# Paper Pattern & Syllabus for ESE

**Vector Calculus (MATH-243)**
**Instructor: Dr. Naila Amir (SEECS, NUST)**

# Paper Pattern

**ESE**

⭐ Total Marks: 100

❓ Q - 1: [30 marks]    30 MCQ's from all CLOs (To be solved on supplementary answer sheet with a black/blue pen only).

🟪 Q - 2:  CLO-1 [10 + 5 = 15 marks]    1 Long question + 1 Short question

🔲 Q - 3: CLO-2 [10 + 10 = 20 marks]    2 Long questions

👥 Q – 4: CLO-3 [10 + 10 + 15 = 35 marks]    3 Long questions

# Syllabus for ESE

The following content is excluded from the ESE syllabus:

- Lecture 1 – 6, 10, 11;

- Two-dimensional heat equation;

- Two-dimensional wave equation;

- Three-dimensional Laplace equation;

- Derivation of Laplacian in cylindrical and spherical coordinates.

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