P118-113(ESE)

DECEMBER 2018 / END-SEM

F. Y. M. TECH. (STRUCTURES) (SEMESTER - I)

COURSE NAME: PLASTIC ANALYSIS OF STEEL STRUCTURES

COURSE CODE: CVPB11183A

(PATTERN 2018)

SOLUTION AND MARKING SCHEME

Q.1)	a)	Definition of shape factor.....	[01]
		Calculation of shape factor for ISST 250.....	[02]
		OR	
	b)	Calculation of δ ..... Calculation of Mp for Sway mechanism.....	[01] [02]
Q.2)	a)	Drawing of two diagrams for two sway mechanisms ..... Calculation of Mp for Beam mechanism ..... Writing maximum Mp value	[01] [1 & Half] [Half]
		OR	
	b)	Drawing of two diagrams for two sway mechanisms ..... Calculation of Mp for Sway mechanism ..... Writing maximum Mp value	[01] [1 & Half] [Half]
Q.3)	a)	Drawing of the stress distribution diagram for column base for (1) $e < a/6$, & (2) $a/2 < e < a/3$	[01 mark each]
		OR	
	b)	Writing formula and calculation of tension carrying capacity of anchor bolt	[02]
Q.4)	a)	Drawing of configuration of any three types of eccentric bracing ..... Brief explanation of at least one advantage and disadvantage of each.....	[01 mark each] [01 mark each]
	b)	Differentiate between Ordinary Concentrically Braced Frames (OCBF) and Special Concentrically Braced Frames (SCBF) – minimum four points of differences – 2 marks each	[08]
		OR	
Q.5)	a)	Write a short note on, (1) 'K' type bracing, (2) 'X' type bracing, (3) 'V' type bracing, (4) Diagonal bracing	[02 marks each]

	b)	Writing importance and functions of bracing system in steel frames - Minimum three each	[01 mark for each]
Q.6)	a)	Note on four methods of analysis.....	[2.5 marks each]
	b)	Explanation of concept of sinking of supports.....	[02]
		Explanation of its effect on portal frames.....	[02]
		OR	
Q.7)	a)	Write short notes on,	
		1) First order inelastic analysis	03 marks
		2) Second order elastic analysis	03 marks
	b)	Write short notes on,	
		1) First order elastic analysis	04 marks
		2) Second order inelastic analysis	04 marks
Q.8)	a)	Write a note on - Factors affecting lateral stability – minimum four factor	[02 marks each]
	b)	While erecting angle or channel section purlins over the rafter, it is desirable to erect their flange facing up slope – Justify the statement. Explanation of concept of shear center and justification with proper diagram	[03 + 03]
		OR	
Q.9)	a)	Calculate moment carrying capacity of laterally unsupported beam for ISMB 550 member of length 3 m. Take b_f =190 mm, t_f =19.3 mm , t_w = 11.2 mm , I_{zz} = 64893.6 cm^4, I_{yy} = 1833.8 cm^4 - Calculation of each parameter of formula	[02 marks each]