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10CV53

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Structural Analysis – II

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Two point loads of 10 kN and 5 kN, spaced 3 mt apart, cross a girder of 10 mt span, as shown in Fig.Q1(a). The smaller load leading, from left to right. Calculate maximum S.F. and B.M. at a section 4 mt from left hand support. **(12 Marks)**

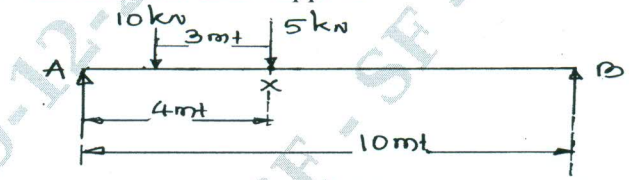

Fig.Q1(a)

b. Two loads of an electrical crane, 50 kN each, spaced at 4 mt centre to centre cross a girder of 8 mt span as shown in Fig.Q1(b). Find the absolute maximum bending moment in the beam. **(08 Marks)**

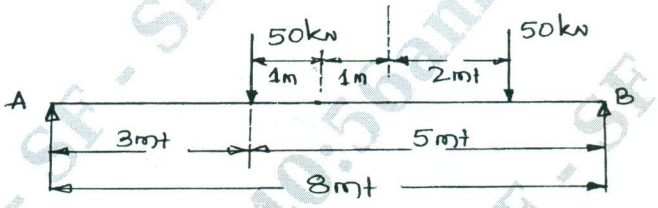

Fig.Q1(b)

2 Analyse the frame shown in Fig.Q2 using "Slope Deflection method", and draw BMD and SFD. **(20 Marks)**

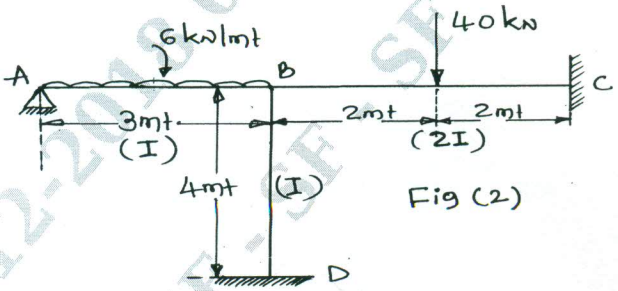

Fig (2)

Fig.Q2

3 Analyse the continuous beam loaded as shown in Fig.Q3 by the moment distribution method. Draw Shear Force {SF} and Bending Moment {BMD} diagrams. **(20 Marks)**

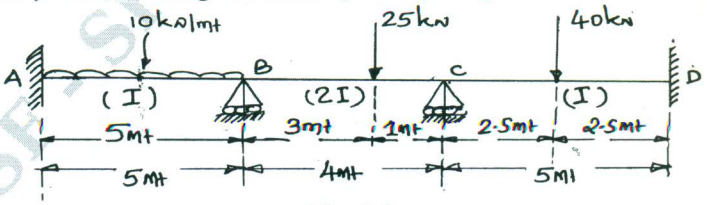

Fig.Q3

4 Analyse the portal frame loaded as shown in Fig.Q4 by using moment distribution method and draw the BMD and SFD. Take EI is constant. **(20 Marks)**

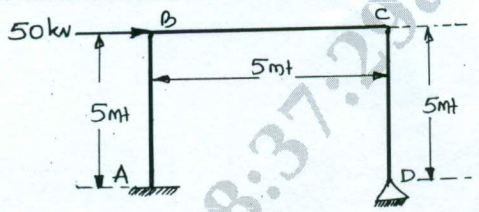

Fig.Q4

PART – B

5 Analyse the continuous beam shown in Fig.Q5 using Kani's method and draw BMD. **(20 Marks)**

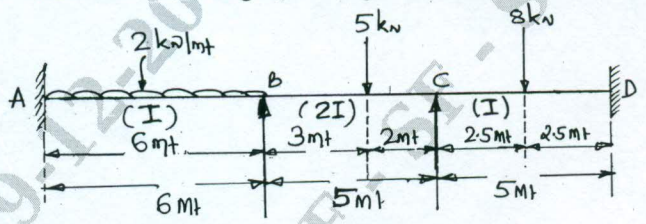

Fig.Q5

6 A continuous beam ABC as shown in Fig.Q6 fixed at 'A' and roller support at 'C' and the EI is constant throughout the beam. Determine the Reactions and Moments at the supports. Draw BMD and SFD by using Flexibility method. **(20 Marks)**

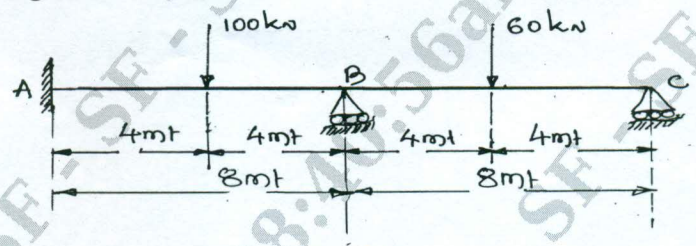

Fig.Q6

7 Analyse the three wire system shown in Fig.Q7, the number in parenthesis are the c/s area of the wire in mm^2. Take E = 2000 kN/mm^2, using stiffness method. **(20 Marks)**

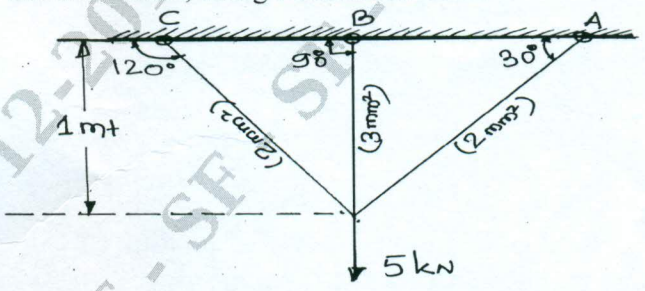

Fig.Q7

8 a. Explain the following :
- i) The equation of motion for damped vibrating system
- ii) Critical damping
- iii) Under damping
- iv) Over damping
- v) Damping ratio. **(10 Marks)**

b. Determine the equivalent spring stiffness and natural frequency of vibration for the Fig.Q8(b) shown below. **(10 Marks)**

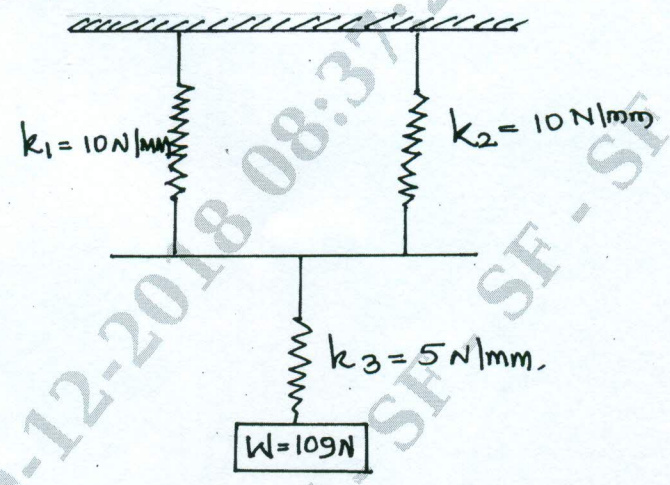

Fig.Q8(b)

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