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15CV52

## Fifth Semester B.E. Degree Examination, July/August 2022 Analysis of Indeterminate Structures

Time: 3 hrs.

Max. Marks: 80

**Note:** 1. Answer any FIVE full questions, choosing ONE full question from each module.  
2. Missing data may be assumed suitably.

### Module-1

- 1 Analyze the continuous beam shown in Fig. Q1 by slope deflection method. The support B sinks by an amount 10 mm. Take  $EI = 30000 \text{ kN-m}^2$ . Draw BMD and sketch Elastic curve.



Fig. Q1

(16 Marks)

OR

- 2 Analyze the frame shown in Fig. Q2 by slope deflection method. Draw BMD and sketch Elastic curve.

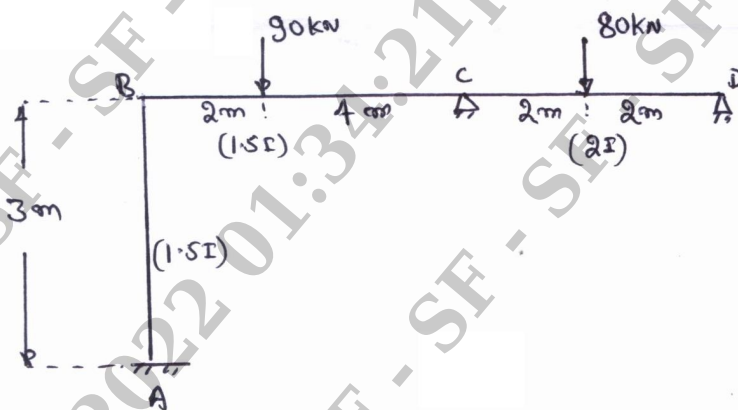


Fig. Q2

(16 Marks)

### Module-2

- 3 Analyse the continuous beam shown in Fig. Q3 by moment distribution method. Draw BMD and sketch elastic curve.

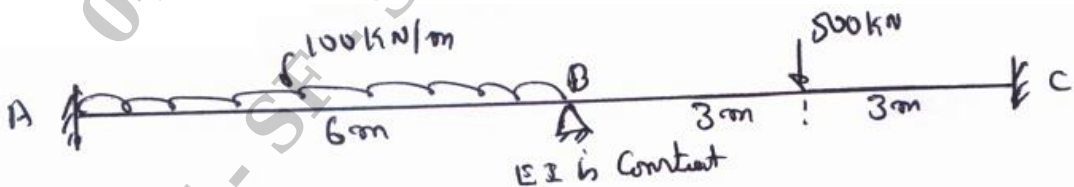


Fig. Q3

(16 Marks)

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.

**OR**

- 4 Analyze the frame shown in Fig. Q4 moment distribution method. Draw BMD and sketch elastic curve.

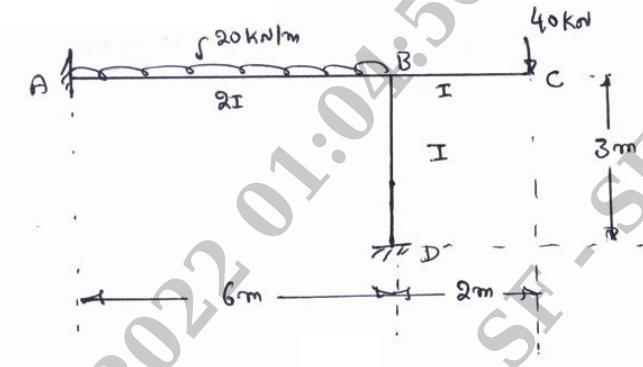


Fig. Q4

(16 Marks)

**Module-3**

- 5 Analyze the continuous beam shown in Fig. Q5 by Kani's method. Draw BMD and sketch elastic curve.

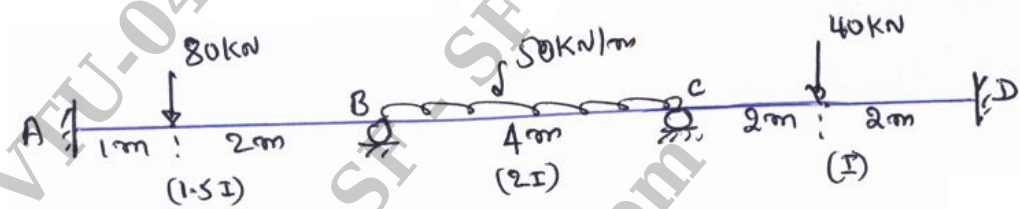


Fig. Q5

(16 Marks)

**OR**

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

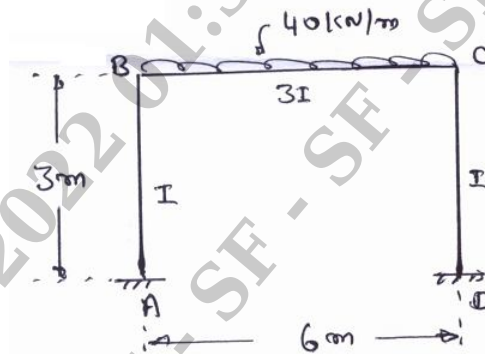
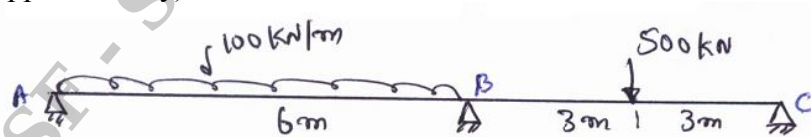


Fig. Q6

(16 Marks)

**Module-4**

- 7 Analyze the continuous beam shown in Fig. Q7 by flexibility matrix method. Draw BMD. (Use system approach only).



$EI$  is Constant

Fig. Q7

(16 Marks)

OR

- 8 Analyze the frame shown in Fig. Q8 by flexibility method. Draw BMD.

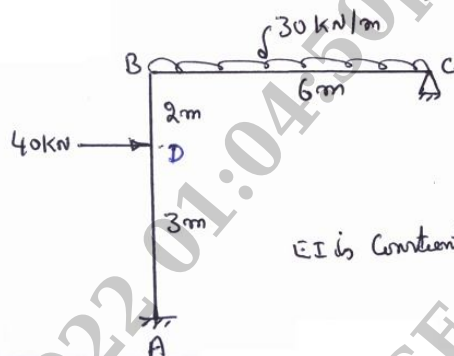


Fig. Q8

(16 Marks)

**Module-5**

- 9 Analyze the continuous beam shown in Fig. Q9 by stiffness matrix method, if the downward settlement of support B and C are 10 mm and 5 mm respectively. Take  $EI = 184 \times 10^2 \text{ kN-m}^2$  (Use system approach only).

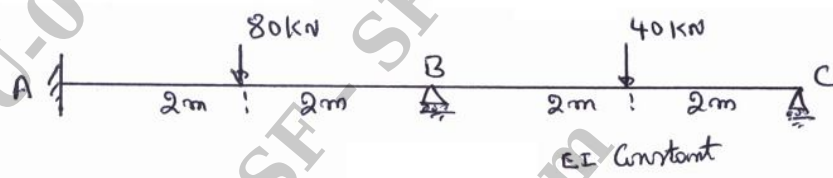


Fig. Q9

(16 Marks)

OR

- 10 Analyze the frame shown below by stiffness matrix method. Take EI as constant. Draw BMD.

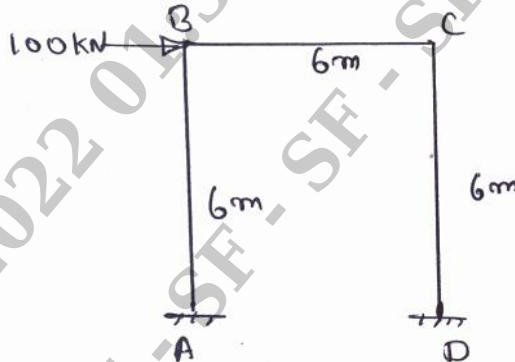


Fig. Q10

(16 Marks)

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