Enrollment No:	Exam Seat No:	
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C. U. SHAH UNIVERSITY

Winter Examination-2021

Subject Name: Structural Analysis-III

Subject Code: 4TE05STA1 Branch: B.Tech (Civil)

Semester: 5 Date: 17/12/2021 Time: 11:00 To 02:00 Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

Q-1		Attempt the following questions:	(14)
	a)	The flexibility methods choose the internal forces while the stiffness methods considers the nodal displacements. True or false?	1
	b)	The flexibility matrix is a square matrix of order n x n, where n is equal to,	1
	c)	(A) SI (B) KI (C) both of above (D) None of above What would be the fixed end moment at A (M _A) if beam AB(having length L) is both end fixed with central point load P? (A) -PL/8 (B) +PL/8 (C) -PL ² /8 (D) +PL ² /8	1
	d)	Pre tensioning is mostly used for heavy structureTrue or False	1
	e)	Shape factor is the ration of,	1
	ŕ	(A) Plastic moment to yield moment (B) Yield moment to Plastic moment (C) Plastic moment to Ultimate moment (D) All are wrong	
	f)	The Creep coefficient at the age of 28 days is considered as per IS 1343-1980, is (A) 2.2 (B) 1.6 (C) 1.1 (D) 1.0	1
	g)	In Plastic method of design philosophy, following load is considered for design,	1
		(A) Yield (B) Breaking (C) Ultimate (D) None of above	
	h)	The highest value of load in stress strain curve is, (A) Yield value (B) Ultimate Value (C) Breaking Value (D) None of above	1
	i)	The Stiffness matrix is a square matrix of order n x n, where n is equal to, (A) SI (B) KI (C) both of above (D) None of above	1
	j)	Fatigue can be designed in Plastic method of designTrue of False	1
	k)	Influence line diagram will come in picture when the applied load is, (A) Static (B) Dynamic (C) both are right (D) Both are wrong	1
	1)	Stiffness is directly proportional to Flexibility. True of False	1
	m)	What would be the fixed end moment at B (M_B) if beam AB(having length L) is both end fixed with w KN/m UDL acting on full span.	1



	n)	(A) -PL/8 (B) +PL/8 (C) -w L^2 /12 (D) +w L^2 /12 Flyover bridges with large span is made with (A) Pre tensioned (B) Post tensioned (C) Both are right (D) Both are wrong	1
Atter	npt any	four questions from Q-2 to Q-8	
Q-2		Attempt all questions	(14)
	(A)	Explain the fundamental concepts of actions and displacements	07
	(B)	What are the essential Features of Flexibility Method? Discuss in brief	07
Q-3		Attempt all questions	(14)
	(A)	State Muller Breslau Principal and sketch Qualitative ILD for 3 span Continuous beam.	07
		Draw ILD for S.F. and B.M. at section middle of span for a two span beam.	07
Q-4		Attempt all questions	(14)
	(A)	Discuss advantages and disadvantages of Priestesses Concrete.	04
	(B)	Differentiate Pre tensioned with Post tensioned techniques	04
	(C)	A straight Pre-tensioned Concrete beam 18 m long with a C/S of 400 mm X 400 mm is concentrically pre-stressed with 900 mm ² of steel wires which are anchored to the bulkheads with a stress of 1250N/ mm ² . Find out Loss of Pre-stress due to elastic shortening of concrete taking modular ratio as 6.	06
Q-5		Attempt all questions	(14)
	(A)	Explain how curved beams differ from usual straight beam.	07
	(B)	A beam circular in plan is loaded UDL of 140 KN/m inclusive of self weight, the radius of the beam is 5 m. The beam is supported by 6 symmetrically placed columns. Draw S.F.D and B.M.D. for one of the span.	07
Q-6		Attempt all questions	(14)
	(A)	For a square beam section as per figure:1 find shape factor and fully plastic moment. Take f_y =500 MPa	07
	(B)	A fixed beam of 6 m span carries a UDL of 175 KN/m over the left half of the span. Determine the fully plastic moment along with plastic section modulus for the beam. $fy = 500 \text{ MPA}$	
Q-7		Attempt all questions	(14)
	(A)	Discuss various types of stresses to be considered in spherical dome design.	04
	(B)	Enlist different utilizations of Dome	04
	(C)	Analyze the continuous beam shown in figure:2 by Stiffness method.	06
Q-8		Attempt all questions	(14)
	(A)	Differentiate Flexibility method with Stiffness method	07
		Formulate flexibility matrix for the actions for a beam shown in figure:3	07



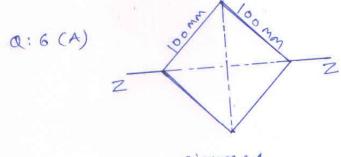


figure: 1

