Printed Pages: 7 NCE-504

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

Paper ID : 289540 Roll No.

B.TECH.

Regular Theory Examination (Odd Sem-V), 2016-17

STRUCTURAL ANALYSIS - II

Time : 3 Hours *Max. Marks : 100*

SECTION - A

Note : Attempt all the questions

1. Attempt all questions. All carries equal marks.

(10×2=20)

a) Distinguish between Flexibility method and stiffness method

b) Define shape factor

c) How we determine the horizontal thrust for two hinged arch?

d) Define distribution factor

e) Derive the shape factor of Rectangle

f) Write any two methods to analysis continues beam with its equation

g) Explain Muller Breslau principle

h) What is relative stiffness? Write relative stiffness of continues beam

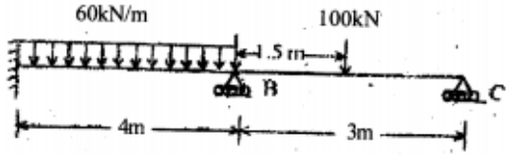
i) What is the maximum tension and minimum tension on a cable of suspension bridge?

j) What is plastic hinge?

SECTION - B

2. Attempt any Five questions (5×10=50)

a) Analyse the following continues beam (fig.1) using the flexibility method of matrix analysis. Draw BMD.



(Constant : EI)

FIG 1

b) Draw the bending moment diagram for the continuous beam shown in fig.2. Using moment distribution method. EI is constant

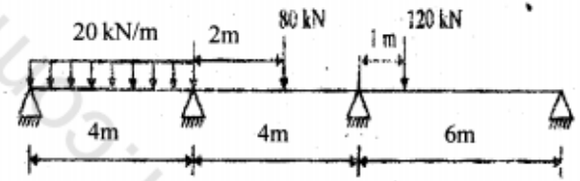


FIG 2

c) 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 20 KN/M, find the tension in the cable

d) 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.

e) Define shape factor and obtain its value for T - section with the following dimension shown in the fig.3 if the yield stress is 250 N/mm^2. Find M_p.

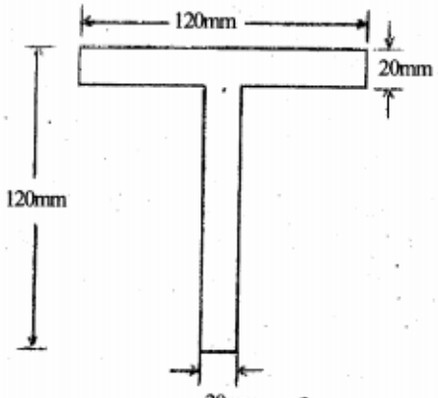


Fig.3

f) 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, 15 KN and 5 KN placed at 1m, 4.5 m and 6.5m respectively

g) Determine the plastic moment capacity **Mp** for the frame shown in Fig 4 given below

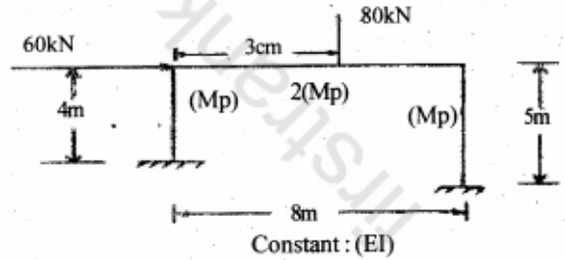


Fig.4

Section - C

Attempt Any two questions **(2×15=30)**

3. A three hinged stiffening girder of suspension bridges of span 100 m is subjected to two pt. loads of 200 KN and 300 KN at the distance of 25m and 50m from the left end. Find the shear force and bending moment for the girder at a distance 30 m from left end. If supporting cable has the central dip of 10m, find the maximum tension in the cable.

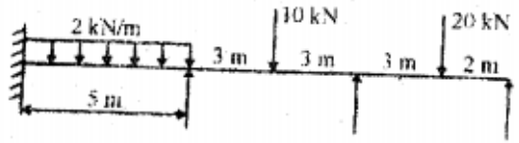
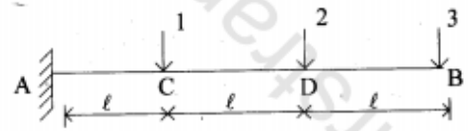


FIG 5

4. Analyze the beam given in Fig.5 by slope deflection method and draw its bending moment diagram and shear force diagram.

5. Develop the flexibility matrix for the cantilever with coordinate as shown in figure, take uniform flexural rigidity.



+ + + +