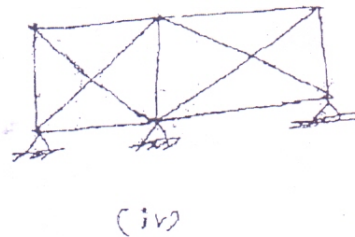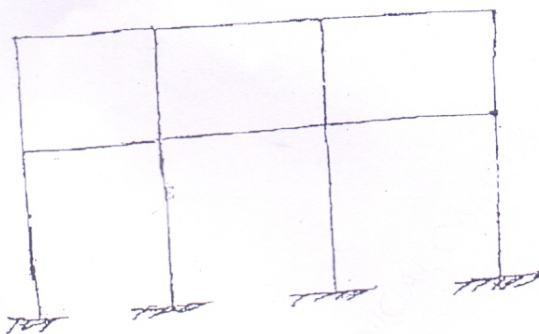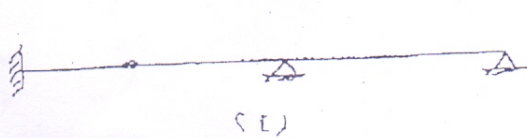QP Code : **29130**

(3 Hours) [Total Marks : 100

N.B. : (1) Question no. **1** is **compulsory**
  (2) Attempt **any four** questions out of remaining **six** questions.
 (3) Assume suitable data wherever required but justify the same.

1. (a) Determine the degree of Static and Kinematic indeterminacy of the following   10
  structures. Neglect the axial deformations.
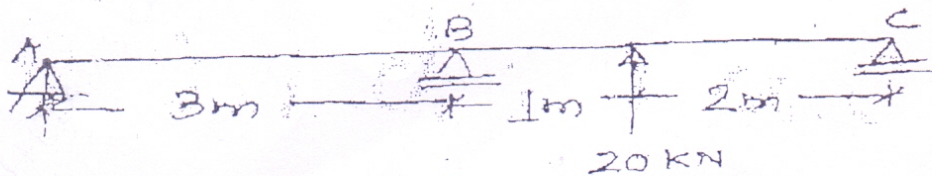

(i)

(ii)

(iii)

(iv)

(v)
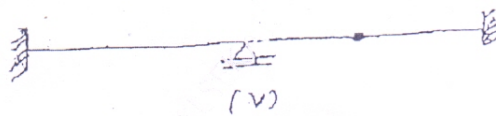
(b) For the rigid jointed frame subjected to temperature variations as shown in figure, 10 determine total deflection at 'C', Assume $\alpha = 12 \times 10^{-6}/^{0}C$ and depth of all members as 600 mm. Neglect the effect of axial forces.
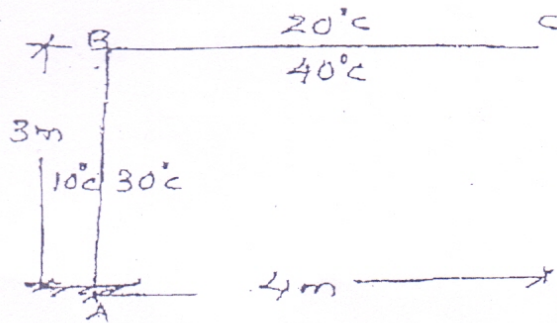
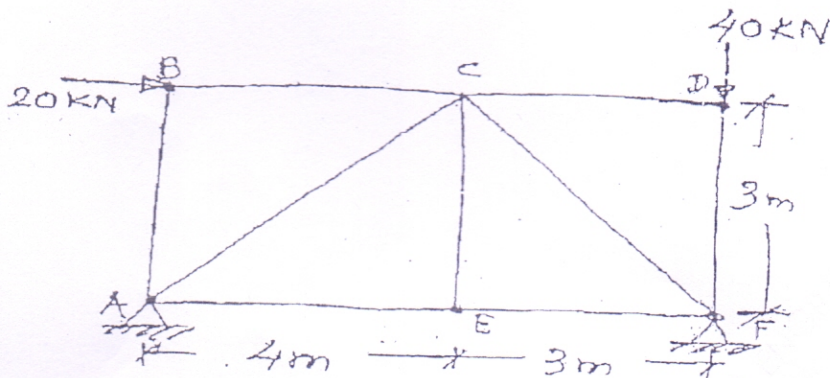2. Analyse the frame using flexibility method and draw BMD. 20

8
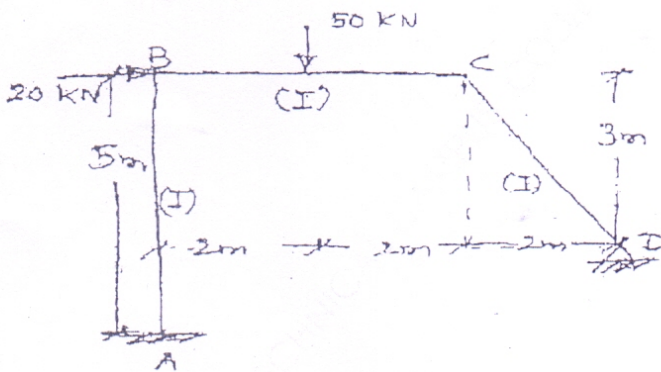
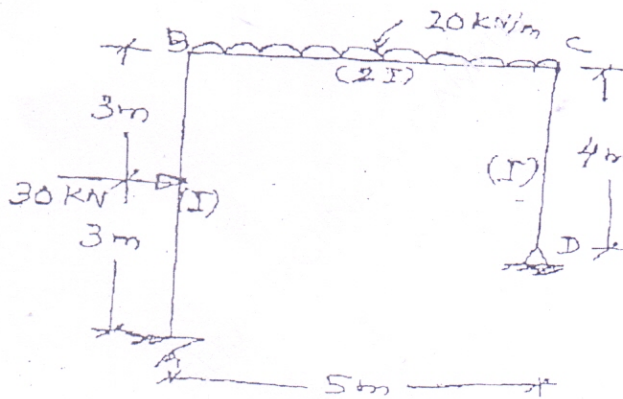3. (a) Analyse the continuous beam using force method. Draw BMD.

(b) Analyse the pin jointed frame as shown in figure using force method. Assume AE for all members same.   12
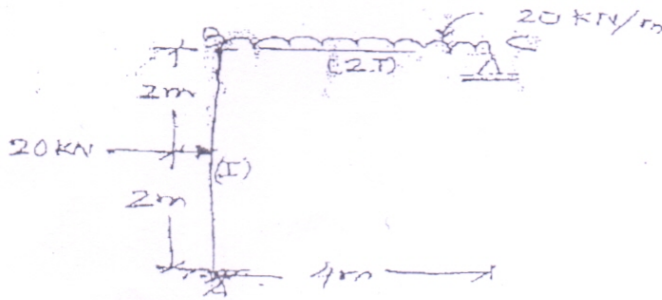

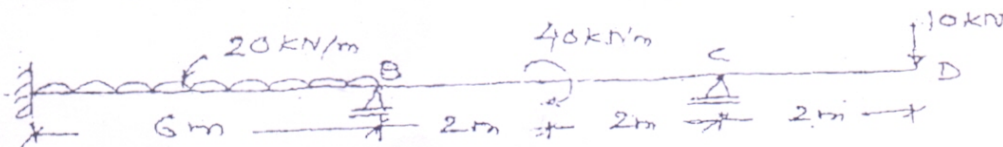4. Analyse the frame using Stiffness method. Draw BMD.   20

5. Analyse the frame using slope diflection method. Draw BMD.   20

6. Analyse the continuous beam using moment distribution method. Draw SFD and BMD.   20

Support B settles down by 12 mm.
EI = 40000 KN/m²

7. (a) A two hinged parabolic arch of span 60 m and rise 10 m carries a u.d.l. of 40 KN/m   10
    on left half of span. Find the reactions at the supports.
   (b) Define shape factor and load factor.   2
   (c) A fixed beam has a plastic moment of resistance 3 Mp at one end which varies   8
    linearly through span L. and becomes 2 Mp at the other end. Determine the ultimate
    u.d.l. which the beam can carry.

GE-Con.8933-16.