Enrollment No: _____ Exam Seat No:_____

C. U. SHAH UNIVERSITY

Winter Examination-2019

Subject Name: Structural Analysis - III
Subject Code: 4TE05STA1 **Branch: B.Tech (Civil)**
Semester : 5 **Date : 19/11/2019** **Time : 10:30 To 01:30** **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) Define Space Frame. (1)
b) What is Plastic hinged? (1)
c) Differentiate between straight beam and curved beam. (1)
d) What do you mean by post-tensioning? (1)
e) Define Plane Truss. (1)
f) Define tendon. (1)
g) What is curved beam? (1)
h) What do you mean by force and displacement? (1)
i) What is Hoop Compression? (1)
j) What is shape factor? (1)
k) Enlist Various types of dome. (1)
l) Define Collapse load. (1)
m) Write any two advantages of dome. (1)
n) Define Gride. (1)

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

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

(A) Develop a stiffness matrix for a beam. **(7)**
(B) Analyse the following beam by stiffness matrix method. **(7)**

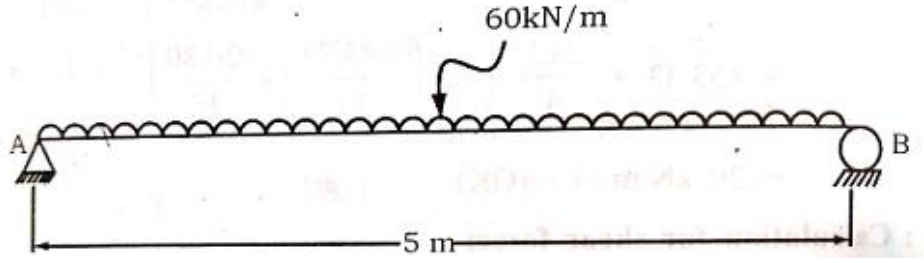

Fig.1

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

(A) Explain the characteristics of stiffness matrix **(6)**
(B) Analyse following beam by flexibility matrix method. **(8)**

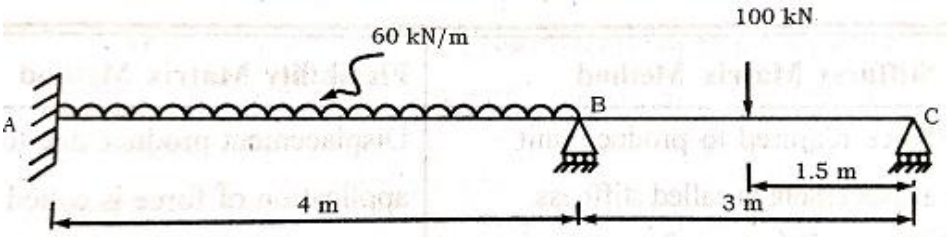

Fig.2

Q-4		**Attempt all questions**	**(14)**
	(A)	Explain Spherical domes with Sketch.	**(7)**
	(B)	Analyse the spherical dome subjected to UDL.	**(7)**
Q-5		**Attempt all questions**	**(14)**
	(A)	A conical Dome of 100 mm thickness and 3.5 m rise is to be used to cover a hall of 20m diameter. The live load of 2.0 kN/m^2 is acting over the dome surface. Calculate meridiional stress and hoop stress at the base of dome. Density of concrete is 25 kN/m^3	**(7)**
	(B)	A circular beam curved in plan symmetrically supported on six columns with radius of 5m. Determine the variation of S.F, B.M and Torsional Moment, When it is subjected to UDL load Of 5 kN/m throughout.	**(7)**
Q-6		**Attempt all questions**	**(14)**
	(A)	Analysis of curved in plane with fixed supports.	**(7)**
	(B)	Calculate the M_p required for a fixed beam of span 8m and loaded by collapse UDL of 20 kN/m over half 4m and a collapse concentrated load of 50kN at 6m from left span.	**(7)**
Q-7		**Attempt all questions**	**(14)**
	(A)	Explain concept of plastic hinge.	**(7)**
	(B)	Explain Various types of losses in Pre tensioning and Post tensioning in beam	**(7)**
Q-8			**(14)**

Analyse the RC frame shown in fig.3 by approximate method (portal method) of analysis Draw SF and BM diagram

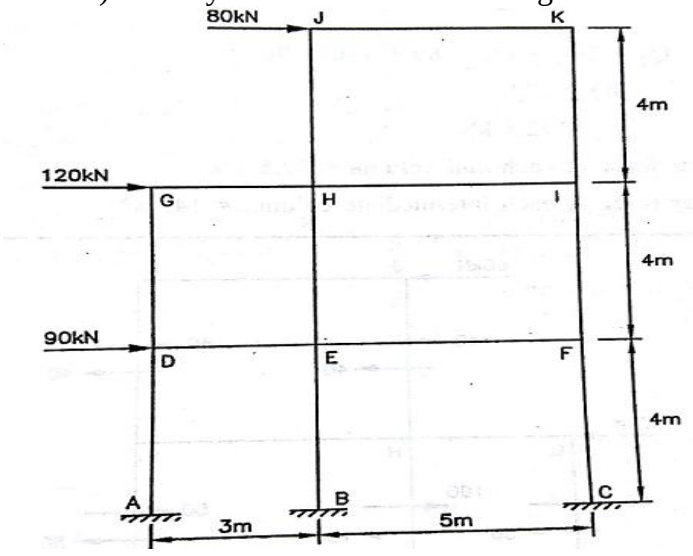

Fig.3