Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2018

Subject Name : Structural Analysis - II

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

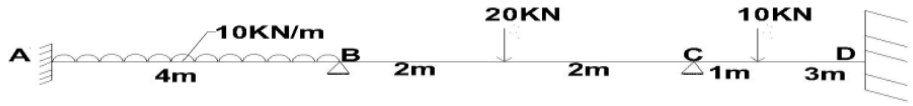
Semester : 4 **Date :01/05/2018** **Time : 10:30 To 01:30** **Marks : 70**

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) Write any two advantages of indeterminate structure. (1)
b) Consistent deformation method is also known as the …… (1)
c) What is actual arch? (1)
d) What is the fixed end moment when Point load acting on mid span of beam? (1)
e) Give fixed end moment for following beam (1)



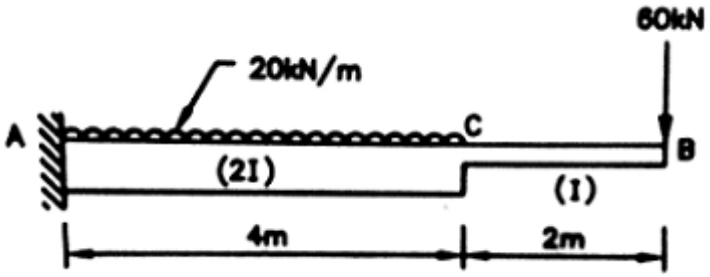
f) Castigliano's Second theorem is also known as the ……or…… (1)
g) What is sinking? (1)
h) What is the Maximum moment when beam is loaded with UDL throughout length? (1)
i) Who was introduced moment distribution method? (1)
j) Define relative stiffness. (1)
k) States the MULLER-BRESLAU PRINCIPLE. (1)
l) What does an ILD indicate? (1)
m) What is qualitative influence line? (1)
n) What is flexibility? (1)

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

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

(A) A three hinge parabolic arch of 20m span and 4m central rise carries a Point load of 4kN at 4m from left hand hinge. Calculate the normal thrust and radial shear under the load. also calculate the Maximum positive and negative B.M. **(7)**

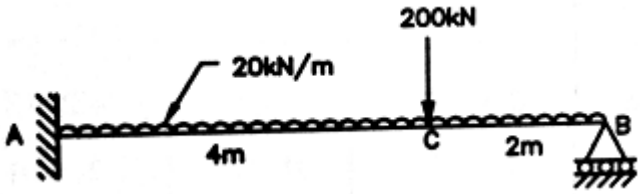
(B) Find θ_c and δ_c for a beam shown in figure by unit load method . **(7)**
EI = $10x10^{13}$ N.mm^2



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

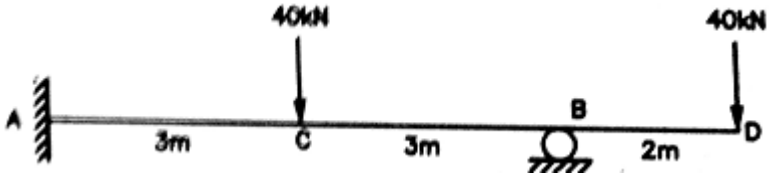
(A) Enlist various type of Arches .Explain Linear arch (Theoretical Arch). **(6)**

(B) Determine the reaction at B for the propped cantilever beam show in figure. Use Castigliano's theorem. **(8)**



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

(A) Determine supports reaction of a propped cantilever beam show in fig using method of consistent deformation. **(8)**

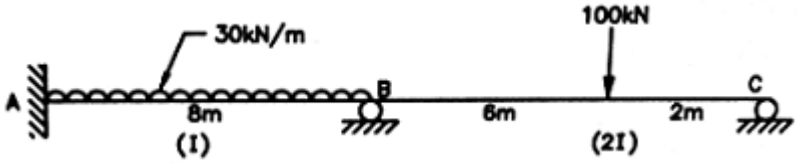


(B) Derive fundamental equation for slop deflection method. **(6)**

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

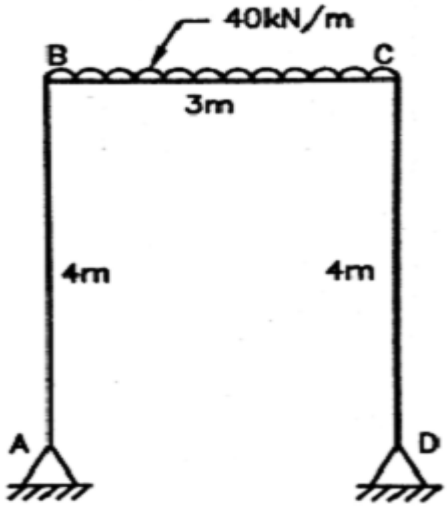
(A) Write differences between statically determinate and indeterminate structures. **(6)**

(B) Using slope deflection method analyse the continuous beam shown in figure. and draw the B.M diagram **(8)**



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

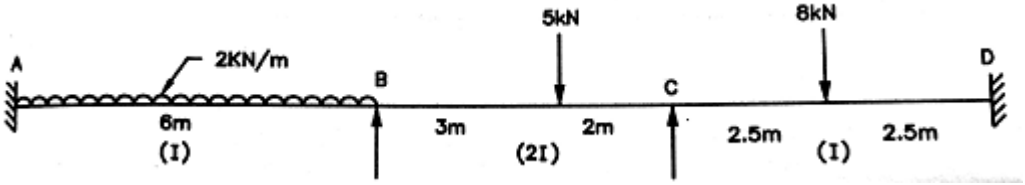
(A) Find support moments using Slope deflection method and draw BMD for a Non sway portal frame shown in Figure EI = Constant. **(8)**



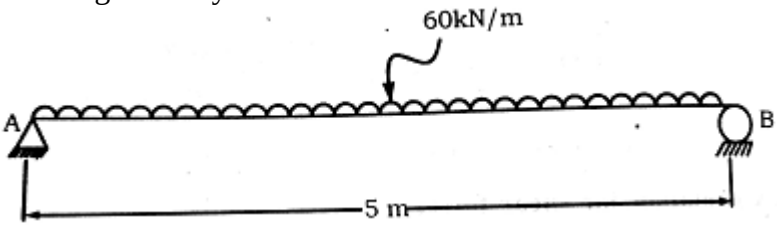
(B) Write differences between stiffness and flexibility **(6)**

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

(A) Analyse the continuous beam using Moment Distribution Method ABCD as shown in figure below. **(8)**



(B) Analyse the following beam by stiffness matrix method. **(6)**



(14)

Q-8 **Attempt all questions**

Construct the influence lines for, V_a, V_b, V_c, V_d, M_1 and V_2 for a three span continuous beam shown in figure below.