Graphic Era
HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

# Term Evaluation (Even) Semester Examination March 2025

Roll no.....

Name of the Course: B.Tech
Semester: VI
Name of the Paper: Finite Element Method
Paper Code: TME 614
**Time: 1.5 hour** **Maximum Marks: 50**

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

Q1. (10 Marks)
a. Explain the applications of finite element method. CO1
OR
b. What are the advantages of using FEM over finite difference method? CO1

Q2. (10 Marks)
a. What is preprocessing in finite element analysis? CO2
OR
b. What do you understand by discretization? What is a finite element? CO2

Q3. (10 Marks)
a. What is stiffness in a bar element? Derive it. CO1
OR
b. Derive the element matrix equation for a spring element. CO2

Q4. (10 Marks)
a. What is homogeneous boundary condition? How is it implemented in calculation? CO1
OR
b. What is a global matrix? How are the dimensions of the global matrix decided? CO1

Q5. (10 Marks)
a. Calculate the potential energy for a spring element on which a force F is applied. CO2
OR
b. How can four spring elements be combined in series? Derive the global matrix? CO2