Enrollment No: _____ Exam Seat No: _____

C.U. SHAH UNIVERSITY

Summer Examination-2017

Subject Name: Structural Analysis - III

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

Semester: 5 **Date: 24/03/2017** **Time: 02:30 To 05:30** **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) What is the axial Prestressing? (1)
b) Define Stiffness. (1)
c) Define Flexibility (1)
d) Define hoop stress. (1)
e) Define Meridional thrust. (1)
f) What is yield stress? (1)
g) What is difference between Yield stress and Ultimate Stress? (1)
h) Write down bending moment equation. (1)
i) What is the shape factor of diamond? (1)
j) Prestress Bridge is example of _____ (1)
(a) post-tensioned members (b) pre-tensioned members
k) $M_p=f_y Z_p$ (1)
Z_p =_____
l) What is approximate methods? (1)
m) Define plastic moment. (1)
n) Draw the figure of prestressing (1)

Attempt any four questions from Q-2 to Q-8

Q-2 **Attempt all questions** **(14)**

A Write differences between stiffness & flexibility method. **(8)**

B Write differences between Pre-tensioning and Post-tensioning. **(6)**

Q-3 **Attempt all questions** **(14)**

A Explain " losses in prestress" in detail. **(7)**

B Determine the shape factor for the I section and circular section. **(7)**

Q-4

Explain Approximate method with suitable example. **(14)**

Q-5		**Attempt all questions**	**(14)**
	A	Explain Stiffness method with suitable example.	**(14)**
Q-6		**Attempt all questions**	**(14)**
	A	A curved beam circular in plan symmetrically supported on six columns has radius 6 m. The beam carries on uniformly distributed load of 10 kN/m including self-weight of beam, determine the shear force, bending moment and twisting moment at important location and plot shear force, bending moment and twisting moment. Concrete density is $24kN/m^3$.	**(10)**
	B	Explain beam curved plan in detail.	**(4)**
Q-7		**Attempt all questions**	**(14)**
	A	A roof of a hall having diameter 20m is to be covered by a conical dome of 150mm thickness and 5 m rise. Assuming live load and other load as $1.5kN/m^2$.calculate stress in the dome.	**(7)**
	B	A spherical dome with 22 m span and 7 m central rise has an opening of 5 m horizontal diameter at top, if all-inclusive udl of 5 kN/m^2 is acting on it calculate the maximum value of hoop tension/compression in top and bottom ring beam.	**(7)**
Q-8		**Attempt all questions**	**(14)**
	A	Analyze the spherical dome subjected to UDL loading.	**(7)**
	B	Analyze the conical dome subjected to point load at vertex.	**(7)**