Q.P. Code: 19CE1005 **R19**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

M.Tech I Year II Semester Regular Examinations October-2020

FEM IN STRUCTURAL ENGINEERING

(STRUCTURAL ENGINEERING)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	**a**	What are the merits, demerits and limitations of Finite Element Methods?	**6M**
	b	Explain in detail finite element method procedure with an example.	**6M**
		OR	
2	**a**	Explain plane stress problem and plane strain problems.	**6M**
	b	Explain axi-symmetric problem.	**6M**

UNIT-II

3		Briefly explain shape function and derive shape. Function for 1D – two noded line element.	**12M**
		OR	
4		A two Noded truss element having the nodal displacement are u_1=6mm and u_2=9mm at the ends. Calculate the displacement at x=L/4, L/3 and L/2.	**12M**

UNIT-III

5		Derive matrix equation for 2-D element (CST element).	**12M**
		OR	
6	**a**	Explain about Geometric invariance.	**6M**
	b	Explain Convergent and compatibility requirements.	**6M**

UNIT-IV

7	**a**	Explain the lagrangian elements.	**6M**
	b	Explain serendipity elements.	**6M**
		OR	
8		Derive the strain-displacement matrix for 4-Noded isoperimetric quadrilateral element.	**12M**

UNIT-V

9		Explain the basic theory of plate bending.	**12M**
		OR	
10		What are the three dimensional stresses and strains explain the relation between them.	**12M**

*** END ***