CBCS SCHEME

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

15CV52

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.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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)**

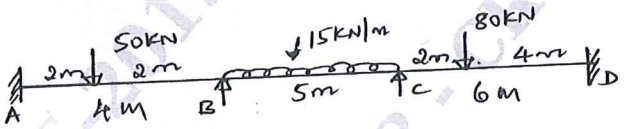

Fig.Q1(a)

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

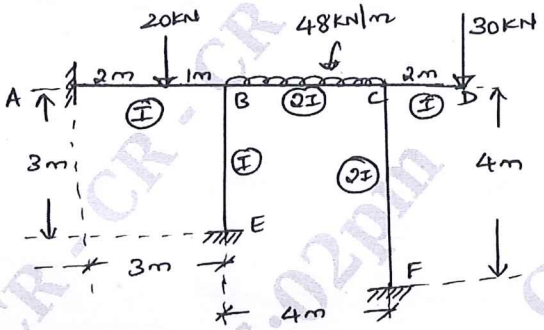

Fig.Q1(b)

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)**

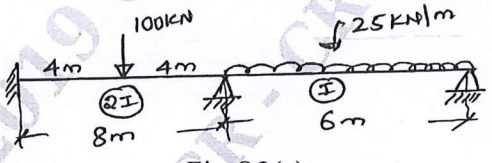

Fig.Q2(a)

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

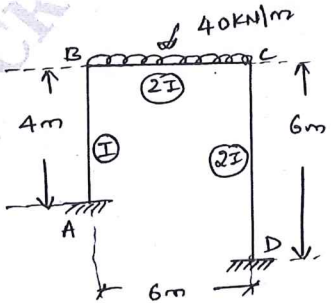

Fig.Q2(b)

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)**

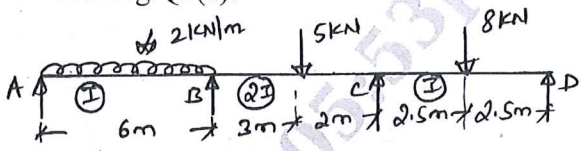

Fig.Q3(a)

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)**

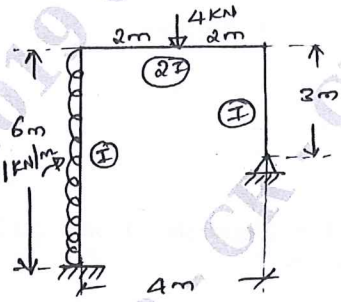

Fig.Q3(b)

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)**

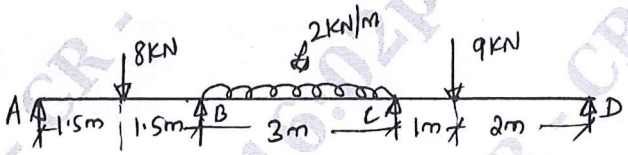

Fig.Q4(a)

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

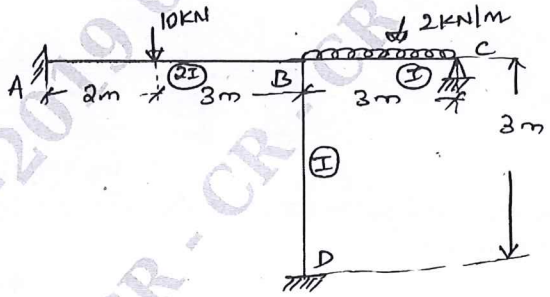

Fig.Q4(b)

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Module-3

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

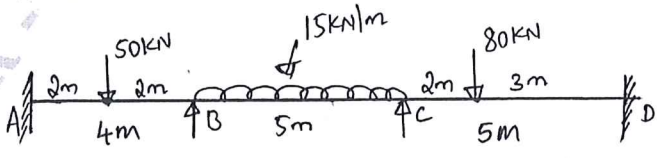

Fig.Q5(a)

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

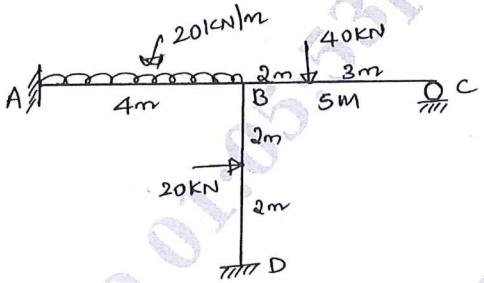

Fig.Q5(b)

OR

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

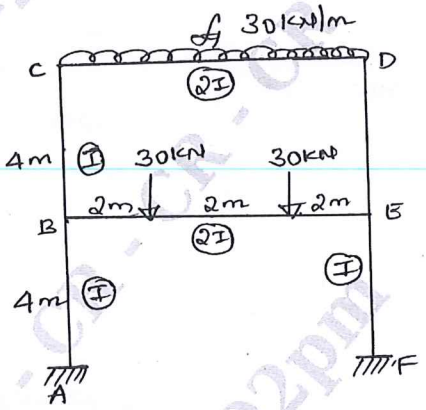

Fig.Q6 **(16 Marks)**

Module-4

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

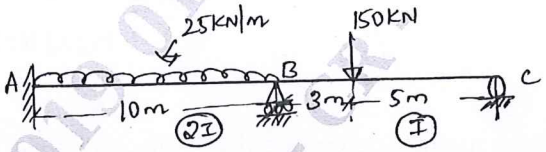

Fig.Q7(a)

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

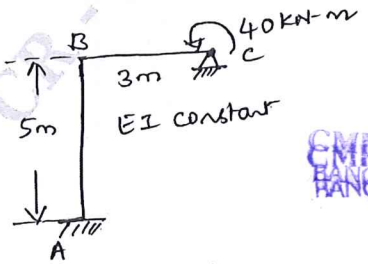

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Fig.Q7(b)

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)**

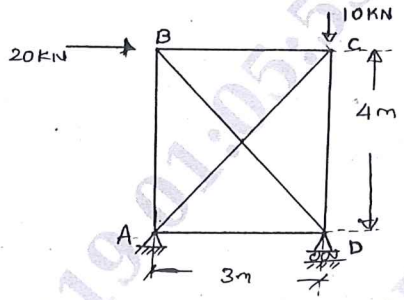

Fig.Q8

Module-5

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

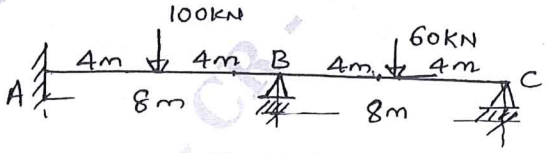

Fig.Q9(a)

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

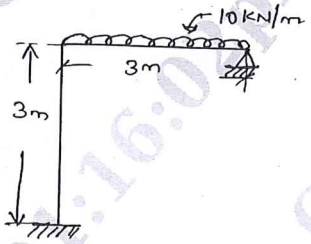

Fig.Q9(b)

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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)**

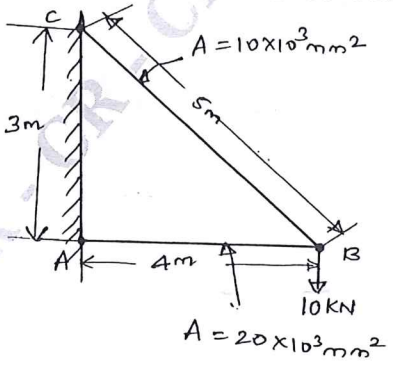

Fig.Q10

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