Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2019

Subject Name : Structural Analysis - II

Subject Code : 4TE04STAl **Branch: B.Tech (Civil)**

Semester : 4 **Date :22/04/2019** **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) The method of consistent deformation is also known as the …… (general force method/ displacement method) (1)

b) The statically determinate beam is analysed by the method of consistent deformation by first obtaining a ……(basic determinate structure/ basic indeterminate structure) (1)

c) What is strain energy? (1)

d) Define castigliano's second theorem. (1)

e) Write equation for castigliano's second theorem for the member is axial loading. (1)

f) The slope deflection method was first presented by ……... (Prof. George A. Maney/ Prof. George A. Safed) (1)

g) Write fixed end moments for any two load cases. (1)

h) What is sinking of supports? (1)

i) Define stiffness. (1)

j) What is carry over moment? (1)

k) Enlist various types of arches. (1)

l) What is distribution factor? (1)

m) Write any two importance of influence line diagram. (1)

n) What is flexibility? (1)

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

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

(A) Analyse the beam shown in fig.1 by moment distribution method and draw bending moment diagram. **(7)**

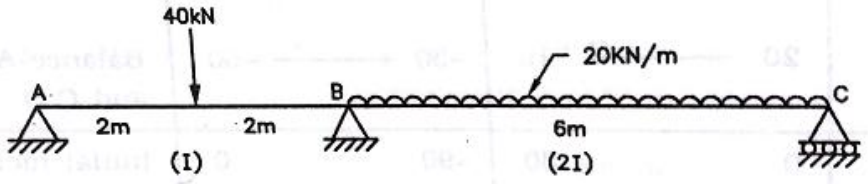

Fig-1

(B) Analyse the beam show in fig.2 by moment distribution method and draw bending moment diagram. **(7)**

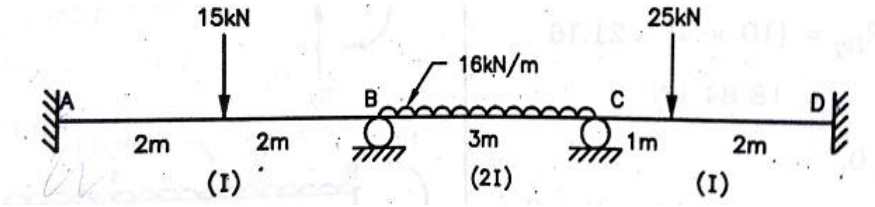

Fig-2

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

(A) Analyse the continues beam show in fig.3 by slope deflection method. Support B sinks 5 mm and support C sinks by 2mm. Take E=2x10^5 N/mm^2 and I = 16x10^{6}mm^4. **(7)**

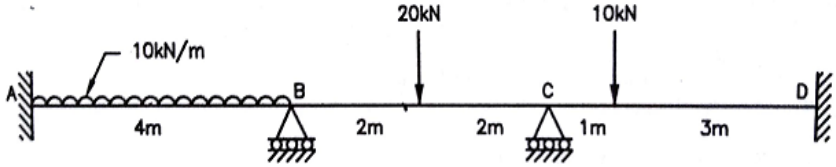

Fig-3

(B) Write different equilibrium equation for various types of beam. **(7)**

Q-4 **Attempt all questions** **(14)**

(A) Derive fundament equation for slope deflection method. **(7)**

(B) Analyse the beam show in fig.4 by slope – deflection method. **(7)**

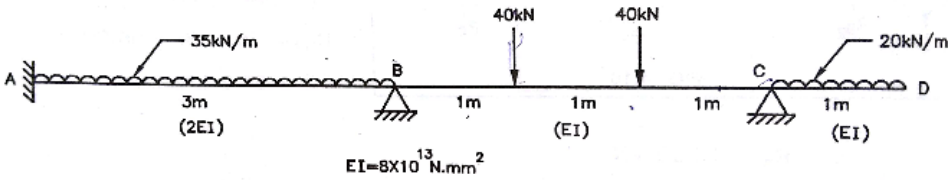

Fig-4

Q-5 **Attempt all questions** **(14)**

(A) Explain linear arch in detail. **(7)**

(B) A three hinged parabolic arch has span 20m and central rise 3m. It carries a point load of 10kN at 7.5m from the left hinge. Calculate normal thrust, Shear and B.M at section 7.5m from right end hinge. **(7)**

Q-6 **Attempt all questions** **(14)**

(A) Write difference between plane frame and grid.

(B) Determine reaction at prop for a proposed cantilever beam using

castigliano's second theorem as show in fig.5

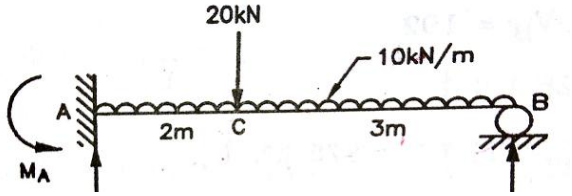

Fig-5

Q-7 **Attempt all questions** **(14)**

(A) Explain Muller- Breslau principle.

(B) Explain types of skeletal structures.

Q-8 **Attempt all questions** **(14)**

(A) Draw qualitative ILD for two span continuous beam. **(4)**

(B) Draw qualitative ILD for three span continuous beam. **(5)**

(C) Draw qualitative ILD for building frames. **(5)**