Printed Pages : 4

ECE-504

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 100504

Roll No.

B. Tech.

(SEM. V) (ODD SEM.) THEORY EXAMINATION, 2014-15

STRUCTURE ANALYSIS - II

Time : 3 Hours] [Total Marks : 100

Note: Attempt all questions.

1. Attempt any TWO parts of the following: **10x2=20**

(a) Analyze the beam given in fig: 1 by slope deflection method and draw BMD.

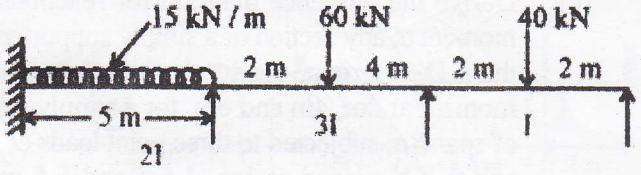


FIG : 1

(b) Draw the bending moment diagram and shear force diagram for the continues beam shown in fig 2.Using moment distribution method. EI is constant.

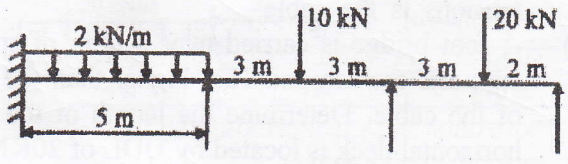


Fig 2

(c) Analyze the following continues beam fig 3. using the strain energy method.

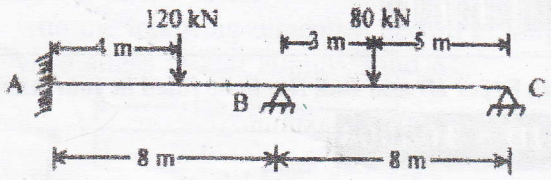


Fig. 3

2. Attempt any Two parts of the following: **10x2=20**

(a) Explain Muller Breslau principle. Using the principle draw the influence line diagram for reaction R_A for the beam shown in the following fig 4. Compute the ordinate at 1 m interval. The flexural rigidity is constant throughout

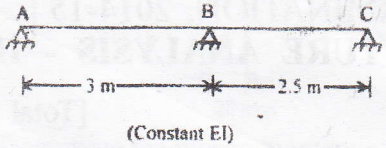


Fig. 4

(b) Draw the schematic diagrams for horizontal thrust, bending moment at any section, radial shear and normal thrust at any given section for a typical two- hinged symmetrical parabolic arch.

(c) Derive the influence diagram for reactions and bending moment at any section of a simply supported beam. Using the ILD, determine the support reactions and find bending moment at 2m, 4m and 6m .for a simply supported beam of span 8m subjected to three point loads of 10 KN,15KN and 5 KN placed at 1m ,4.5m and 6.5 m respectively.

3. Attempt any TWO questions of following: **10x2=20**

(a) A suspension cable of span 20 m and central dip 2m is carrying a UDL of 20 KN/m. Find the horizontal pull in the cable .Also find the maximum and minimum tensions is the cable.

(b) A foot bridge is carried over a river of span 90m. the supports are 3m and 12m higher than the lowest point of the cable. Determine the length of the cable. If the horizontal deck is located by UDL of 20KN/M, find the tension in the cable.

(c) The cables of a suspension bridge have a span of 40m and a dip of 5m. Each cable is stiffened by a girder hinged at the ends and at mid span to enable to cable to maintain its parabolic shape. A UDL of 10KN/m over the whole span and a live load of 30 KN/m over 10m length in central part. Determine the maximum cable tension when the head of the live load is on the central hinge. Calculated maximum S.F and B.M at a section 10m from the left end.

4. Attempt any TWO questions of the following **10x2=20**

(a) Analyse the following continues beam (fig 5) using the flexibility of stiffness method of matrix analysis.

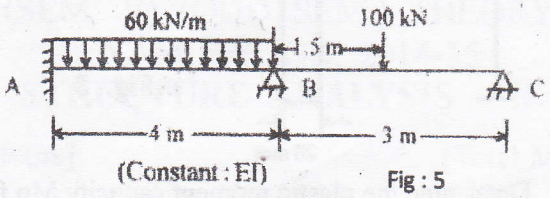


Fig : 5

(b) Analyze the continuous beam shown in fig 6 by stiffness method. Draw bending moment diagram and elastic curve.

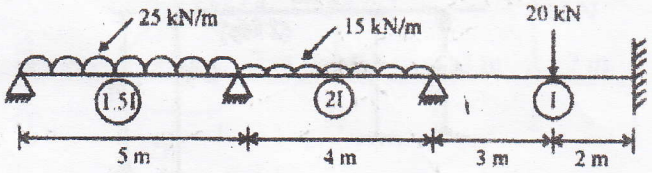


FIG 6

(c) Analyse the continuous beam shown in fig 7 using flexibility method and draw BMD.

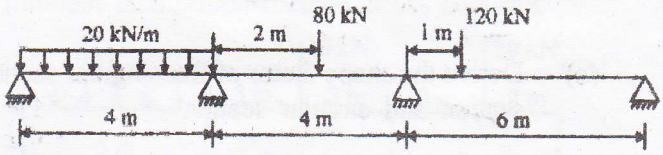


FIG 7

5. Attempt any TWO questions of the following: **10x2=20**

(a) Define shape factor and obtain its value for T-section with the following dimention shown in the fig 8. If the yield stress is 250 N/mm^2. Find M_p.

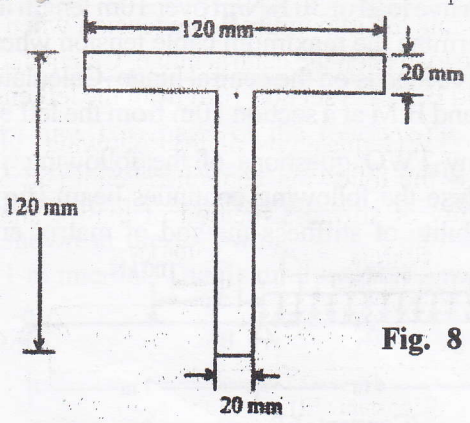
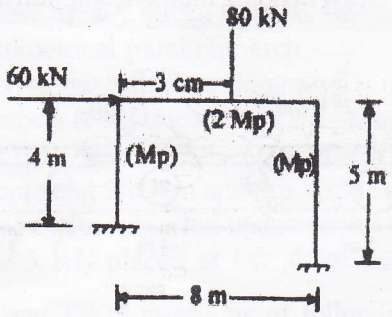


Fig. 8

(b) Determine the plastic moment capacity Mp for the frame shown in fig 9 given below:



(Constant : EI)

Fig. 9

(c) Derive the shape factor of Rectangular section, triangular section and circular section.