Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year II Semester Supplementary Examinations March-2021
STRUCTURAL ANALYSIS-II
(CIVIL ENGINEERING)

Time: 3 hours   Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1. A three hinged circular arch of span 16m and rise 4m is subjected to two concentrated **12M** loads of 100KN and 80KN at the left and right quarter span points respectively. Find the reactions at the supports? Find also the bending moment, radial shear and normal thrust at 6m from the left support?

OR

2. A two hinged parabolic arch of span 36m and rise 8m carries an u.d.l. of 40KN/m over **12M** the left half of the span. Determine the position and magnitude of maximum bending moment and also find the normal thrust and radial shear at 9m from the left support? Assume that the moment of inertia at a section varies as the secant of the inclination at the section.

UNIT-II

3. Using the cantilever method, analyze the building frame shown below subjected to **12M** horizontal force (due to wind). Sketch the BMD.
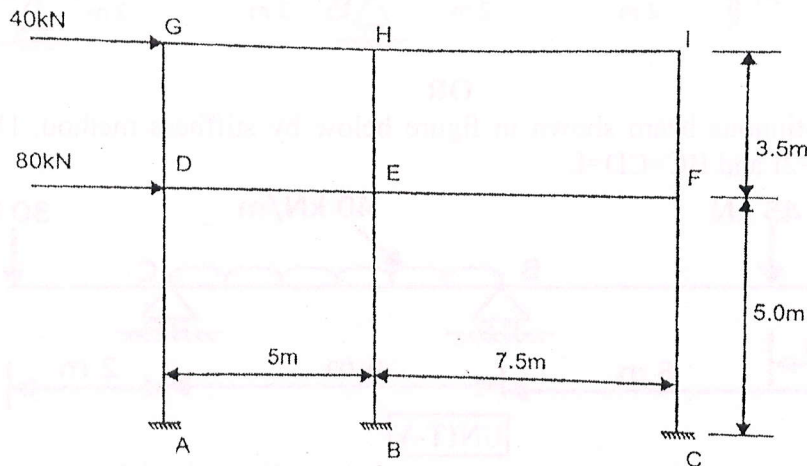

OR

4. A multistoried building consists of 4 storied 3 bay frames spaced at 3m c/c. Live load **12M** on the floor is 3KN/m^2 and dead load is 3.5 KN/m^2. The spans beams from left to right are 6m, 4m and 4m respectively. Storey height is 5.5m. Moment of inertia of the beam is 1.5 times that of columns. Self weight of the beams is 3.5 KN/m. Determine the maximum moment in the beam at the junction of first span and second span of an intermediate floor? Use substitute frame method.

UNIT-III

5. Four point loads of 120KN, 160KN, 160KN and 80KN spaced 2m between consecutive loads move on a girder of 25m span from left to right with 120KN load leading. Calculate the maximum bending moment at a point 10m from left support? Also calculate the position and value of the absolute maximum bending moment? **12M**
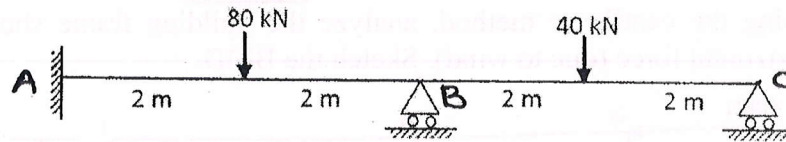
OR

6. For a truss shown in figure below, draw the influence line diagrams for the forces in the members 'P', 'Q', 'R' and 'S' of the truss. **12M**
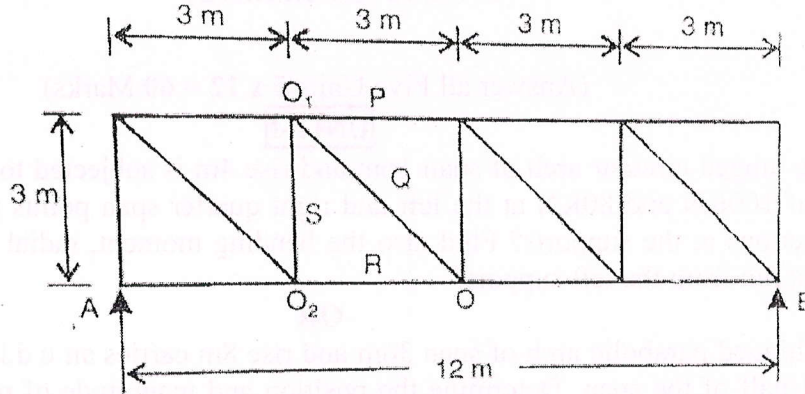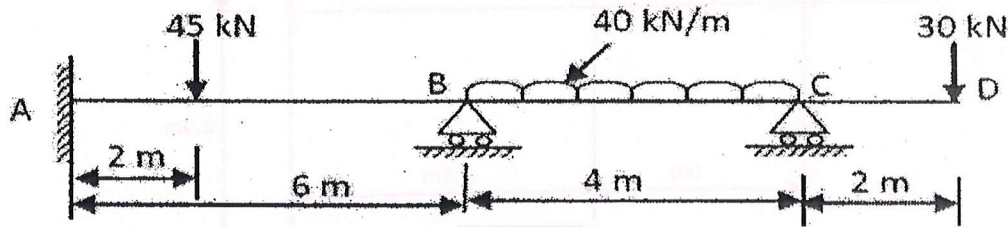

UNIT-IV

7. Analyze the continuous beam shown in figure below by flexibility matrix method. The downward settlements of the supports B and C are 10mm and 5mm respectively. Take EI=184x10^{11} N.mm^2. **12M**
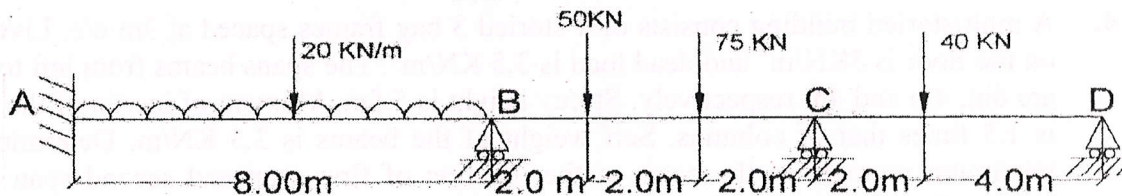

OR

8. Analyze the continuous beam shown in figure below by stiffness method. Draw the BMD. Take AB=2I and BC=CD=I. **12M**

UNIT-V

9. Find the required value of plastic moment capacity at collapse load for the continuous beam shown below? Take AB=2Mp; BC=1.5Mp; CD=Mp. **12M**

OR

10. A mild steel I-section 200mm wide and 250mm deep has a mean flange thickness of 20mm and web thickness of 10mm. Calculate the shape factor and also the fully plastic moment if the yield stress for the material is 250MPa? **12M**

*** END ***