Code: CE4T6

II B.Tech - II Semester – Regular Examinations - JUNE 2015

STRUCTURAL ANALYSIS - I
(CIVIL ENGINEERING)
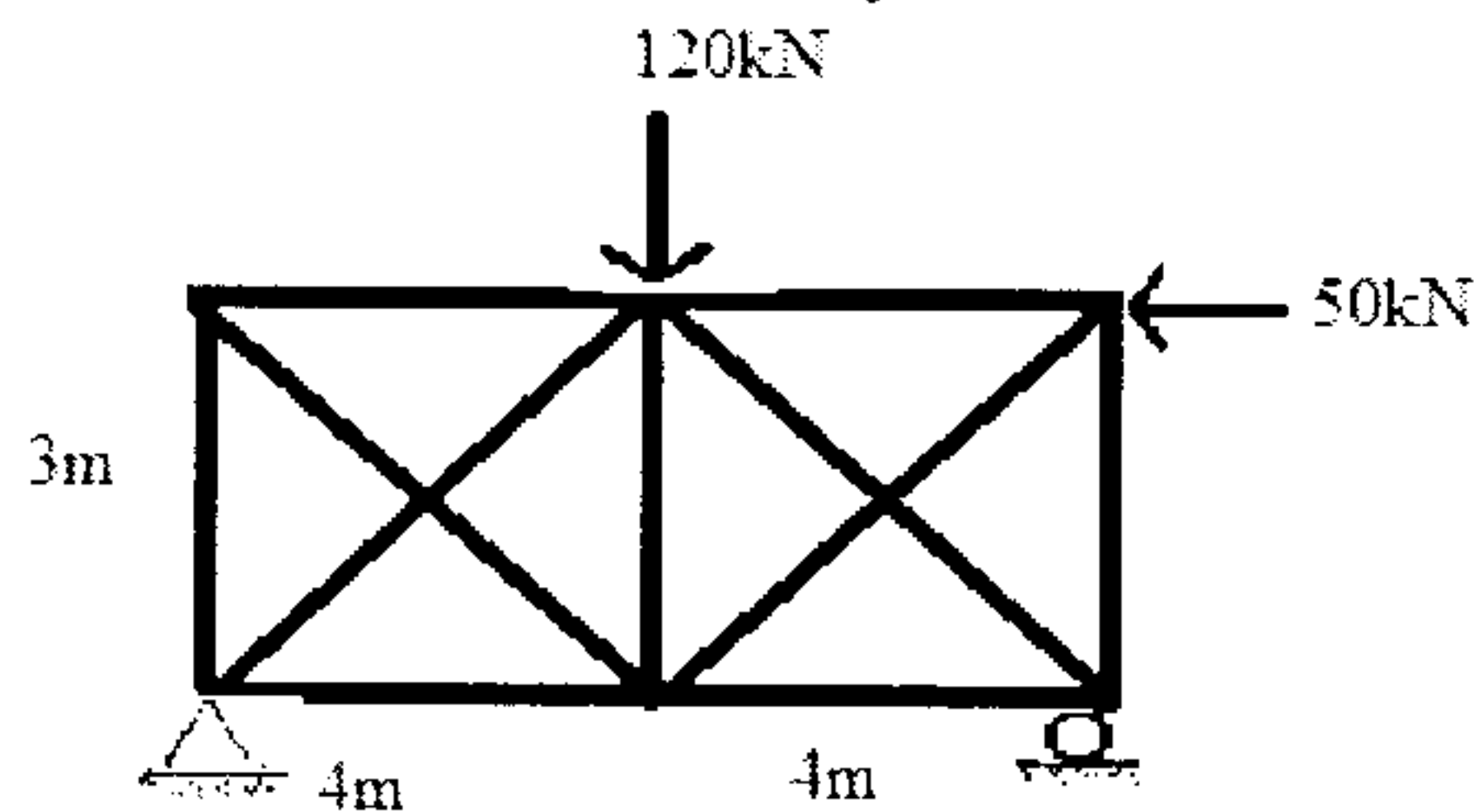
Duration: 3 hours   Marks: 5x14=70

Answer any FIVE questions.   All questions carry equal marks

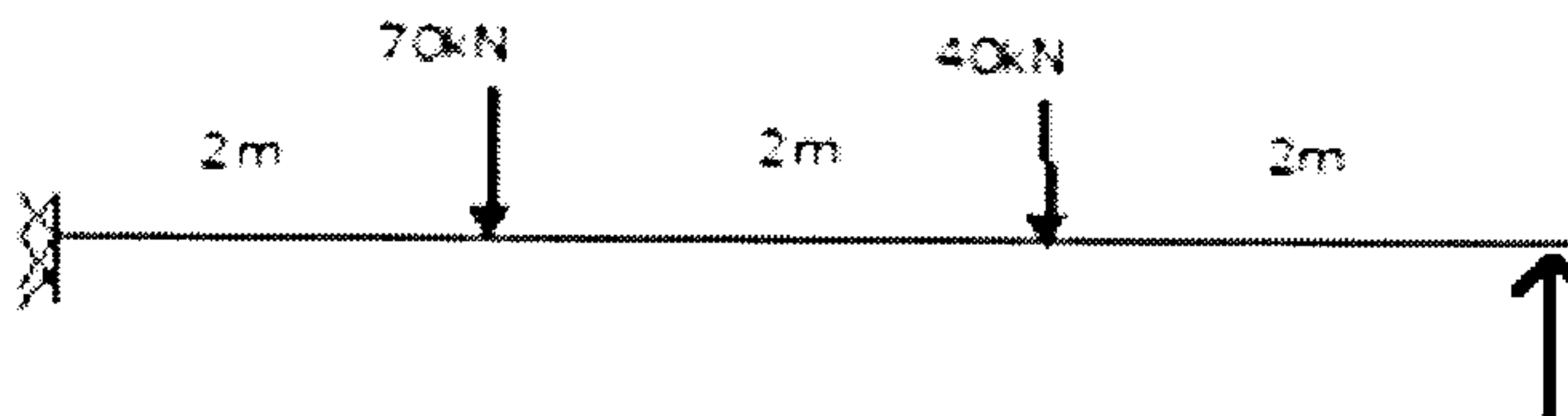1. Find the forces in members of the truss as shown in figure below. The axial rigidity of all the truss members is same. Assume suitable data if necessary.   14 M
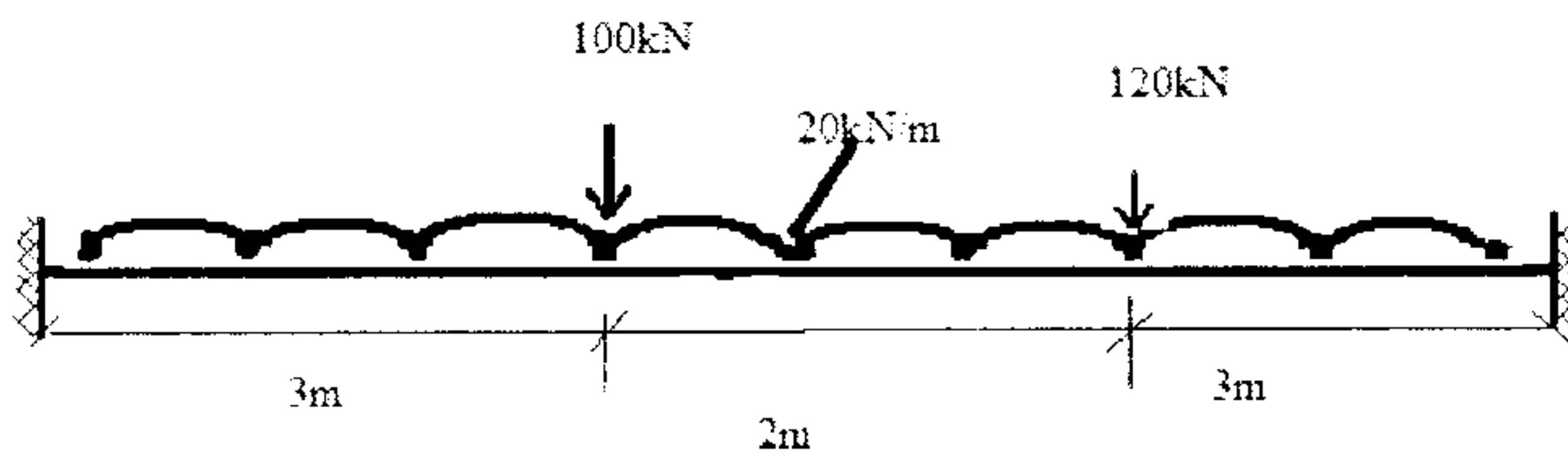

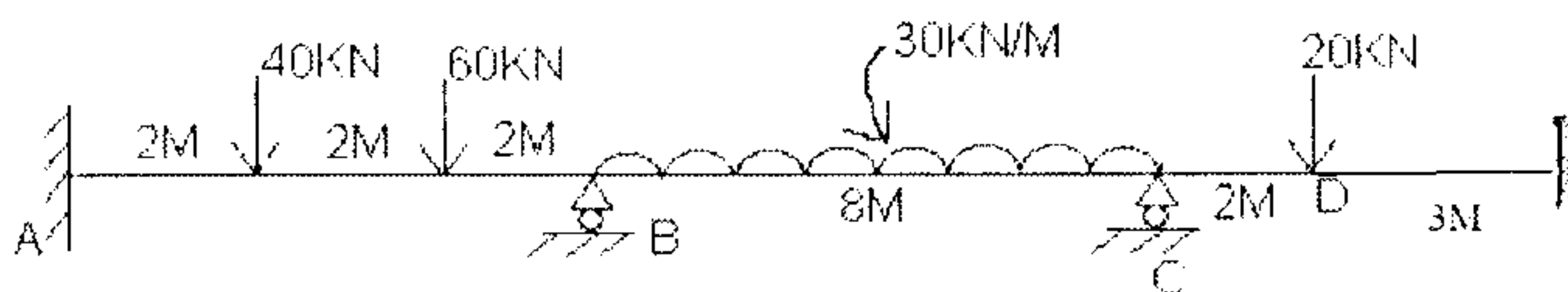2. Calculate the deflection at the Central point of the proped Cantilever beams as shown in figure below.   14 M

3. Draw the bending moment and Shear force Diagram for the structure shown below. **14 M**


4. Analyse the continuous beam as shown in figure below. Adopt Clapeyron's theorem of three moments method. Also Draw Bending Moment Diagram. **14 M**

5. Using Slope Deflection method of Analysis, Analyse the continuous beam ABCD is simply supported at A, B, C and is fixed at D. The spans AB, BC and CD are 3m, 4m and 6m long respectively. The span AB subjected to a point 20kN at midpoint of AB, the span BC is subjected to a udl 10kN/m throughout BC. The span CD is subjected 40kN point load at 2m from support D. The support B settles by 30mm. And the support C settles by 20mm. Take $I_{ab}:I_{bc}:I_{cd}=1:1.2:2$. And $EI=7 \times 10^5 kN\text{-}mm^2$ **14 M**

6. Determine the vertical and horizontal deflections at the joint where the loads are acting. Adopt unit load method. 14 M

10KN

5KN

4m

4m
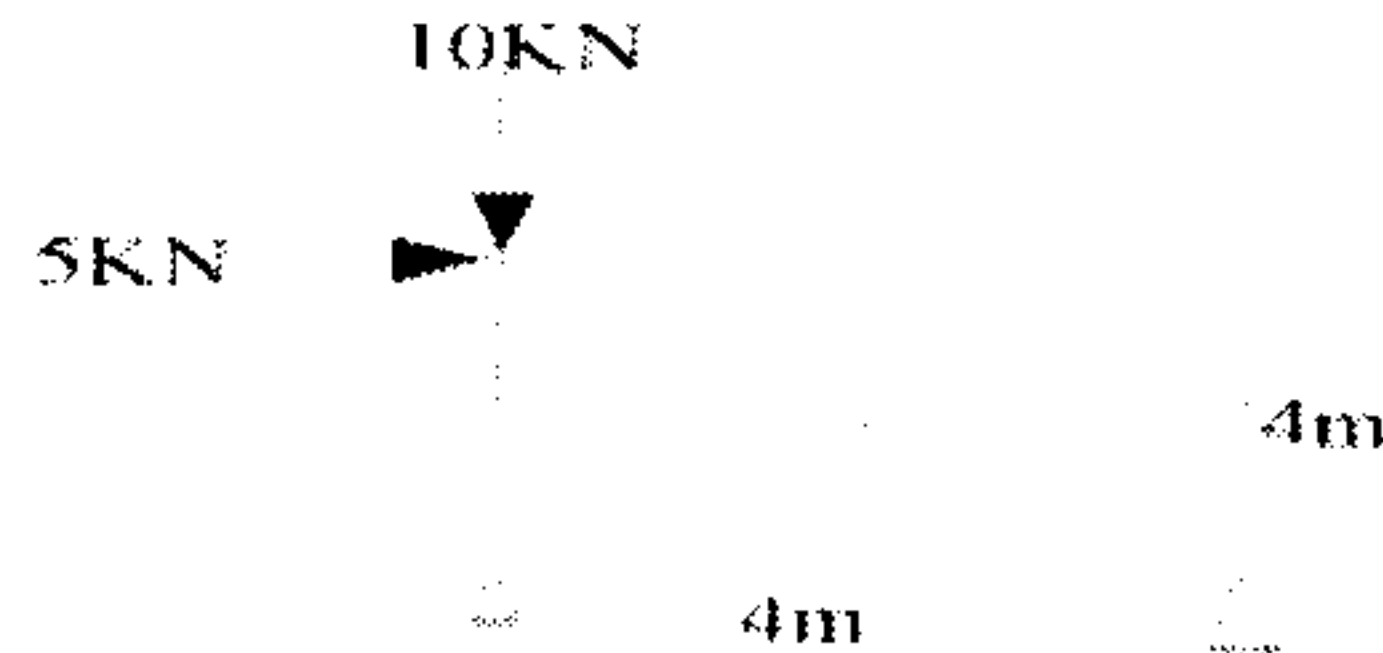
7. Draw the bending moment for a girder of span 20m. is traversed by two wheel loads 40kN and 60kN spaced at 3m apart from left to right. 60kN is leading load. Also find maximum shear force at given section 4m from left support.

14 M

8. The load of a system shown in figure below moves from left to right on a girder of span 24m. Find maximum Bending moment under 8KN load; also calculate the absolute maximum bending moment. 14 M

10KN   15KN   10KN   8KN   20KN
    1M   2M   1M   1M