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

G.R. No.	

U229-111 (BE - FE FT)

DEC 2019/BACKLOG / END-SEM

S. Y. B. TECH. (CIVIL ENGINEERING) (SEMESTER - II)

COURSE NAME: THEORY OF STRUCTURES

COURSE CODE: CVUA22171

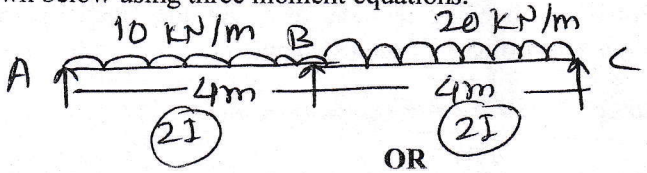
(PATTERN 2017)

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

(*) Instructions to candidates:

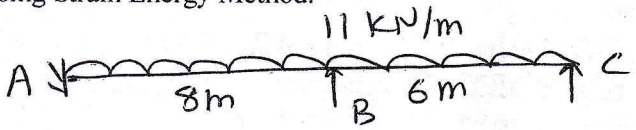
1) **Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data whereever required**

Q.1) a) Compute the support moments for the continuous beam loaded and supported as shown below using three moment equations. [6]

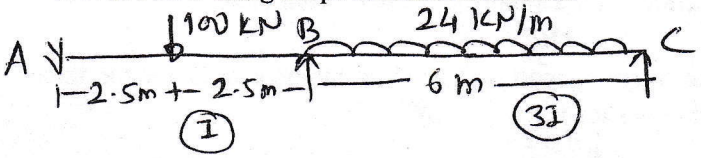


OR

b) Determine the support reactions for the propped cantilever beam as shown below using Strain Energy Method. [6]

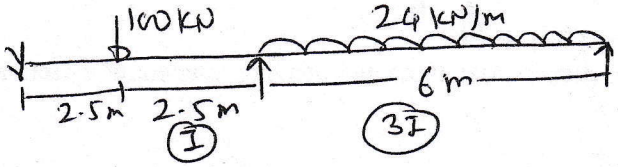


Q.2) a) Calculate the support moments in the continuous beam loaded and supported as shown below using Slope Deflection Method. [6]

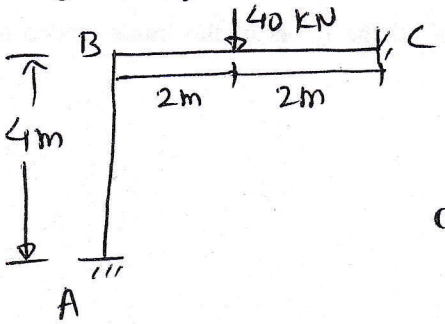


OR

b) Calculate the support moments in the continuous beam loaded and supported as shown below using Moment Distribution Method. [6]

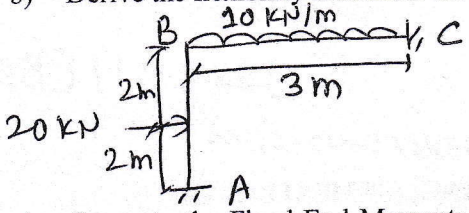


Q.3) a) Determine the reactions at C for the frame frame loaded and supported as shown using Flexibility Method. [6]

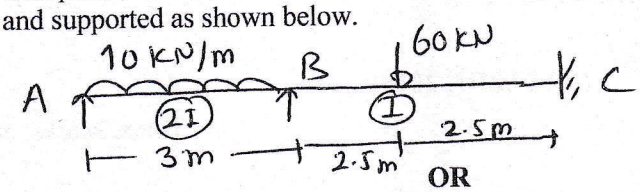


OR

b) Derive the flexibility matrix for the frame and supported as shown. [6]

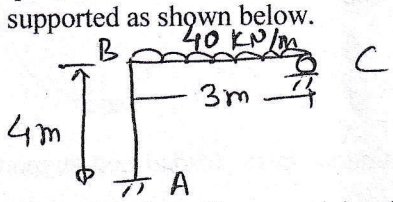


Q.4) a) Compute the Fixed End Moments and derive stiffness matrix for the beam loaded and supported as shown below. [4]

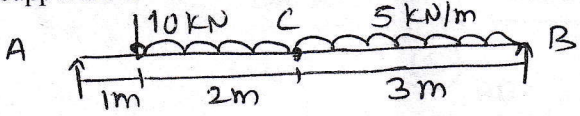


OR

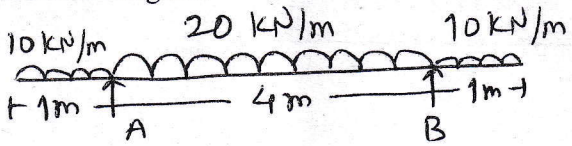
b) Compute the Fixed End Moments and derive stiffness matrix for the frame loaded and supported as shown below. [4]



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



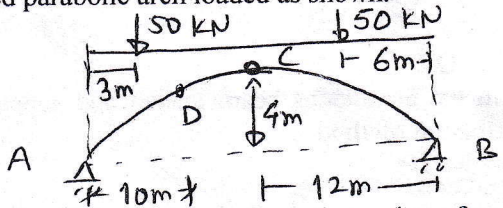
b) Calculate the support reactions for the beam loaded and supported as shown below. Use Influence Line Diagram. [4]



c) Draw typical Influence Line Diagrams for the support reactions, shear force and bending moment at any section C for a simply supported beam of span L. [4]

OR

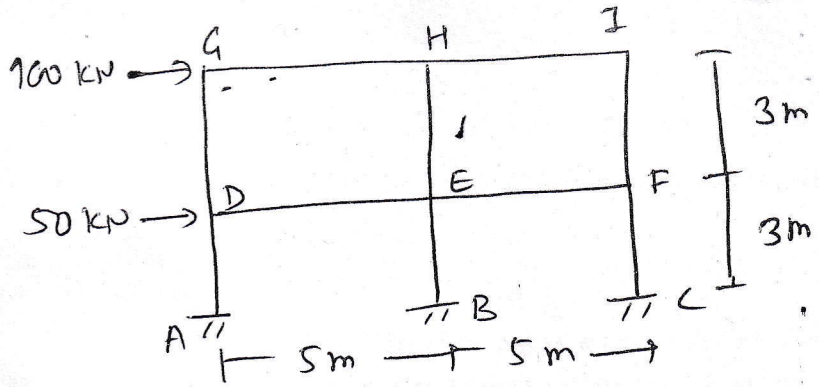
Q.6) a) Determine the reactions at hinge support and bending moment at D for the three hinged parabolic arch loaded as shown. [6]



b) Draw the ILDs for support reactions, shear force and bending moment at a section for a simply supported beam. [4]

c) Write the equation of parabolic arch assuming left support as origin. [4]

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

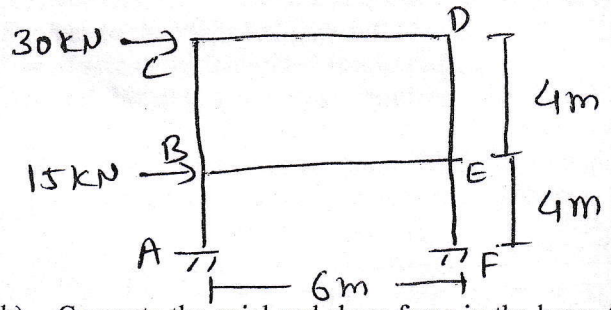


b) Compute the axial and shear force in the beam GH and column GD for the frame of Q7 a. [4]

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

OR

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



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

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