O.P.Code: 20CE1010	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

M.Tech I Year I Semester Regular & Supplementary Examinations February-2025

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 built in ends?	**CO1**	**L3**	**12M**
		OR			
2	a	Derive the differential equation of slope in case of continuous beams with axial loads?	**CO1**	**L3**	**6M**
	b	Derive the differential equation for beam columns with compressive force and distributed lateral load?	**CO1**	**L3**	**6M**
		UNIT-II			
3		Derive expression for critical load in case of buckling of bars with intermediate compressive forces?	**CO2**	**L3**	**12M**
		OR			
4		Derive the effect of shear force on value of crippling load.	**CO2**	**L2**	**12M**
		UNIT-III			
5	a	Explain the tangent theory and its assumptions and also show that critical load of tangent modulus.	**CO3**	**L3**	**6M**
	b	Explain the Tangent Modulus and Double Modulus theories.	**CO3**	**L2**	**6M**
		OR			
6		Explain reduced modulus theory and its assumptions and also derive critical load of double modulus theory.	**CO3**	**L3**	**12M**
		UNIT-IV			
7	a	Explain non-uniform torsion of thin walled bars of open cross section with neat sketches.	**CO4**	**L3**	**6M**
	b	Derive the expression for pure torsion of thin walled bars of open cross section.	**CO4**	**L3**	**6M**
		OR			
8		Briefly describe torsional buckling, lateral buckling and inelastic buckling.	**CO4**	**L2**	**12M**
		UNIT-V			
9		Derive the crippling load for simply supported beam of rectangular cross section subjected to pure bending.	**CO5**	**L4**	**12M**
		OR			
10		Derive the critical value of the compressive force for buckling of simply supported rectangular plates uniformly compressed in two direction.	**CO5**	**L3**	**12M**

***** END *****