Progression G.P. is 9 and its tenth term is 6561. Find the sum of its first six terms. Also, find the series.

Q3.

(CO1) (10 Marks)

- a. i. Expand $\left(x^2 + \frac{3}{x}\right)^2, x \neq 0$ ii. Compute $(99)^4$

OR

- b. State & prove Binomial theorem for positive integral index.

Q4.

(CO2) (10 Marks)

- a. Define the Sine formula, Cosine formula, and Tangent formula.

OR

- b. If in a triangle ABC, given a=8, b=5 and c=8, then find value of $\cos \frac{A}{2}$ and find angle A.

Q5.

(CO2) (10 Marks)

- a. Evaluate: i^9 , $(i-1)^3$ and $(\sqrt{1})^{90}$.

OR

- b. Define De-Movier's theorem for the set of positive and negative integers.