Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Winter Examination-2018

Subject Name : Structural Analysis - II

Subject Code : 4TE04STA1 **Branch: B.Tech (Civil)**

Semester : 4 **Date :25/10/2018** **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) What is Degree of Redundancy? (1)
b) Write any Two disadvantage of Indeterminate Structure. (1)
c) Who is stated "The displacement resulting from each of a number of force may added to obtained the displacement resulting from the sum of forces"? (1)
d) Write Maxwell's Reciprocal Theorem. (1)
e) The method of consistent deformation method is also known as the …… (1)
f) Write Equation for Deflection when applied Unit Load Method to Determinate Structures. (1)
g) What is Strain Energy? (1)
h) What is Fixed end moment ? (1)
i) What Is Settlement in beam ? (1)
j) In slope deflection method Rotations of the Joints are Treated as ……..(knowns/Unknowns/Fixed) (1)
k) What is Practical application of Influence lines ? (1)
l) Enlist Various Type Of Arch. (1)
m) Write Eddy's Theorem. (1)
n) Which one is accurate method for analysis of beam? (1)

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

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

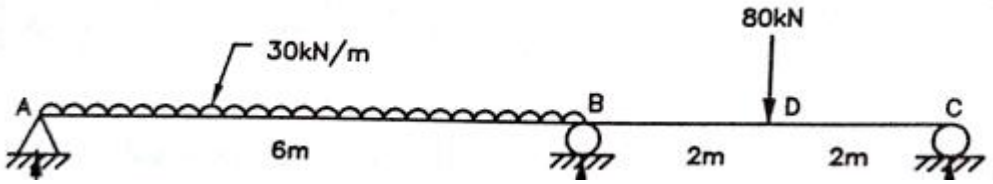
(A) Write Short Note on **(7)**
1) Degree of Redundancy of Space truss.
2) Degree of Redundancy of Space Frame.

(B) Explain law Of Superposition in detail. **(7)**

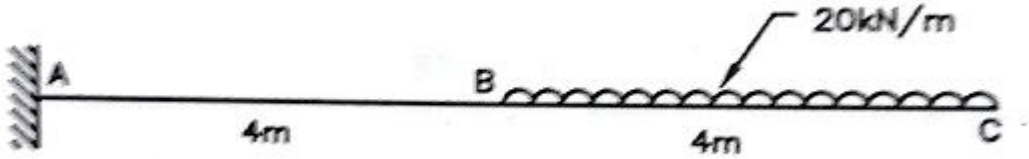
Q-3 **(14)**

Attempt all questions

(A) Determine Reaction at Support for a continuous beam Show in Fig Using Castigliano's Second Theorem. **(6)**

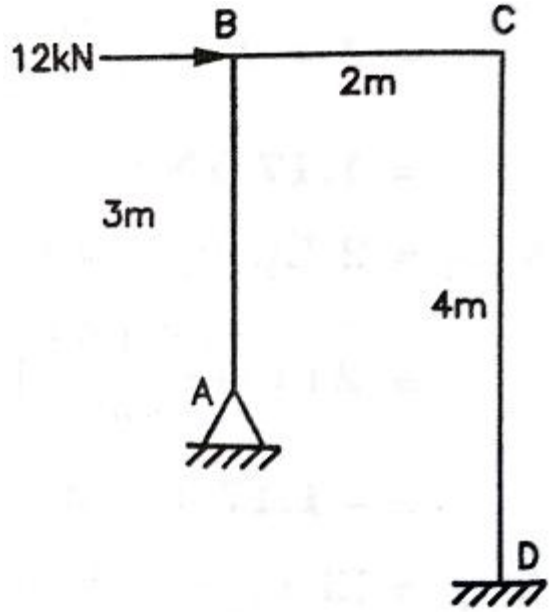


(B) Determine deflection at the free end of a cantilever beam using unit load method. **(8)**
$E = 2x10^5$ N/mm^2 and $I = 8x10^8$ mm^4

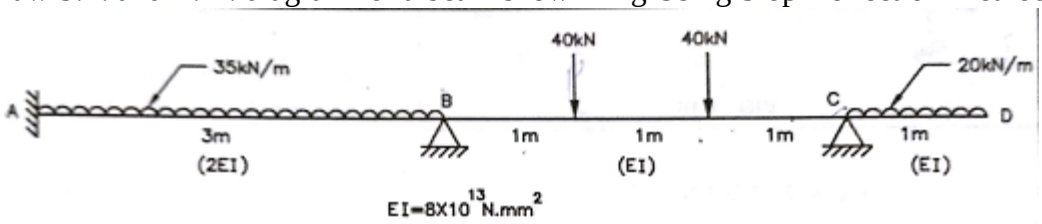


Q-4 **Attempt all questions** **(14)**

(A) Find the moment at A,B,C and D for Portal Frame Using Slop Deflection Method **(8)**
Show in fig Also Draw bending moment diagram. Take EI = Constant

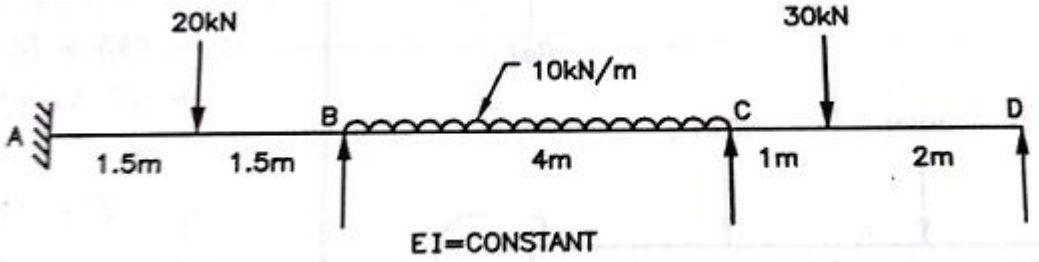


(B) Draw S.F. and B.M. diagram for a beam show in fig Using Slop Deflection Method **(6)**

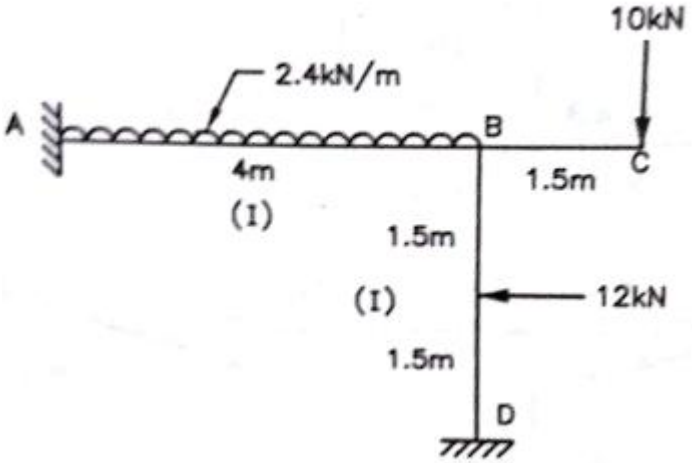


Q-5 **Attempt all questions** **(14)**

(A) Analysis the beam shown in fig by moment distribution method and draw B.M and S.F diagram **(6)**

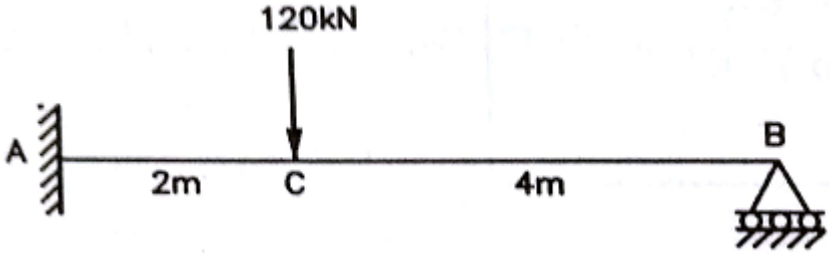


(B) Analyse the frame using Moment distribution method. **(8)**



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

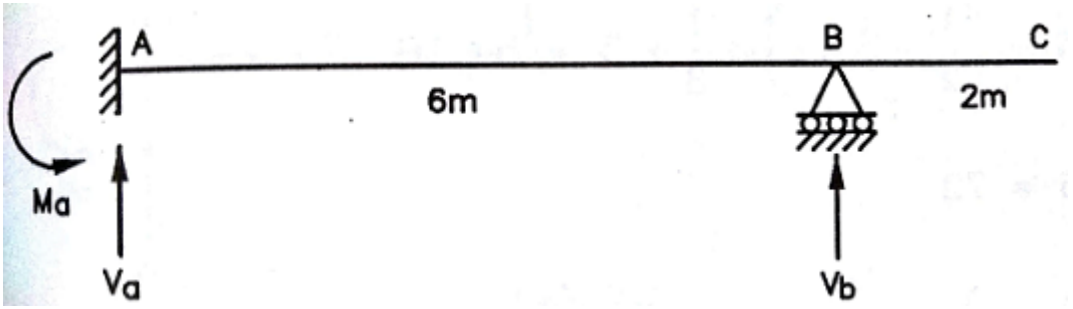
(A) Analyse the beam Show in Fig by consistent deformation method **(8)**



(B) A propped cantilever beam of span 'l' is subjected to a point load 'W' at center of the span. Determine all reaction and draw shear force and bending moment diagram. **(6)**

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

(A) Draw influence line diagram for V_a , V_b and M_a for a beam shown below. **(8)**



(B) A three hinged parabolic arch of 18m span and 4m central rise carries a point load of 3 kN at 3m from left hand hinged. Calculate the normal thrust and radial shear under the load. Also calculate the maximum positive and radial shear under the load. Also calculate the maximum positive and negative B.M **(6)**

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

(A) Write Short note on linear (Theoretical) arch. **(7)**

(B) Write short note on Stiffness and flexibility method **(7)**