

RAJASTHAN INSTITUTE OF ENGINEERING & TECHNOLOGY, JAIPUR

FIRST MID TERM EXAMINATION

SESSION: 2018-19

VII SEM MECHANICAL ENGINEERING

SET-A

TIME – 2 HRS

SUB – FINITE ELEMENT METHOD (7ME1A)

MAX MARKS – 20

Instruction for students:

1. No provision for supplementary answer book.
2. Each question carries 5 marks.

Q.1 What is FEM? Write detailed applications of FEM

OR

Q.1 Write the steps to be followed in solving a physical problem by FEM method.

Q.2 Explain Gauss elimination method with a suitable example.

OR

Q.2 Solve the given simultaneous equations:

$$3x_1 - 2x_2 + x_3 = 6$$

$$x_1 - 10x_2 - x_3 = 2$$

$$-3x_1 - 2x_2 + x_3 = 0$$

Q. 3 Classify different types of solution, based on the rank of matrix.

OR

Q.3 Find the rank of the given matrix;

$$\begin{matrix} 2 & 5 & 2 \\ 1 & 3 & 4 \\ 4 & 10 & 8 \end{matrix}$$

Q. 4 Explain the concept of stiffness and stiffness matrix.

OR

Q. 4 Explain the following given in brief.

- a) Banded symmetric matrix and bandwidth
- b) Initial value problem and boundary value problem