Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
M.Tech I Year I Semester Regular Examinations July-2021
THEORY OF STRUCTURAL STABILITY
(Structural Engineering)

Time: 3 hours   Max. Marks: 60

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

UNIT-I

1		Derive the differential equation for maximum deflection and maximum bending moment in Case of beam column with central load.	L3	12M

OR

2	a	Derive the differential equation of slope in case of continuous beams with axial Loads.	L3	6M
	b	Derive the differential equation for beam columns with compressive force and distributed lateral load.	L3	6M

UNIT-II

3		Derive Euler's column formula for elastic buckling of straight bars.	L3	12M

OR

4		Derive expression for critical load in case of buckling of bars with intermediate compressive forces.	L3	12M

UNIT-III

5	a	Explain the Tangent Modulus and Reduced Modulus theories.	L2	6M
	b	Show that the reduced modulus of rectangular cross section.	L2	6M

OR

6	a	Briefly discuss buckling of straight bar column.	L1	6M
	b	Differentiate between elastic buckling & inelastic buckling.	L1	6M

UNIT-IV

7		Explain non uniform torsion of thin walled bars of open cross section with Neat sketches.	L2	12M

OR

8		Derive lateral buckling of simply supported beam of narrow rectangular section.	L3	12M

UNIT-V

9		Derive the crippling load for simply supported beam of rectangular cross section subjected to pure bending.	L3	12M

OR

10		Derive the critical value of the compressive force for buckling of simply supported rectangular plates uniformly compressed in two directions.	L3	12M

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