2015

STRUCTURE–IV

Paper : Eng–4·5

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* Derive Clapeyron's three moment equation. 10

   (b) For the propped centilever shown in *fig-1*, find the support reaction and draw the bending moment diagram. 10

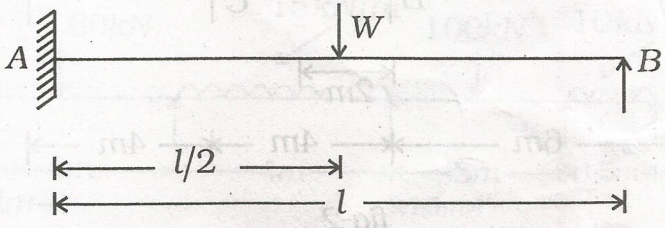

fig-1

2. Find the fixing moment for a fixed beam of uniform section due to an uniformly distributed load acting over the full span of the beam and draw the bending moment diagram. 20

3. A fixed beam *AB* of span 5*m* carries a point load of 100*kN* at a distance of 2*m* from the left support. Calculate the deflection of the beam under the load. Assume flexural rigidity of the beam as $12\times10^9 kN\text{-}mm^2$. 20

4. A continuous beam *ABCD* is shown in *fig-2*. Draw SFD (shear force diagram) and BMD (bending moment diagram). 20

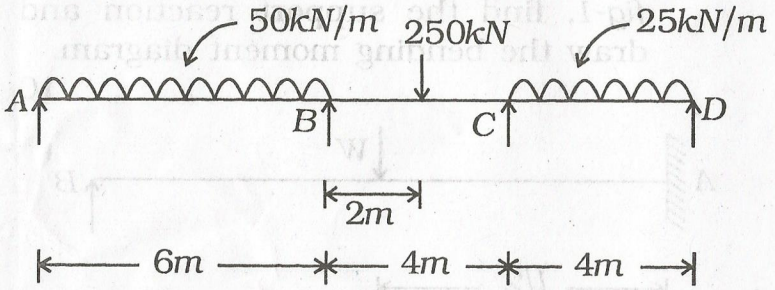

fig-2

5. Analyse the portal frame as shown in *fig-3* and draw the bending moment diagram. 20

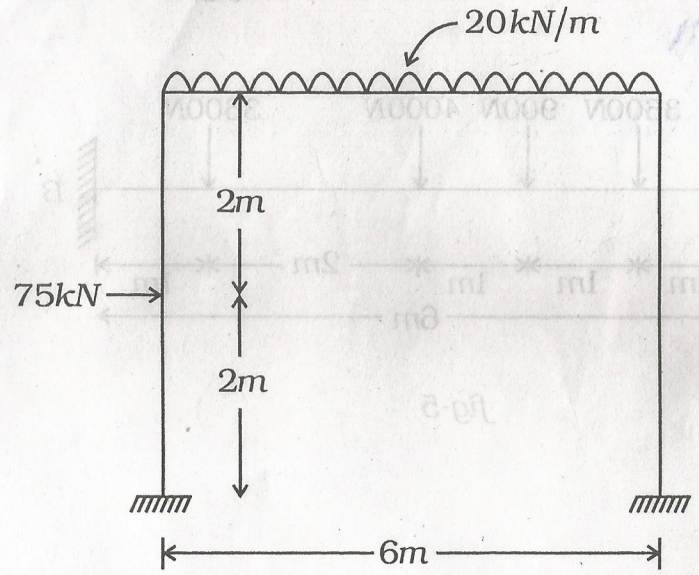

fig-3

6. Analyse the beam shown in *fig-4* and draw the bending moment diagram. 20

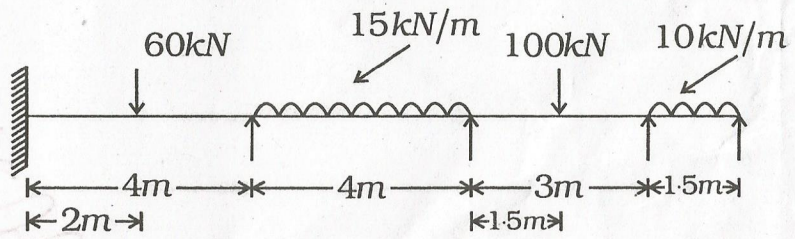

fig-4

7. Find the fixed end moment and plot the shear force and Bending moment diagram for the fixed beam shown in *fig*-5. 20

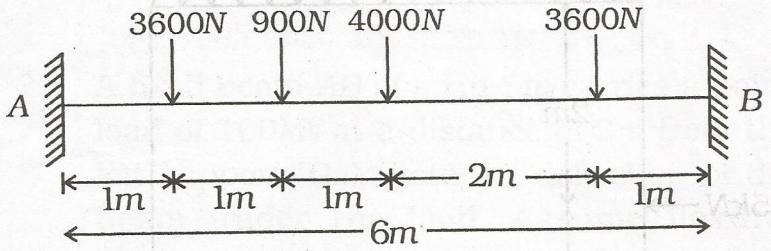

fig-5