Total No. of Questions – [08]   Total No. of Printed Pages 03

G.R. No.	

Paper Code - U228 - III (ESE)

MAY 2019/ENDSEM
S. Y. B. TECH. (CIVIL ENGINEERING) (SEMESTER - II)
COURSE NAME: THEORY OF STRUCTURES
**COURSE CODE: CVUA2217**
**(PATTERN 2017)**

Time: [2 Hours]   [Max. Marks: 50]

(*) Instructions to candidates:
1)   Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8
2)   Figures to the right indicate full marks.
3)   Use of scientific calculator is allowed
4)   Use suitable data whereever required
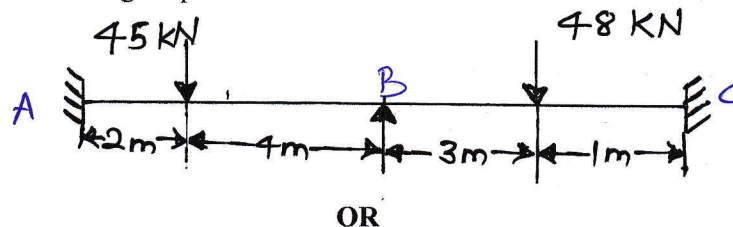
Q.1)   a)   Calculate the support moments in the continuous beam loaded and supported as   [6]
shown below using Three Moment Equtions.

OR
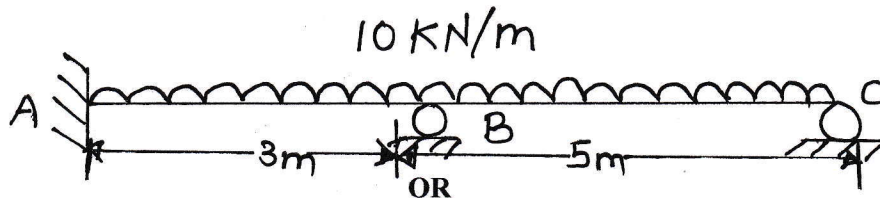
   b)   Determine the support reactions for the cantilever beam as shown below using Strain   [6]
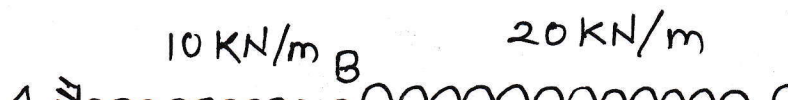Energy Method.
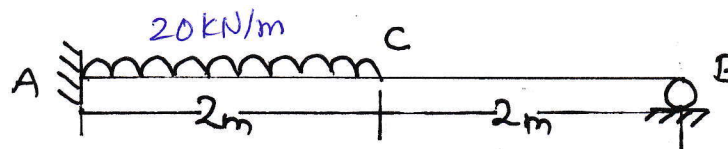
Q.2)   a)   Calculate the support moments in the continuous beam loaded and supported as   [6]
shown below using Slope Deflection Method.

OR

   b)   Calculate the support moments in the continuous beam loaded and supported as   [6]
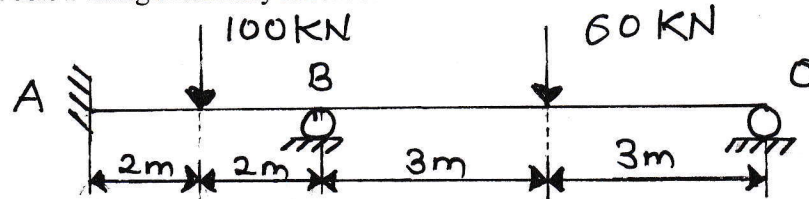shown below using Moment Distribution Method.
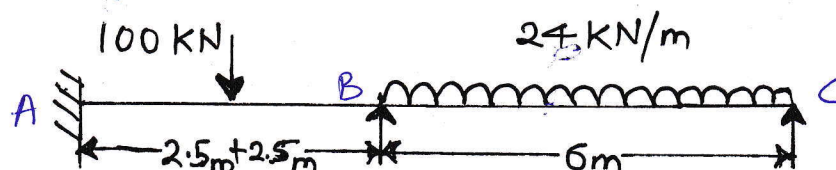
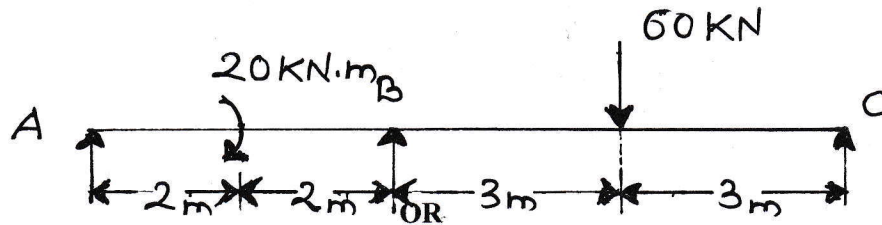Q.3)   a)   Compute the flexibility coefficients for the beam loaded and supported as shown.   [6]

OR

b) Calculate the deflection at B and C for the continuous beam loaded and supported as shown below using Flexibility Method. [6]


Q.4) a) Compute the Fixed End Moments and derive stiffness matrix for the beam loaded and supported as shown below. [4]


OR

b) Compute the Fixed End Moments and derive stiffness matrix for the frame loaded and supported as shown below. [4]
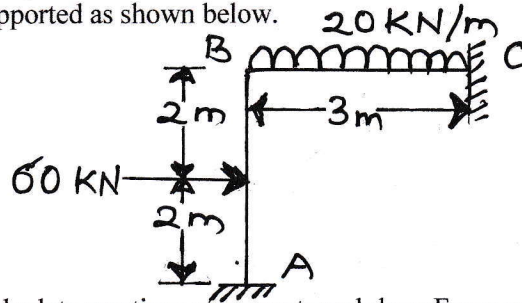

Q.5) a) Calculate reactions at supports and shear Force and bending moment at C for the beam loaded and supported as shown below. Use Influence Line Diagram. [6]
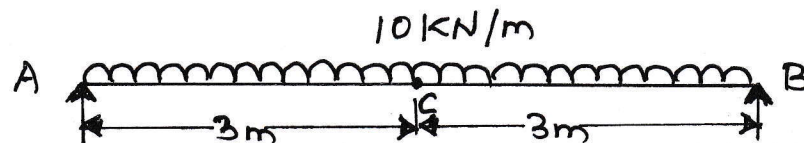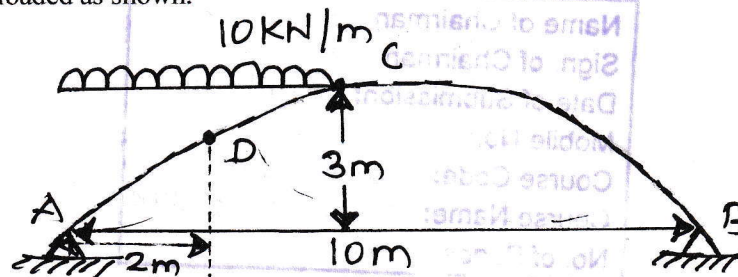

b) Calculate shear Force and bending moment at C for the beam loaded and supported as shown below. Use Influence Line Diagram. [4]
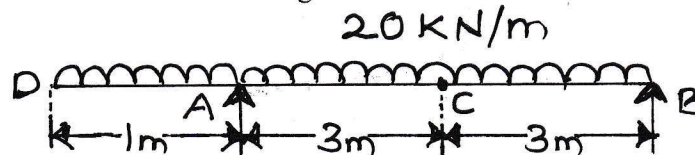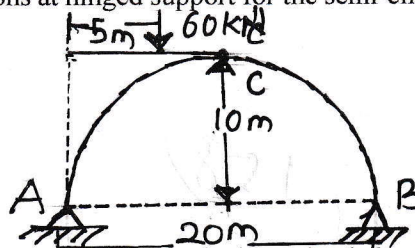

c) Determine the vertical reactions at the hinge support for a semi-circular arch as shown below. [4]
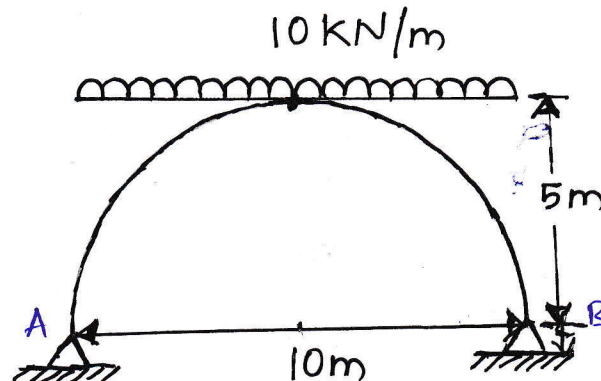
Q.6) a) Determine the reactions at hinge support and bending moment at D for the parabolic [6]
arch loaded as shown.

10KN/m

C

D 3m

A

2m 10m B

b) Determine the reactions at hinged support for the semi-circular arch as shown below. [4]

5m 60KN

C
10m

A 20m B

c) Compute the reactions at A and B for the beam loaded as shown. Use Influence Line [4]
Diagram.

50 KN

20 KN/m B
A C

4m 1m
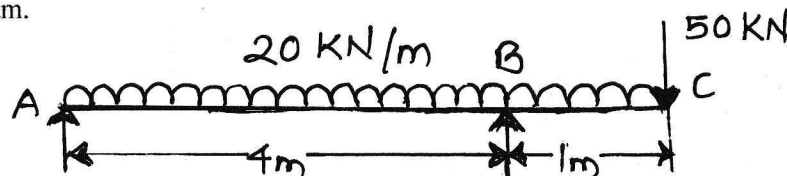
Q.7) a) Compute the Shear Force in the columns of all the floors of the frame loaded as shown [6]
using Portal Method.

B A

C 60 KN

3m

F E D 80KN

3m

I H G

3m 3m
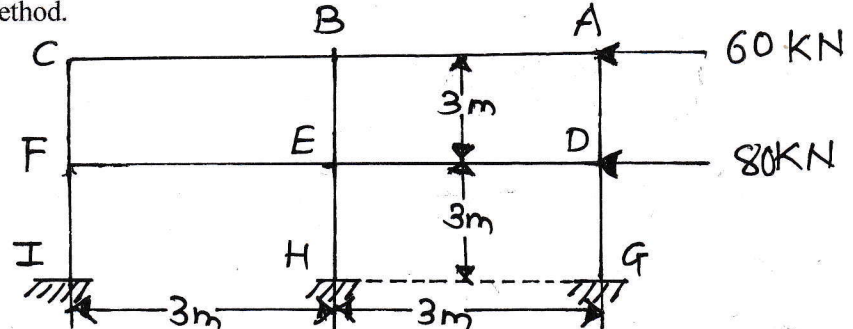
b) Compute the axial and shear force in the beam AB and column AD for the frame of [4]
Q7 a.

c) Compute the axial and shear force in the beam BC and column BE for the frame of [4]
Q7 a.

OR

Q.8) a) Compute the Axial Force in the columns of all the floors of the frame loaded as shown [6]
using Cantilever Method.

20 kN A B

3.5m

40 KN C D

3.5m

E F

4m
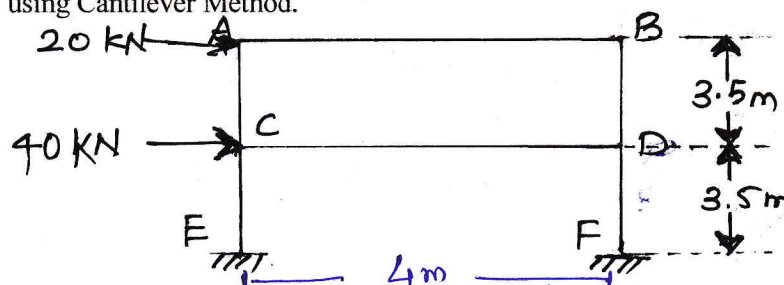
b) Compute the axial and shear force in the beam AB and column AC for the frame of [4]
Q8 a.

c) Compute the axial and shear force in the beam CD and column DF for the frame of [4]
Q8 a.