PVP 14

Code: CE4T6

II B.Tech - II Semester – Regular / Supplementary Examinations
October 2020

STRUCTURAL ANALYSIS-I
(CIVIL ENGINEERING)

Duration: 3 hours Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks

11 x 2 = 22 M

1.

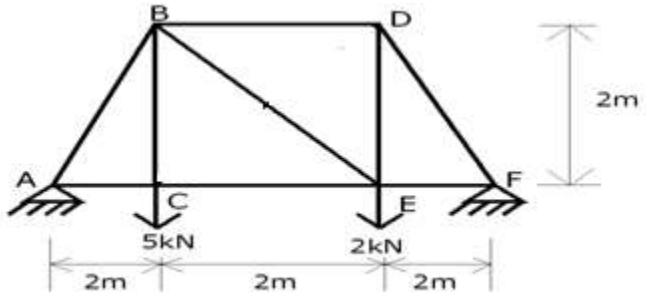
a) State principle of superposition.
b) Define truss and write the condition for perfect truss.
c) Draw influence line diagrams for shear force and bending moment at a section for a simply supported beam.
d) Explain arch action.
e) Define cable and what are the forces developed in cable.
f) Sketch the shape of the cable if it applied (i) uniformly distributed loads and (ii) concentrated load at the centre.
g) What is meant by compatibility?
h) Write differences between statically determinate and indeterminate structures. What is static indeterminacy of fixed beam?
i) Write the fixed end moments for the fixed beam carrying uniformly distributed load of span L.
j) What is fixed beam? Is fixed beam determinate or indeterminate give reasons.
k) Explain the effect of sinking of support.

PART – B

Answer any ***THREE*** questions. All questions carry equal marks.

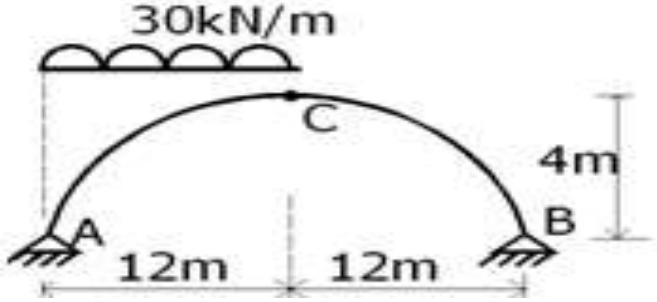
3 x 16 = 48 M

2. Find the forces in the members of the given truss using method of joints. 16 M

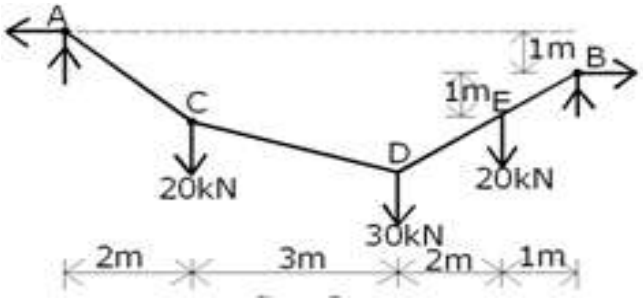


3. A uniformly distributed load of intensity 2kN/m and 5m long crosses a simply supported beam of 20m span from left to right. Calculate maximum shear force and maximum bending moment at a section 8m from the left support. Also calculate absolute maximum bending moment. 16 M

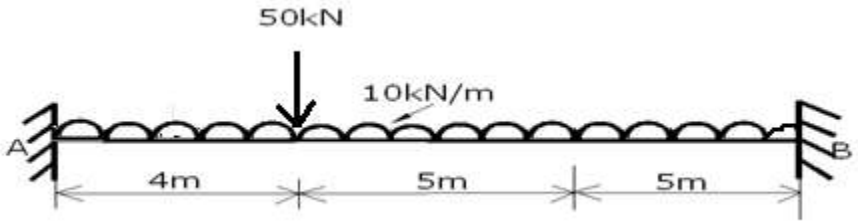
4. a) Calculate bending moment, normal thrust and radial shear force at a distance 10m from left support of three hinged parabolic arch as shown below. 10 M



b) Calculate the maximum tension in the cable as shown in below figure. 6 M



5. Calculate the fixed end moments for the given beam. Draw bending moment diagram also. 16 M



6. Analyze the given continuous beam by theorem of three moments. Support B sinks by 4mm. Take E= 200 kN/mm^2 & I= 9x10^{7}mm^4. 16 M