Reg. No. : | | | | | | | | | | |

Question Paper Code: 35104

B.E. / B.Tech. DEGREE EXAMINATION, AUGUST 2021

Fifth Semester

Civil Engineering

01UCE504 – STRUCTURAL ANALYSIS - I

(Regulation 2013)

Duration: 1:45 hour Maximum: 50 Marks

PART A - (10 x 2 = 20 Marks)

(Answer any ten of the following questions)

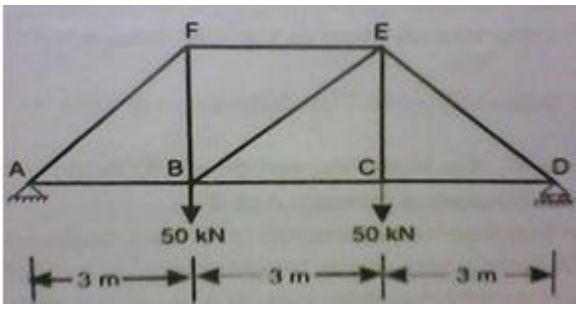
1. State principle of virtual work.
2. Differentiate determinate and indeterminate structures.
3. Describe the basic assumption made in slope deflection method.
4. What are the assumptions made in slope-deflection method?
5. Define Carry over factor.
6. What are the advantages of continuous beams over simply supported beams?
7. Mention any three reasons due to which sway may occur in portal frames.
8. Define flexibility influence coefficient.
9. What is the displacement transformation matrix?
10. List the properties of the stiffness matrix.
11. Distinguish between pin jointed and rigidly jointed structure.
12. Write the general slope deflection equation.
13. Define relative stiffness factor.
14. Define static indeterminacy.

15. What is a transformation matrix?

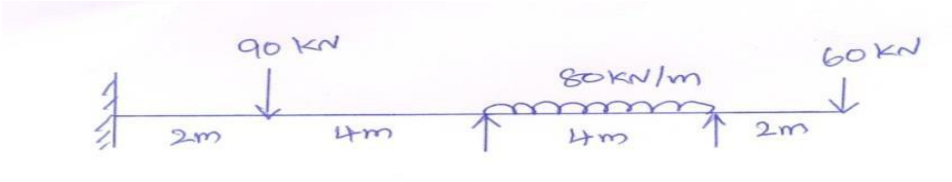
PART – B (3 x 10= 30 Marks)

(Answer any three of the following questions)

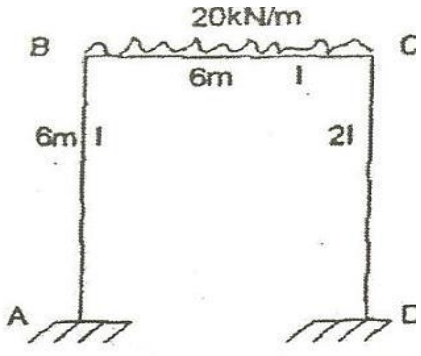
16. Determine the vertical displacement of joint C of the steel truss shown in figure. The cross sectional area of each member is A = 400 mm2 and E = 2 x10^5 N/mm^2. (10)



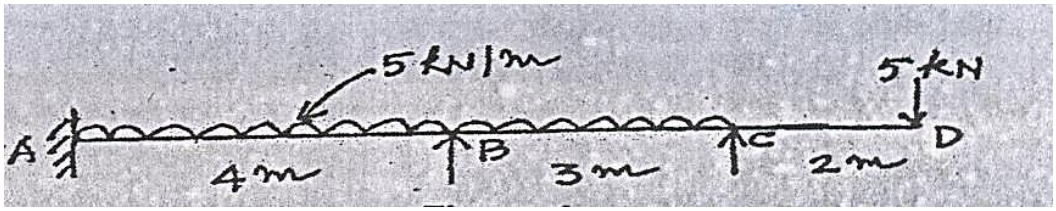
17. Analysis the given continuous beam shown in figure and draw its BMD and SFD using slope deflection method. EI=Constant. (10)



18. Analyze the frame shown in figure By moment distribution method and draw the SFD and BMD. (10)



19. Apply the continuous beam ABCD shown in figure by Flexibility matrix method. Take EI=Constant. Also sketch the shear force and Bending Moment diagram. (10)



20. A continuous beam ABC consist of span AB=3m and BC=4m, the ends A and C being fixed. AB and BC carries uniformly distributed loads of intensity 4kN/m and 5kN/m respectively. Find the support moments by stiffness matrix method and draw the bending moment diagram for the beam. The beam is of uniform section throughout. (10)