Q.P. Code: 19CE1010 **R19**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

M.Tech I Year I Semester Supplementary Examinations November-2020

THEORY OF STRUCTURAL STABILITY

(Structural Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	**a**	Explain the differential equation of slope in case of continuous beams with axial loads	**6M**
	b	Derive the differential equation for beam columns with compressive force and distributed lateral load	**6M**

OR

2		Find the maximum bending moment in a beam –column on simply support & when subjected to axial load P and concentrated lateral load Q	**12M**

UNIT-II

3	**a**	Derive the crippling load for buckling of Bars with intermediate compressive forces	**6M**
	b	Derive the crippling load for buckling of Bars with distributed axial load	**6M**

OR

4		Derive the critical load in case of buckling of bars with effect of eccentric load	**12M**

UNIT-III

5		Explain Rayleigh – Ritz method. Illustrate with a problem, its application with respect to the determination of critical load of a compressive	**12M**

OR

6		Explain the various methods for calculating crippling load for buckling of bars in mathematical treatment of stability problems.	**12M**

UNIT-IV

7	**a**	Explain non-uniform torsion of thin walled bars of open cross section with neat sketches	**6M**
	b	Derive the expression for pure torsion of thin walled bars of open cross section	**6M**

OR

8	**a**	Briefly describe torsional buckling, lateral buckling and inelastic buckling	**6M**
	b	Discuss the stability of plates under in plane and transverse loading	**6M**

UNIT-V

9		Derive the expression for the maximum bending moment of a simply supported beam of length L carrying an axial compressive force P and uniformly distributed load q/unit length.	**12M**

OR

10	**a**	Write a short notes on determine of allowable stress	**6M**
	b	Derive the crippling load for simply supported beam of rectangular cross section subjected to pure bending	**6M**

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