Reg. No. :

Question Paper Code: 35014

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Fifth Semester

Civil Engineering

01UCE504 – STRUCTURAL ANALYSIS - I

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Differentiate determinate and indeterminate structures.

2. Define Virtual work.

3. Describe the basic assumption made in slope deflection method.

4. State the assumptions in slope deflection method.

5. Define carry over factor and relative stiffness.

6. What is carry over moment and carry over factor?

7. Define static indeterminacy with example.

8. Define equivalent joint load forces.

9. Define degree of freedom?

10. What is meant by generalized coordinates?

PART - B (5 x 16 = 80 Marks)

11. (a) What is Williott's diagram? Describe its uses and importance in detail.   (16)

Or

(b) Determine the deflection and rotation at the free end of the cantilever beam shown in figure Use unit load method. Given $E=2 \times 105$ and $I=12 \times 10^6 mm^4$.
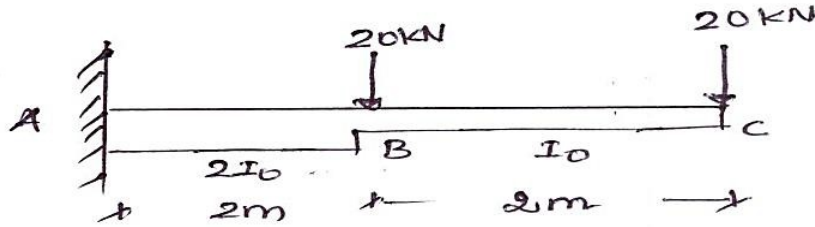

(16)

12. (a) A continuous beam *ABC* consists of spans *AB* and *BC* of length 5 *m* each. Both ends of the beam are fixed. The span *AB* carries a point load of 15 *kN* at its middle point. The span *BC* carries a point load of 25 *kN* at its middle point. Find the moments and reactions at the supports. Assume the beam is of uniform section. Use slope deflection method. (16)

Or

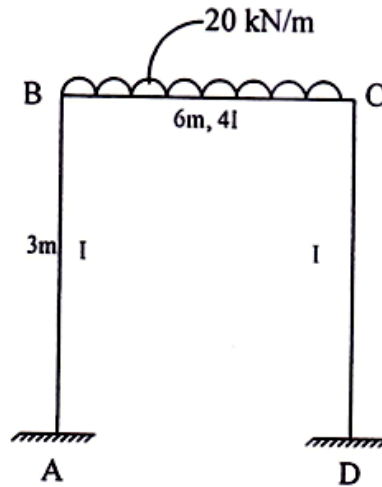(b) Analyze the portal frame shown in figure by slope deflection method. (16)
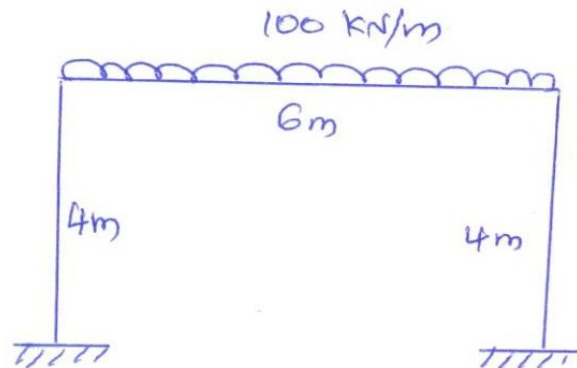
13. (a) Analyze the frame shown in figure By moment distribution method and draw the SFD and BMD. (16)
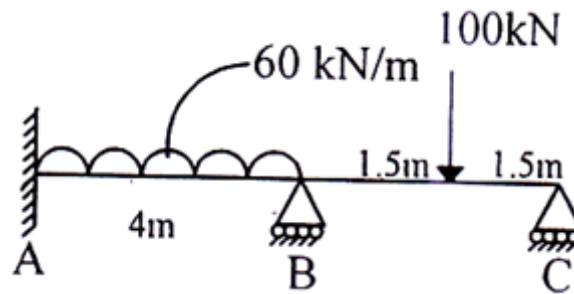

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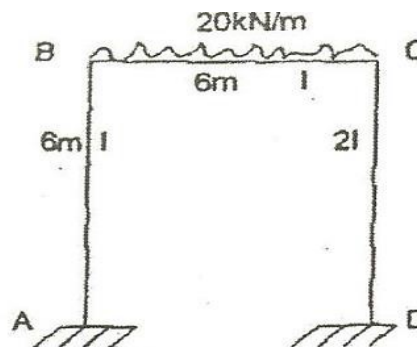
Or

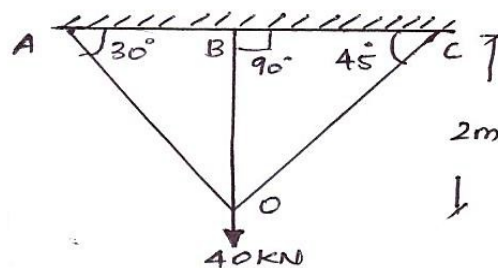(b) Analyse the portal frame shown in Figure by using moment distribution method and draw BMD. (16)

14. (a) Analyse the continuous beam shown in Figure by using Flexibility matrix method and draw BMD. (16)
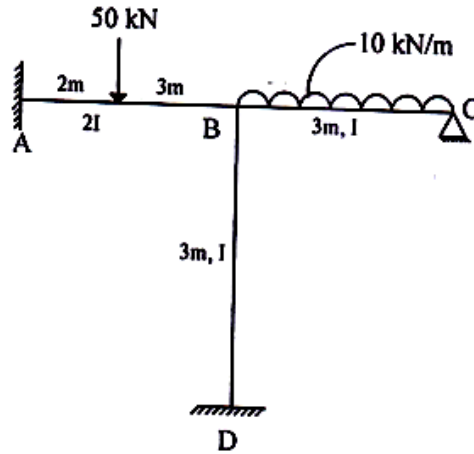

Or

(b) Analyze the pin jointed plane trusses shown in figure. By Flexibility matrix method. (16)

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15. (a) Analyse the portal frame shown in figure by using Stiffness matrix method and draw BMD. (16)

Or

(b) Write down the steps in analyzing a beam or frame using matrix stiffness method. (16)

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