CBCS Scheme

USN | | | | | | | | | | |

15CV52

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Analysis of Indeterminate Structures

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 Analyze the continuous beam shown in Fig.Q1 by slope deflection method. Draw BMD and EC.

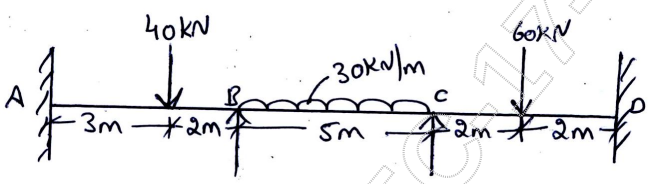

Fig.Q1 **(16 Marks)**

OR

2 Analyze the portal frame shown in Fig.Q2 by slope deflection method. Draw BMD.

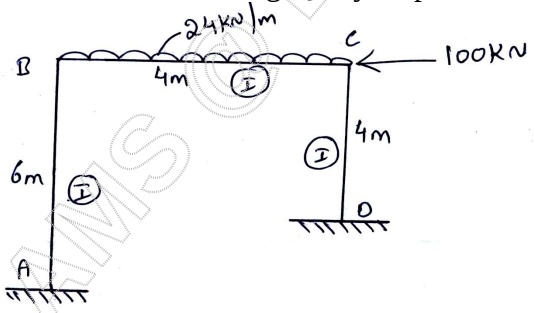

Fig.Q2 **(16 Marks)**

Module-2

3 Analyze the continuous beam by moment distribution method shown in Fig.Q3. The support 'B' sinks by 10 mm. Take EI = 4000 kN-m^2. Draw BMD and EC.

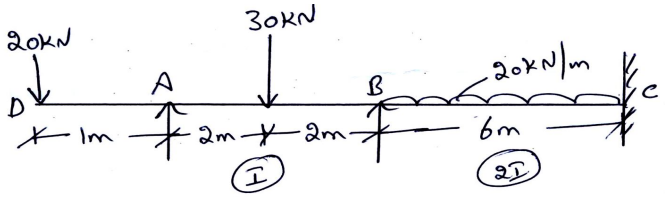

Fig.Q3 **(16 Marks)**

OR

4 Analyze the frame shown in Fig.Q4 by moment distribution method. Draw BMD.

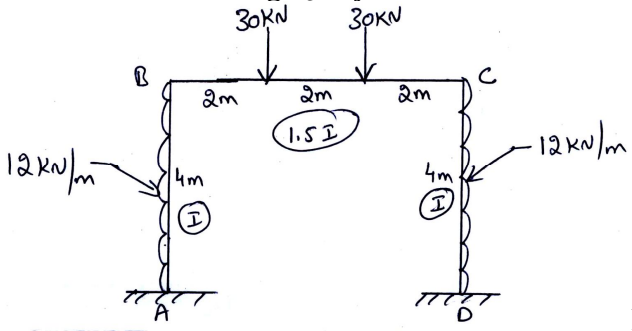

Fig.Q4 **(16 Marks)**

Module-3

5 Analyze the continuous beam by Kani's method. Shown in Fig.Q5. Draw BMD.

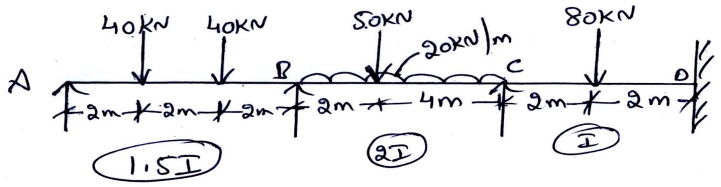

Fig.Q5 **(16 Marks)**

OR

6 Analyze the frame shown in Fig.Q6 by Kani's method. Draw BMD.

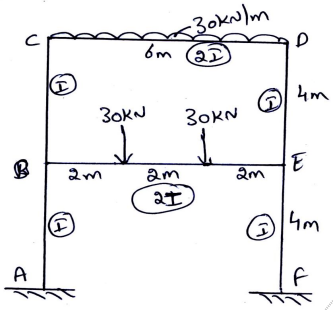

Fig.Q6 **(16 Marks)**

Module-4

7 Analyze the beam shown by flexibility matrix method. Draw BMD.

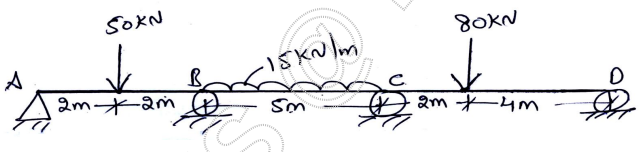

Fig.Q7 **(16 Marks)**

OR

8 Analyze the beam shown in Fig.Q8 by flexibility matrix method. Draw BMD.

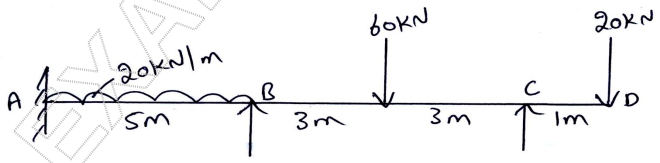

Fig.Q8 **(16 Marks)**

Module-5

9 Analyze the continuous beam shown in Fig.Q9 by stiffness matrix method. Draw BMD.

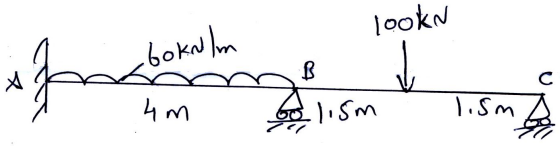

Fig.Q9 **(16 Marks)**

OR

10 Analyze the portal frame shown in Fig.Q10 by stiffness matrix method. Draw BMD.

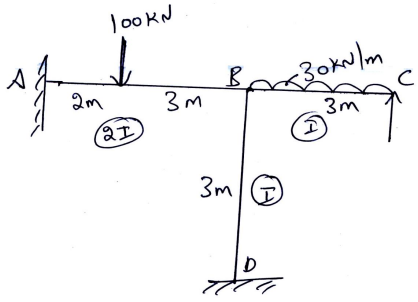

Fig.Q10 **(16 Marks)**

* * * * *

Modified

CBCS SCHEME

USN | | | | | | | | | | |

15CV52

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Analysis of Indeterminate Structures

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 Analyze the continuous beam shown in Fig.Q.1 by slope deflection method and draw BMD. **(16 Marks)**

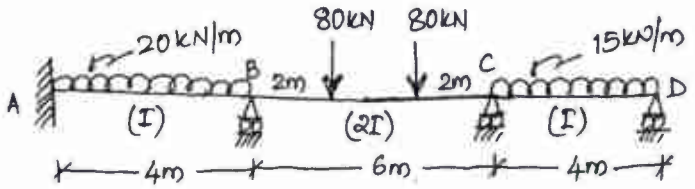

Fig.Q.1

OR

2 Analyze the rigid frame shown in Fig.Q.2 by slope deflection method and draw BMD. **(16 Marks)**

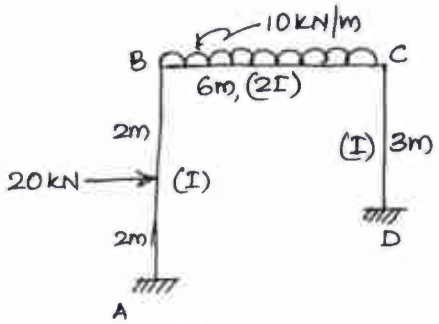

Fig.Q.2

Module-2

3 Analyze and draw BMD for the continuous beam shown in Fig.Q.3 by moment distribution method if support 'B' sinks by 30mm and support 'C' sinks by 20mm. Take EI = 24,000 kNm^2. **(16 Marks)**

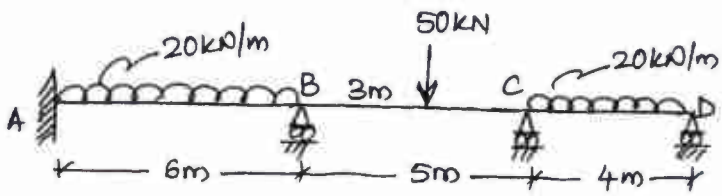

Fig.Q.3

OR

4 Analyze the rigid frame shown in Fig.Q.4 by moment distribution method and draw BMD. **(16 Marks)**

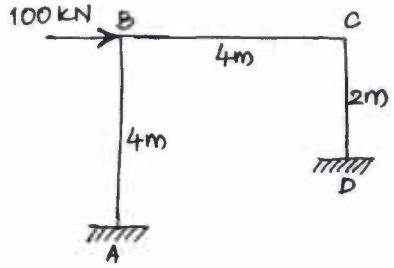

Fig.Q.4

Module-3

5 Analyze and draw BMD for the continuous beam shown in Fig.Q.5 by Kani's method, if support 'B' sinks by 10mm and $E = 2 \times 10^5$ N/mm^2, $I = 1.2 \times 10^{-4}$ m^4. **(16 Marks)**

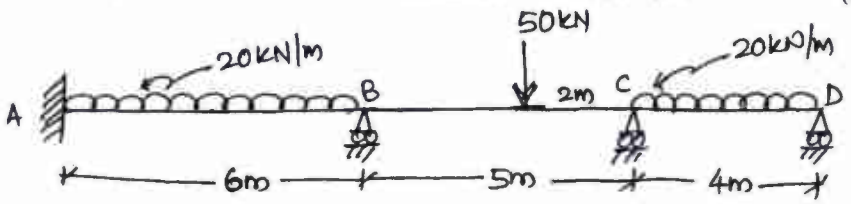

Fig.Q.5

OR

6 Analyze the rigid frame shown in Fig.Q.6 by Kani's method and draw BMD. **(16 Marks)**

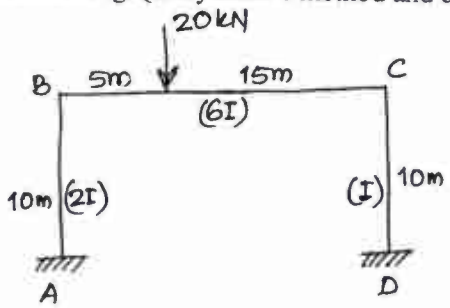

Fig.Q.6

Module-4

7 Analyze the continuous beam shown in Fig.Q.7 by matrix flexibility method using system approach and draw BMD. Take moments as redundants. **(16 Marks)**

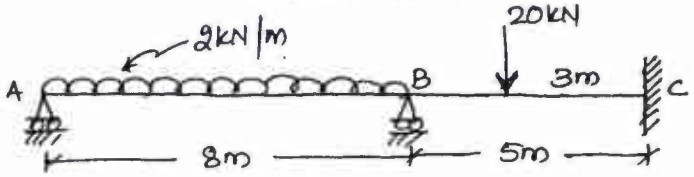

Fig.Q.7

OR

8 Analyze the pin-jointed truss shown in Fig.Q.8 by matrix flexibility method of system approach and determine forces in all the members. Take force in member 'OA' as redundant. **(16 Marks)**

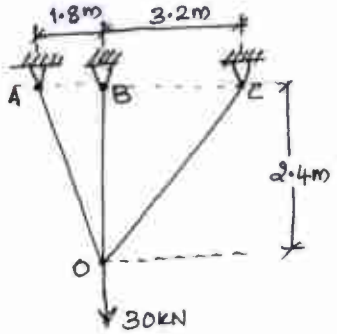

Fig.Q.8

Module-5

9 Analyze the rigid frame shown in Fig.Q.9 by matrix stiffness method and draw BMD. **(16 Marks)**

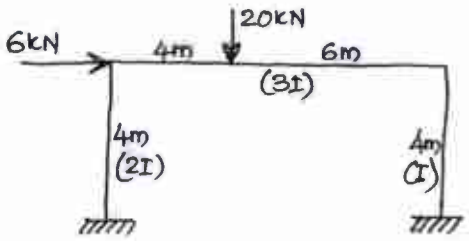

Fig.Q.9

OR

10 Analyze the pinjointed frame shown in Fig.Q.10 by matrix stiffness method and find forces in all the members. The numbers in parentheses are the C/S areas of members in sqmm. (Take E = constant). **(16 Marks)**

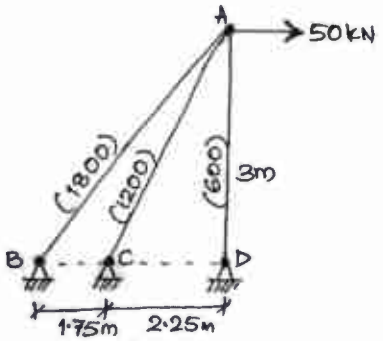

Fig.Q.10

* * * * *

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Analysis of Indeterminate Structures

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 Analyse the beam completely by slope deflection method relative to support A support B sinks by 1mm and support C rises by 0.5 mm. Take EI = 30000 kN-m2. Refer Fig.Q1. Draw BMD, SFD and Elastic curve.

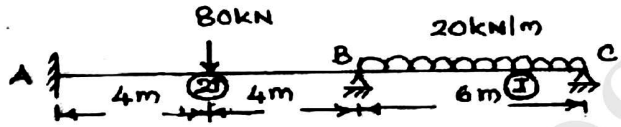

Fig.Q1 **(20 Marks)**

OR

2 Analyse the given frame by slope deflection method. Draw SFD, BMD and elastic curve. Refer Fig.Q2.

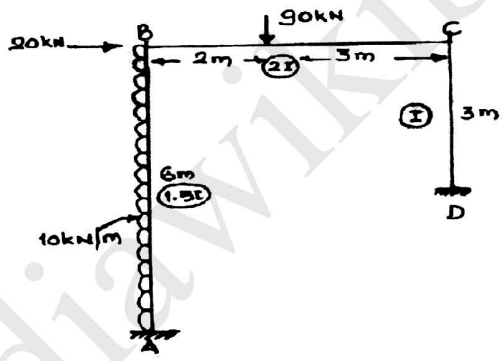

Fig.Q2 **(20 Marks)**

Module-2

3 Analyse the beam shown in Fig.Q3 by moment distribution method. Draw BMD, SFD and elastic curve.

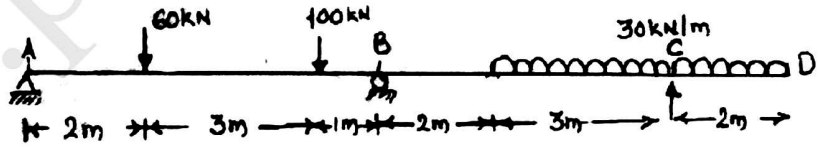

Fig.Q3 **(20 Marks)**

OR

4 Analyse the frame by moment distribution method. Draw BMD, SFD and elastic curve. Refer Fig.Q4.

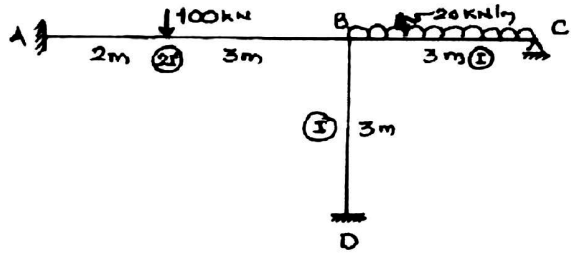

Fig.Q4

(20 Marks)

Module-3

5 Analyse the three span continuous beam shown in Fig.Q5 by using Kani's method. Draw BMD, SFD and elastic curve.

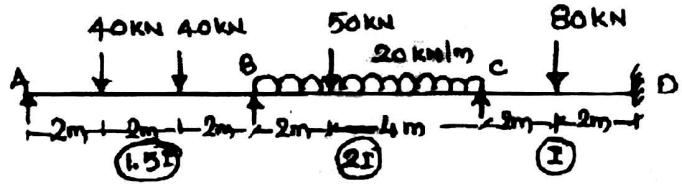

Fig.Q5 **(20 Marks)**

OR

6 Analyse the portal frames shown in Fig.Q6 by using Kani's method. Draw BMD, SFD and elastic curve.

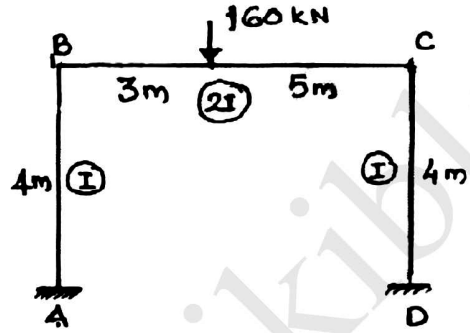

Fig.Q6 **(20 Marks)**

Module-4

7 Analyse the continuous beam shown in Fig.Q7 by flexibility method using system approach. Support B sinks by 5 mm sketch BMD, SFD and elastic curve. Take EI = 15×10^3 kN-m^2.

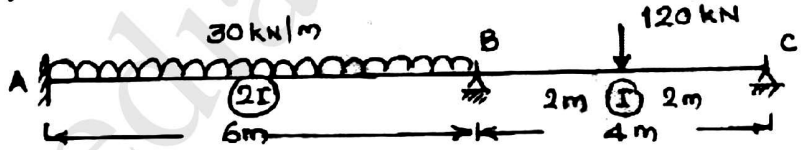

Fig.Q7 **(20 Marks)**

OR

8 Analyse the pin jointed plane truss shown in Fig.Q8 by using flexibility matrix method. Assume $\frac{L}{AE}$ for each member = 0.025 mm/kN. Tabulate the member forces.

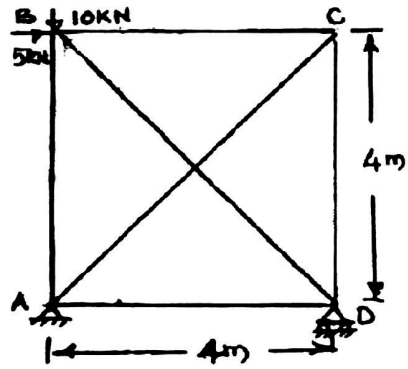

Fig.Q8 **(20 Marks)**

Module-5

9 Analyse the frame shown in Fig.Q9 by stiffness matrix method and draw BMD, SFD and Elastic curve. Assume EI is constant throughout.

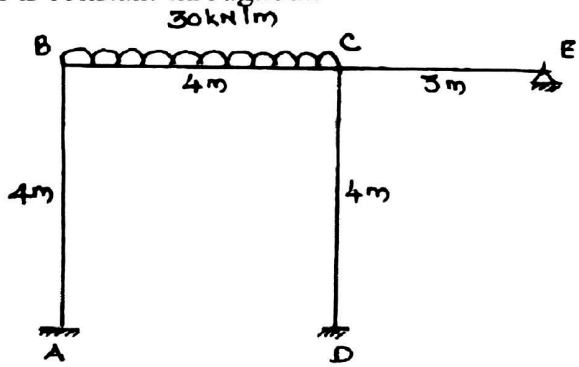

Fig.Q9 **(20 Marks)**

OR

10 Analyse the continuous beam shown in Fig.Q10 by using stiffness matrix method.

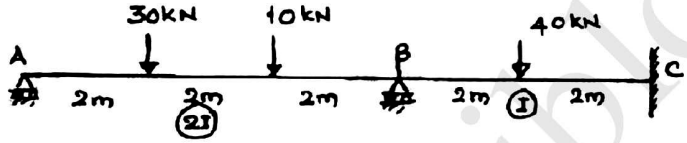

Fig.Q10 **(20 Marks)**

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Analysis of Indeterminate Structures

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 Analyse the continuous beam shown in Fig Q1 by slope deflection method. Draw bending moment diagram and shear force diagram.

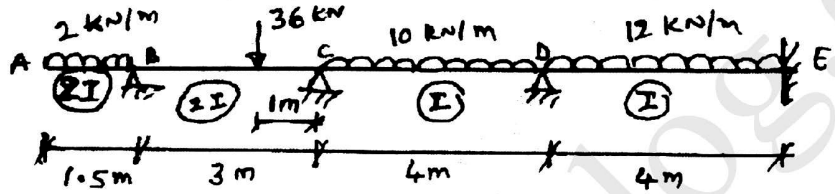

Fig Q1 **(16 Marks)**

OR

2 Analyse the portal frame shown in Fig Q2 by slope deflection method. Draw bending moment diagram.

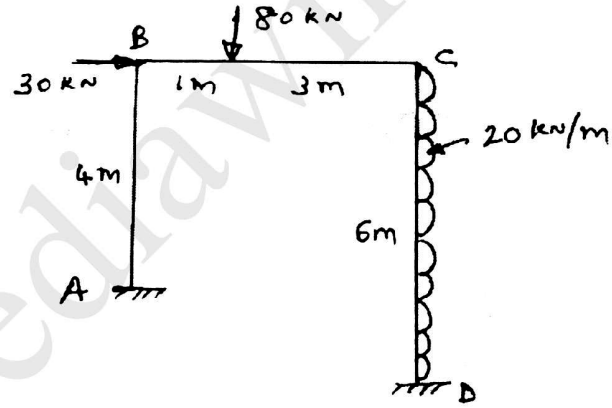

Fig Q2 **(16 Marks)**

Module-2

3 Analyse the continuous beam shown in Fig Q3 by moment distribution method. Draw bending moment diagram and shear force diagram. Support at B sinks by 10mm.

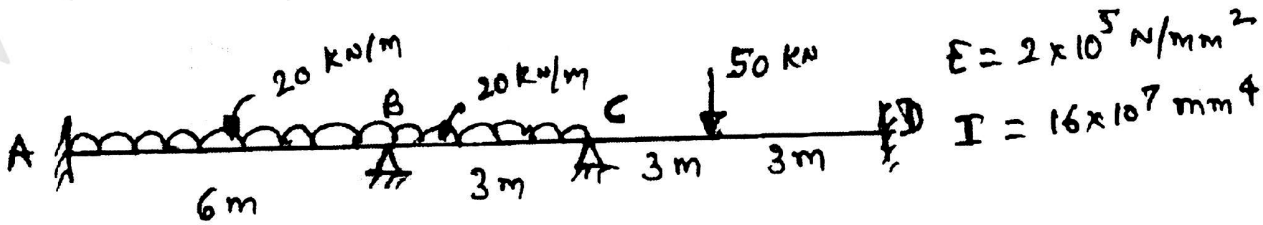

Fig Q3 **(16 Marks)**

OR

4 Analyse the frame shown in Fig Q4 by moment distribution method. Draw bending moment diagram.

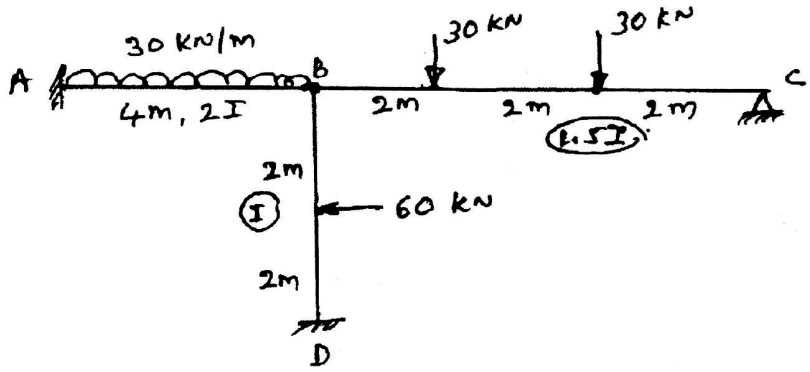

Fig Q4 **(16 Marks)**

Module-3

5 Analyse the continuous beam shown in Fig Q5 by rotation contribution method. Draw bending moment diagram and shear force diagram.

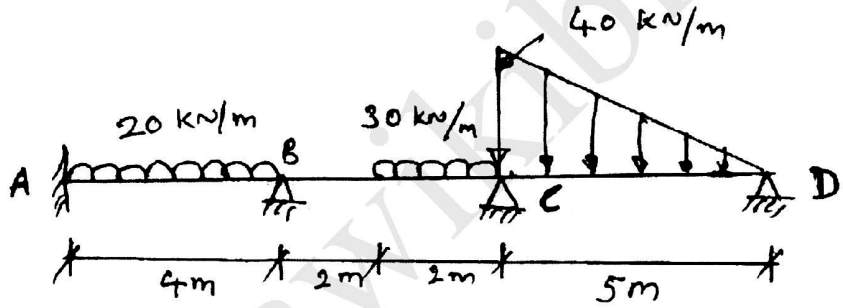

Fig Q5 **(16 Marks)**

OR

6 Analyse the frame shown in Fig Q6 by Kani's method. Draw bending moment diagram. Use axis of symmetry approach.

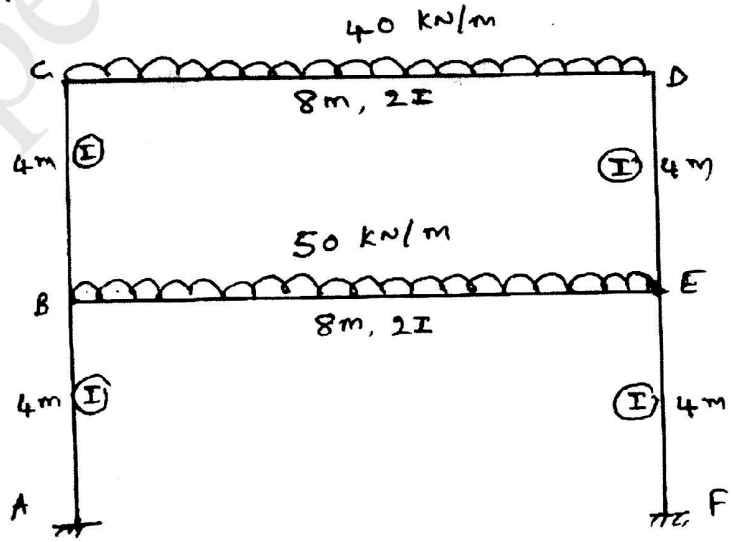

Fig Q6 **(16 Marks)**

Module-4

7 Analyse the continuous beam shown in Fig Q7 by flexibility matrix method. Draw BMD and SFD.

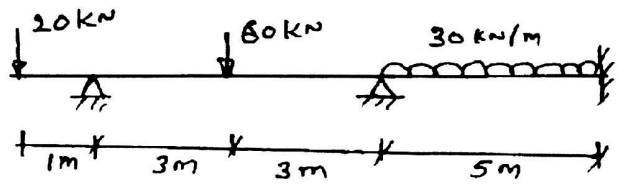

Fig Q7 **(16 Marks)**

OR

8 Analyse the pin jointed plane shown in Fig Q8 by flexibility matrix method to compute axial forces in the members. Assume $\frac{L}{AE}$ for each member is 0.025mm/kN.

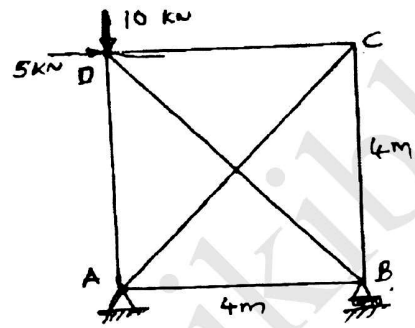

Fig Q8 **(16 Marks)**

Module-5

9 Analyse the continuous beam shown Fig Q9 by stiffness matrix method. Draw SFD and BMD.

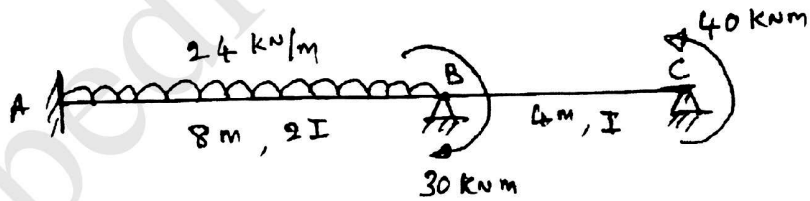

Fig Q9 **(16 Marks)**

OR

10 Analyse the portal frame shown in Fig Q10 by stiffness matrix method. Draw bending moment diagram.

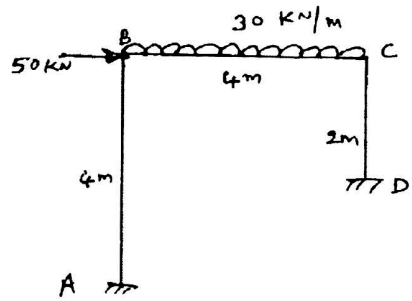

Fig Q10 **(16 Marks)**

CBCS Scheme

USN | | | | | | | | | | |

15CV52

Fifth Semester B.E. Degree Examination, June/July 2018
Analysis of Indeterminate Structures

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 Analyze the continuous beam as shown in Fig.Q1 by slope deflection method and also determine its bending moment diagram and shear force diagram.

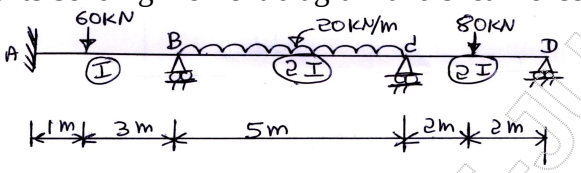

Fig.Q1 **(16 Marks)**

OR

2 Analyze the rigid jointed frame as shown in Fig.Q2 by slope deflection method and also determine its bending moment diagram.

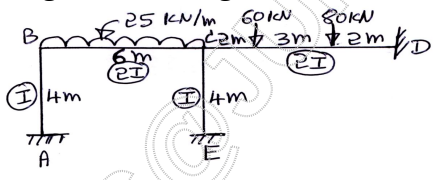

Fig.Q2 **(16 Marks)**

Module-2

3 Analyze the continuous beam as shown in Fig.Q3 by moment distribution method and also determine its bending moment diagram and shear force diagram.

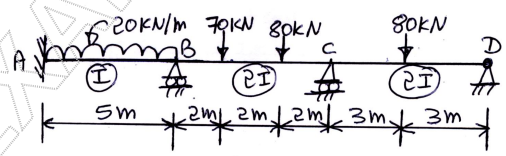

Fig.Q3 **(16 Marks)**

OR

4 Analyze the portal frame as shown in Fig.Q4 by moment distribution method and also determine its bending moment diagram.

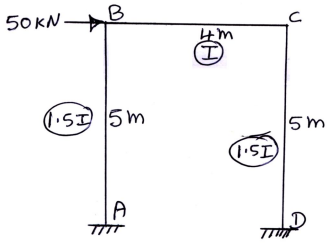

Fig.Q4 **(16 Marks)**

Module-3

5 Analyze the continuous beam as shown in Fig.Q5 by Kani's method and also determine its bending moment diagram and shear force diagram.

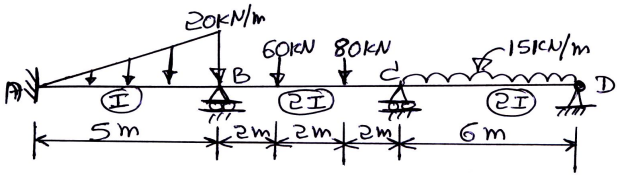

Fig.Q5 **(16 Marks)**

OR

6 Analyze the portal frame as shown in Fig.Q6 by Kani's method by taking the advantage of symmetry and also determine its bending moment diagram.

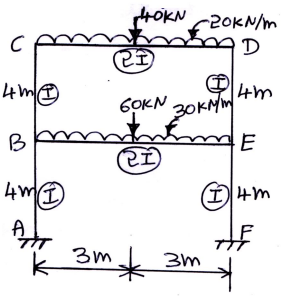

Fig.Q6 **(16 Marks)**

Module-4

7 Analyze the continuous beam as shown in Fig.Q7 by flexibility matrix method with system approach and also determine its bending moment diagram.

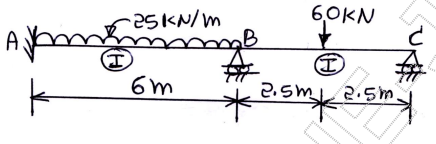

Fig.Q7 **(16 Marks)**

OR

8 Analyze the mill bent as shown in Fig.Q8 by flexibility matrix method with system approach and also determine its bending moment diagram.

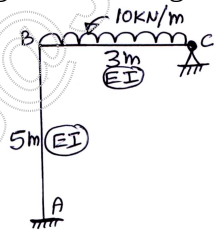

Fig.Q8 **(16 Marks)**

Module-5

9 Analyze the rigid jointed frame as shown in Fig.Q9 by stiffness matrix method with system approach and also determine its bending moment diagram.

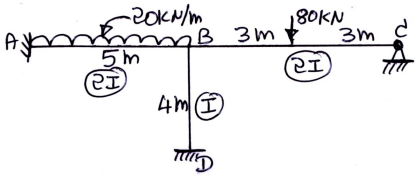

Fig.Q9 **(16 Marks)**

OR

10 Analyze the truss joint as shown in Fig.Q10 by stiffness matrix method with system approach and also tabulate the member forces. Cross section area of all members are 1000 mm^2 and E = 2×10^5 N/mm^2.

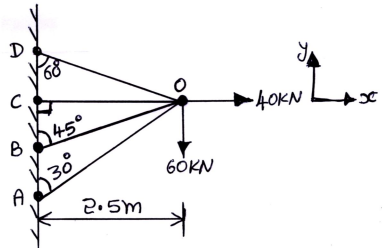

Fig.Q10 **(16 Marks)**

* * * * *

Fifth Semester B.E. Degree Examination, June/July 2019
Analysis of Indeterminate Structures

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Analyse the continuous beam shown in Fig.Q1(a) by slope deflection method. Draw bending moment diagram. EI is constant. **(06 Marks)**

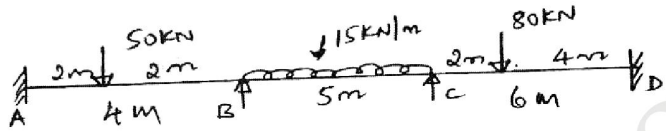

Fig.Q1(a)

b. Analyse the portal frame shown in Fig.Q1(b) by slope deflection method. Draw bending moment diagram. **(10 Marks)**

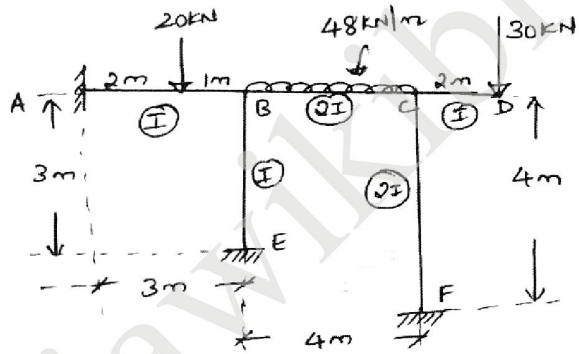

Fig.Q1(b)

OR

2 a. Analyse the continuous beam shown in Fig.Q2(a) by slope deflection method. Support 'B' sinks by 3 mm. Take EI = 3000 kN-m^2. Draw bending moment diagram. **(06 Marks)**

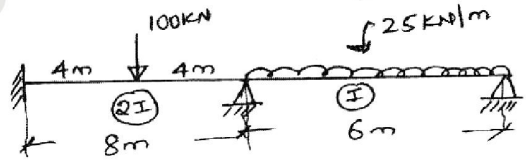

Fig.Q2(a)

b. Analyse the portal frame shown in the Fig.Q2(b) by slope deflection method. Draw bending moment diagram. **(10 Marks)**

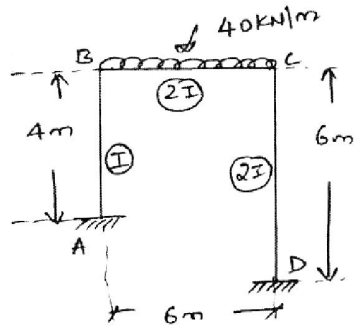

Fig.Q2(b)

Module-2

3 a. Analyse the continuous beam using moment distribution method. Draw bending moment and shear force diagram. Refer Fig.Q3(a). **(06 Marks)**

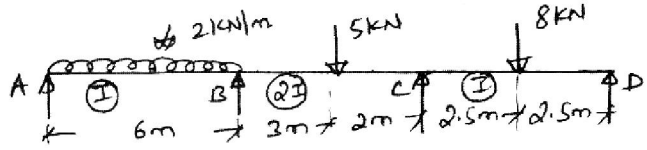

Fig.Q3(a)

b. Analyse the portal frame shown in Fig.Q3(b) using moment distribution method. Draw bending moment diagram. Take EIS = 20 kN-m^3. **(10 Marks)**

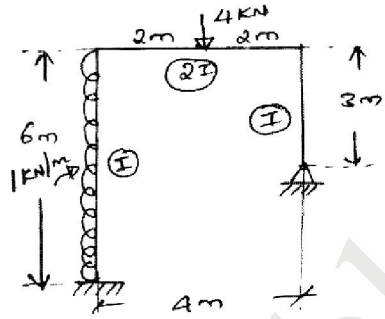

Fig.Q3(b)

OR

4 a. A horizontal beam is loaded as shown in Fig.Q4(a). It support 'A' sinks by 10 mm and B by 30 mm and C by 20 mm. Determine the end moments in the beam. Given I = 2.4×10^6 mm^4 and E = 2×10^5 N/mm^2. **(08 Marks)**

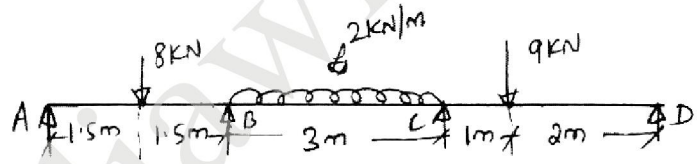

Fig.Q4(a)

b. Analyse the portal frame shown in Fig.Q4(b) using moment distribution method. Draw bending moment. **(08 Marks)**

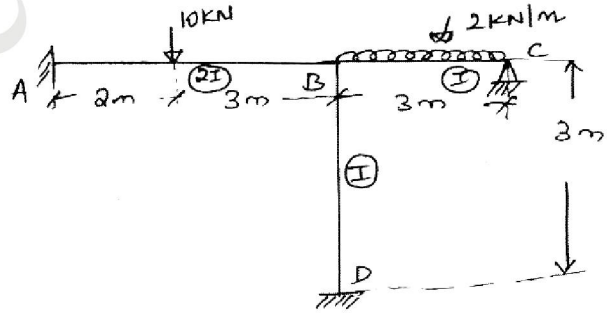

Fig.Q4(b)

Module-3

5 a. Analyse the continuous beam shown in Fig.Q5(a) using Kani's method. Draw bending moment diagram. **(08 Marks)**

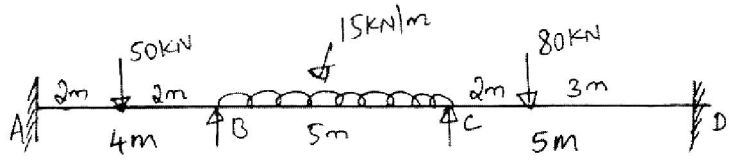

Fig.Q5(a)

b. Analyse the frame shown in Fig.Q5(b) using Kani's method. Draw bending moment diagram. **(08 Marks)**

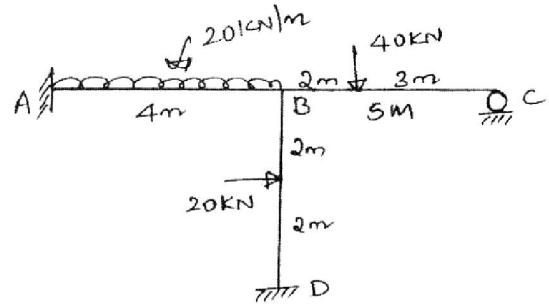

Fig.Q5(b)

OR

6 Analyse the frame shown in Fig.Q6 by Kani's method. Draw bending moment diagram.

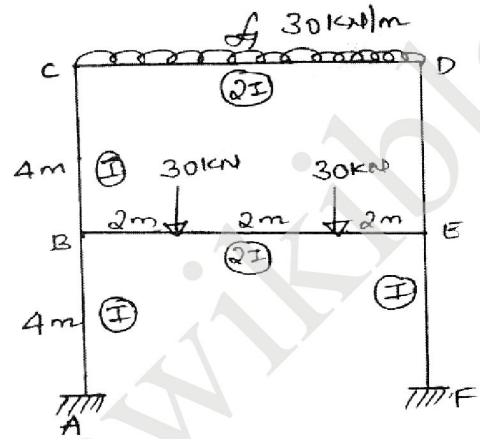

Fig.Q6 **(16 Marks)**

Module-4

7 a. Analyse the beam shown in Fig.Q7(a) by flexibility method and draw bending moment diagram. **(08 Marks)**

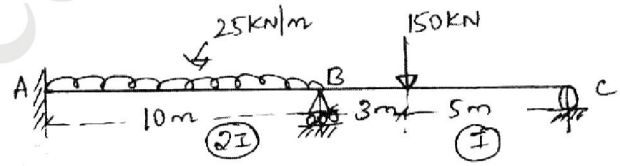

Fig.Q7(a)

b. Analyse the frame shown in Fig.Q7(b) by flexibility method and draw bending moment diagram. **(08 Marks)**

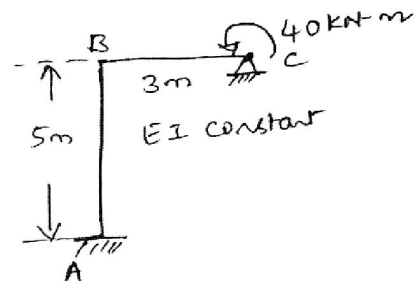

Fig.Q7(b)

OR

8 Analyse the pin-jointed frame shown in Fig.Q8 by flexibility method. The cross-sectional areas A and E for all members is the same. **(16 Marks)**

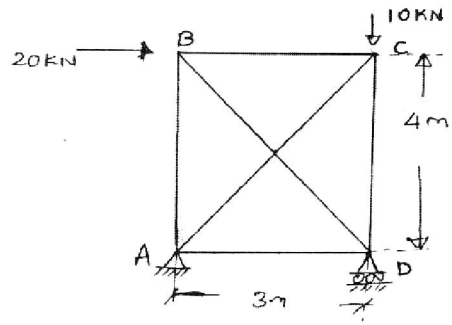

Fig.Q8

Module-5

9 a. Analyse the continuous beam shown in Fig.Q9(a) by stiffness method. Draw bending moment diagram. **(08 Marks)**

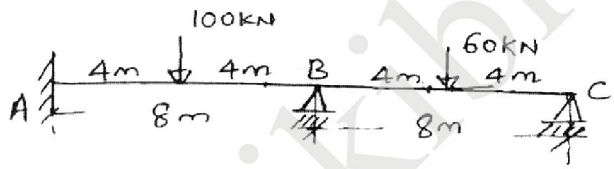

Fig.Q9(a)

b. Analyse the portal frame shown in Fig.Q9(b) by stiffness method. Draw bending moment diagram. **(08 Marks)**

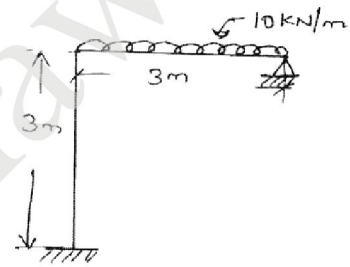

Fig.Q9(b)

OR

10 Using stiffness method determine the displacements at the joint 'B' of a pin-jointed frame shown in Fig.Q10. Also calculate the forces in the members AB and BC due to given loading. The values of area of cross-section are indicated. Take $E = 2\times10^5$ N/mm^2. **(16 Marks)**

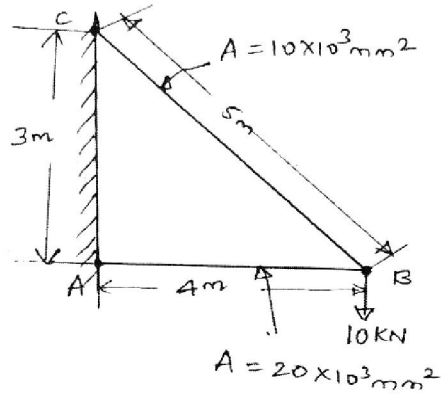

Fig.Q10

Model Question Paper (CBCS Scheme)

Fifth Semester B.E. Degree Examination (CIVIL)
Analysis of Indeterminate Structures (15CV52)

Time: 3 Hours **Max. Marks: 80**

Note: Answer FIVE full questions, choosing one full question from each Module.

Module -1

1. A horizontal beam ABCD is loaded as shown in Fig. Q1. Plot SFD and BMD. Use slope deflection method. Support B settles by 10mm. E = 2 x 10^5 N/mm^2 I = 2.4 x 10^6 mm^4. (16 marks)

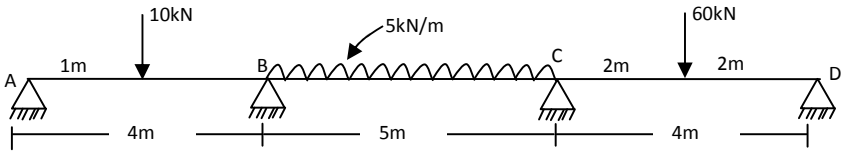

Fig. Q.1

OR

2. Analyze the frame shown in Fig. Q2 using slope deflection method. Draw BMD. (16 marks)

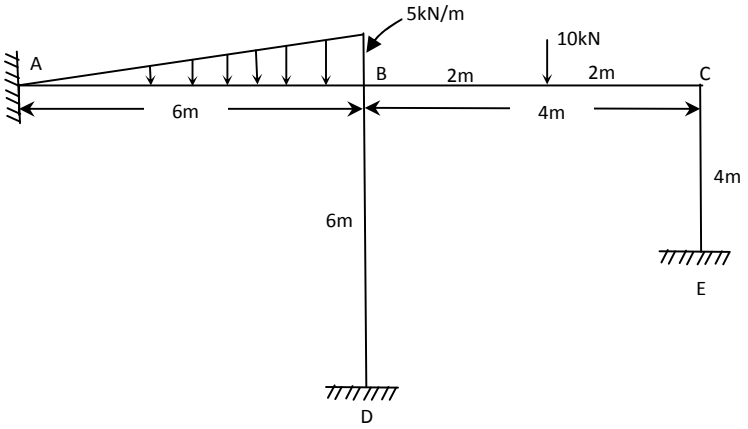

Fig. Q.2

Module -2

3. Analyze the portal frame shown in Fig. Q3 using moment distribution method. Draw BMD (16 marks)

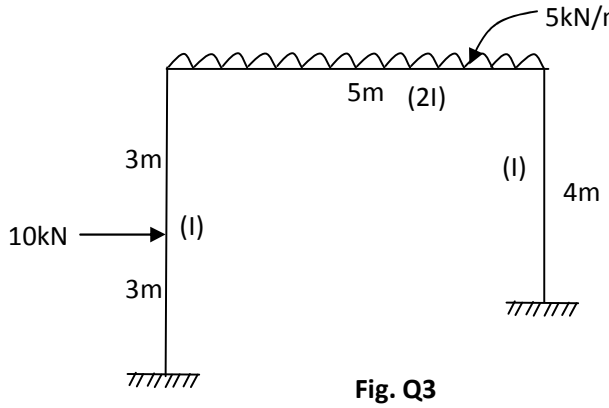

Fig. Q3

OR

4. Analyze the continuous beam shown in Fig.Q4 using moment distribution method. Draw SFD and BMD. (16 marks)

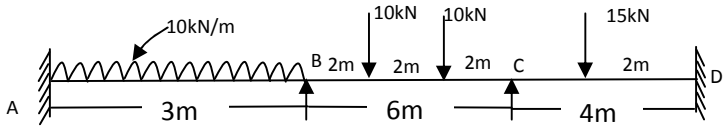

Fig.Q4

Module -3

5. Analyze the frame shown in Fig. Q5 using Kani's method taking advantage of symmetry. (16 marks) Draw BMD

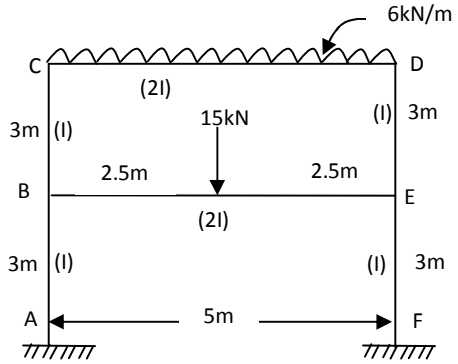

Fig.Q5

OR

6. Analyze the beam shown in Fig.Q6 using Kani's method. Draw BMD and elastic curve. (16 marks)

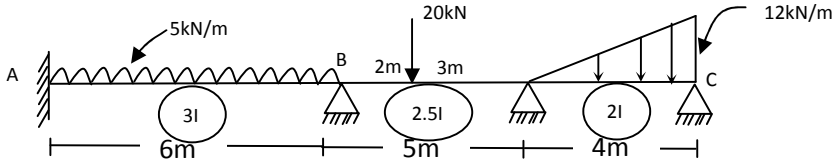

Fig.Q6

Module -4

7. Using flexibility matrix method, analyze the beam shown in Fig. Q7. Sketch SFD and BMD (16 marks)

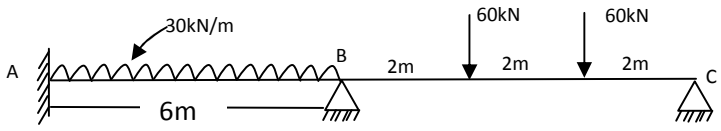

Fig.Q7

OR

8. Analyze the frame shown in Fig. Q8 using matrix flexibility method. Draw BMD (16 marks)

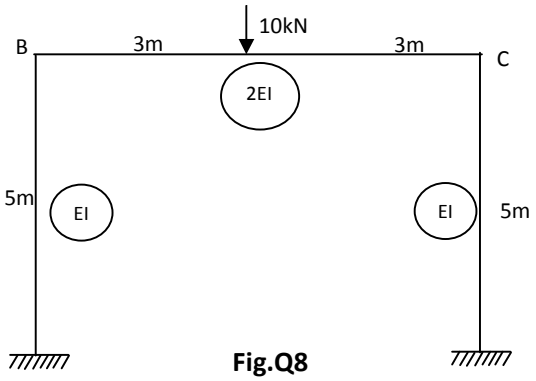

Fig.Q8

Module -5

9. Using stiffness method, determine forces in the members AB and BC of a pin jointed frame given in Fig. Q9. The cross sections are indicated in the brackets against each member. E = 2 x 10^5 N/mm^2 (16 marks)

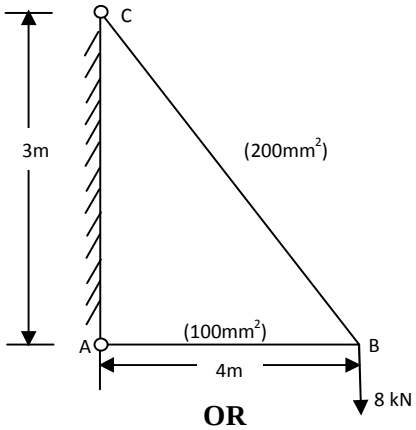

Fig.Q9

OR

10. Analyze the frame shown in Fig. Q10 using stiffness method. Draw BMD (16 marks)

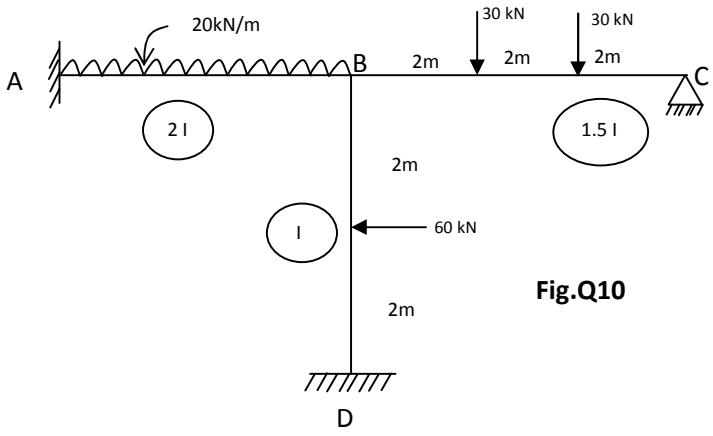

Fig.Q10