315400

12526

4 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following : **10**

a) Identify nature of support from boundry condition –

i) $\theta = 0 \quad y = 0$

ii) $\theta \neq 0 \quad y \neq 0$

b) State the maximum slope and deflection equation for a simply supported beam of span 'L' carrying point load 'W' at it's centre.

c) Explain with sketch the effect of fixity on B.M. of a beam.

d) State any two advantages of fixed beam over simply supported beam.

e) State the effect of continuity on continuous beam.

f) Define perfect and imperfect frames.

g) Define stiffness factor and distribution factor.

P.T.O.

Marks

2. Attempt any THREE of the following : **12**

a) State the slope and deflection at the ends of simply supported beam of span 'L' carrying udl 'w'/unit length over the entire span.

b) For a cantilever of span 3 m carrying a point load 'W' at the tree end, the maximum slop was 0.3 degree. Find maximum deflection.

c) A simply supported beam as shown bellow, using Macaulay's method, Derive slope and deflection equation. (Do not find constatnt integration.)

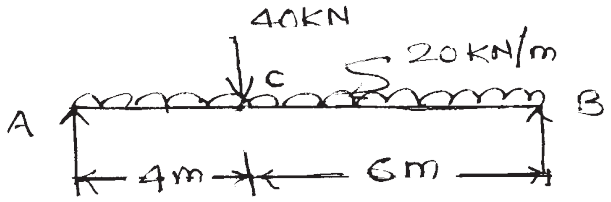

Fig. No. 1

d) Find maximum slope and deflection for the following beam, having width 230 mm and depth 300 mm. Use standard formula. Take E = 100 GPa.

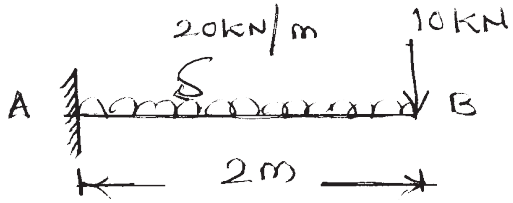

Fig. No. 2

3. Attempt any THREE of the following : **12**

a) Write disadvantages of fixed beam over simply supported beam. (Four points)

b) Find fixed end moments by first principle for following beam.

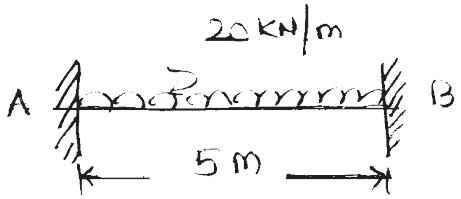

Fig. No. 3

Marks

c) Find fixed end moments by using Standard formula for following beam.

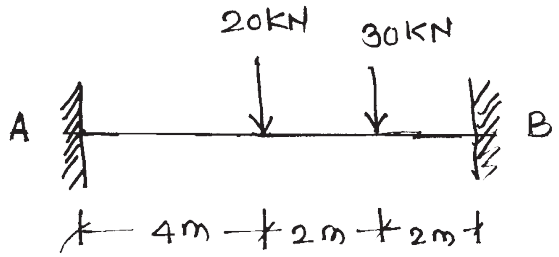

Fig. No. 4

d) Explain the principle of super position with an example.

4. Attempt any THREE of the following : **12**

a) State Clapeyron theorem of three moments for same and different MI also state the meaning of each terms involved.

b) Find distribution factor for following members OA, OB, OC and OD.

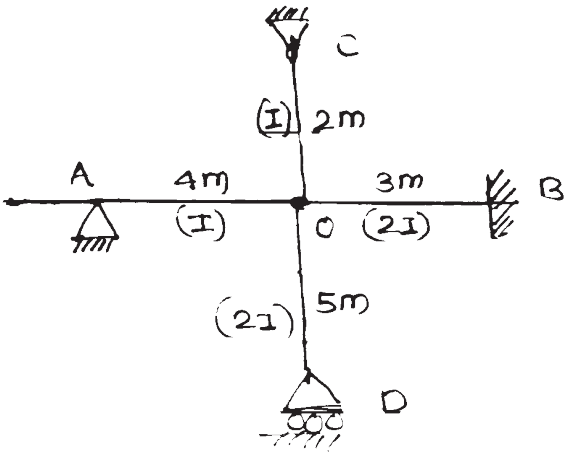

Fig. No. 5

c) Define symmetrical and unsymmetrical portal frame with sketch.

Marks

d) Calculate support moments and draw BMD for a continuous beam ABC shown in Figure by moment distribution method.

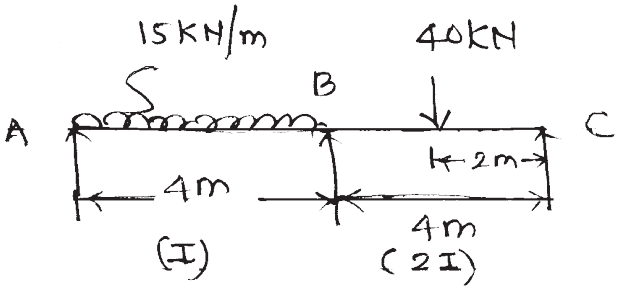

Fig. No. 6

5. Attempt any TWO of the following : **12**

a) Using three moment theorem, calculate the support moments and draw BMD for a continuous beam as shown in Figure.

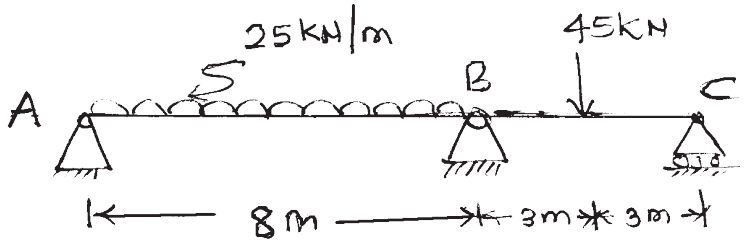

Fig. No. 7

b) Using Clapeyron's theorem, calculate the support moments and draw BMD.

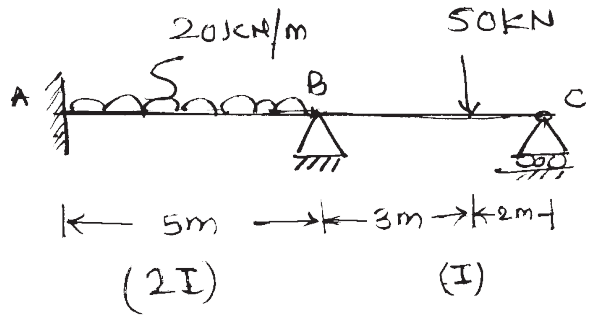

Fig. No. 8

Marks

c) Using moment distribution method. Find support moments of continuous beam also draw BMD assume EI constant.

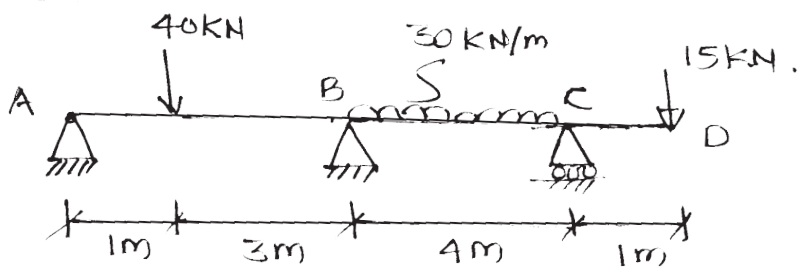

Fig. No. 9

6. Attempt any TWO of the following : **12**

a) Draw SFD for continuous beam ABC having negative BM at B is 66.14 KN.m.

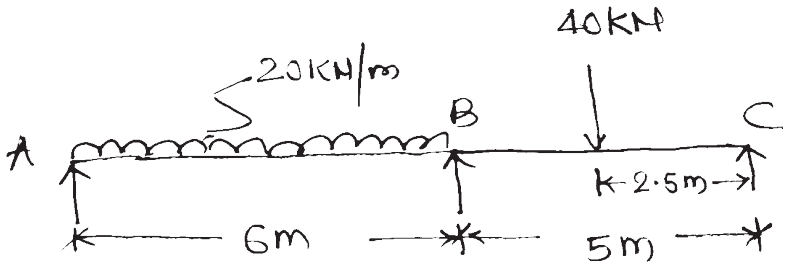

Fig. No. 10

b) Calculate magnitude and state the nature of forces in the members AB, BC, CD, DE, BD and BE of a truss as shown in Fig. Use method of section.

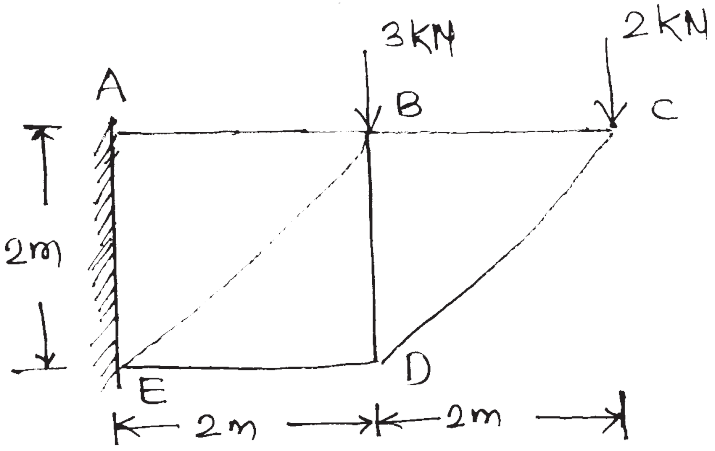

Fig. No. 11

P.T.O.

Marks

c) Calculate magnitude and state the nature of forces in the members AB, BC, CD, AD and BD of a truss as shown in Figure. Use method of joints.

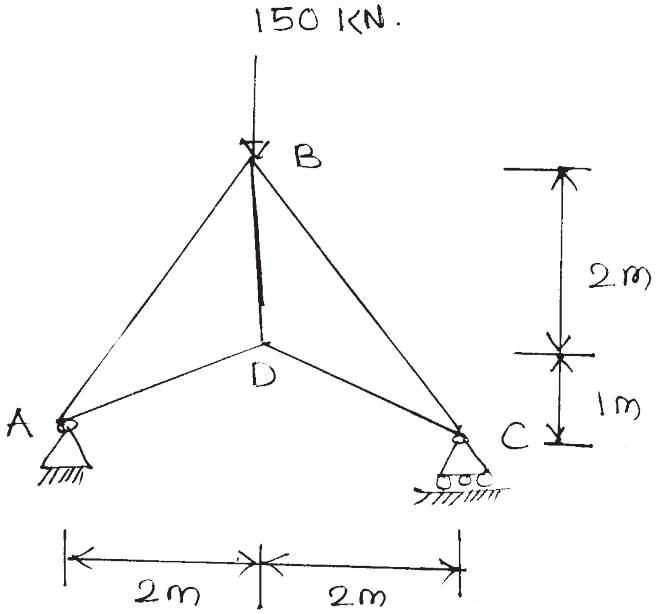

Fig. No. 12