[This question paper contains 3 printed pages.]

3158   *Your Roll No.* ....

MEC   J

Paper – CE.506

ADVANCED THEORY OF STRUCTURES

Time : 3 hours   *Maximum Marks : 100*

(Write your Roll No. on the top immediately
on receipt of this question paper.)

Attempt any **Five** *questions.*
Use of scientific calculator is permitted.
Suitably assume any missing data, if any.

1. Analyse the rigid frame, shown in Fig. 1, by Moment
    Distribution method. Draw Bending moment and
    shear force diagrams and the deformed shape of
    structure.   (20)
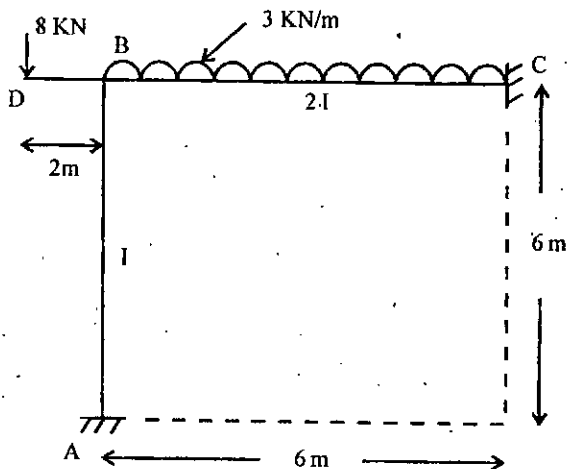

Fig. 1

P.T.O.

2.   Analyse the continuous beam, shown in Fig. 2, by
     Kani's method.   (20)
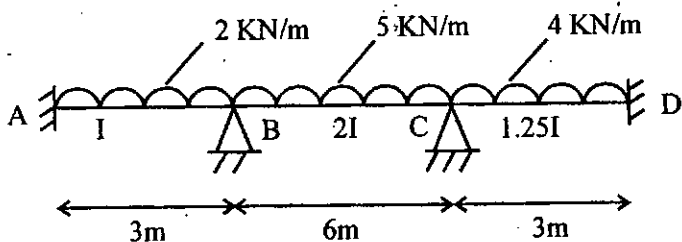

Fig. 2

3.   Determine reactions for the building frame, shown in
     Fig. 3, by Portal method.   (20)
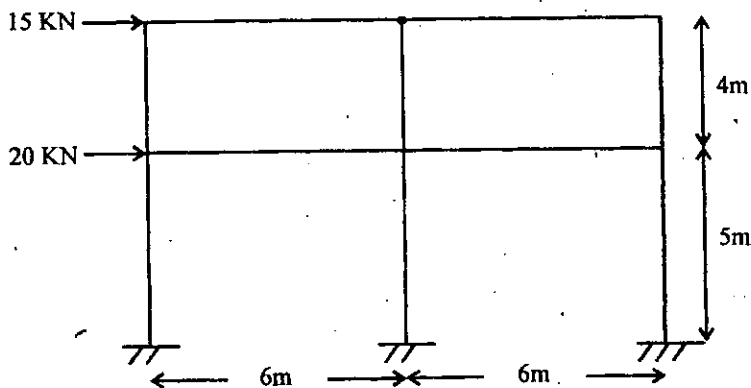

Fig. 3

4.   Analyse the continuous beam, shown in Fig. 4, by
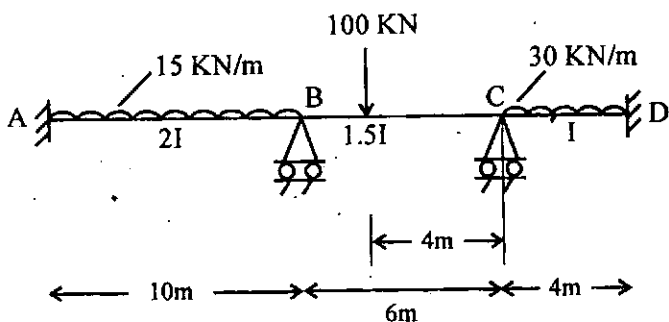   Stiffness matrix method.   (20)

Fig. 4

5. Discuss essential differences between the approaches of stiffness and flexibility matrix methods. Provide suitable examples to elaborate. (20)

6. Discuss what types of stresses are encountered by beams curved in plan, taking suitable examples. (20)

7. Write short notes on any **two** of the following :

   (i) Elastic Centre

   (ii) Unsymmetrical bending

   (iii) Influence line diagram

   (iv) Analysis of plane trusses (20)