No. of Printed Pages : 3

ET-502(B)

01256

B.Tech. Civil (Construction Management) / B.Tech. Civil (Water Resources Engineering)

Term-End Examination

June, 2012

ET-502(B) : STRUCTURAL ANALYSIS

Time : 3 Hours *Maximum Marks : 70*

Note : *Attempt **any five** questions. All questions carry **equal** marks. Use of scientific calculator is **permitted**.*

1. For the beam, with internal hinge, shown in figure -1, plot the influence lines for reaction at A, reaction at B, bending moment at B, shear force at X and bending moment at X. **14**

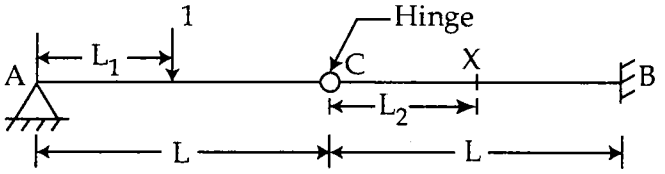

Figure - 1

2. A symmetrical three - hinged parabolic arch has a span of 24 m and central rise of 6 m. It carries a concentrated load of 60 kN at left quarter - point. Determine the horizontal thrust in the arch and maximum bending moment. **14**

3. Determine the reactions of the two span beam shown in figure - 2, EI is constant for the beam. **14**

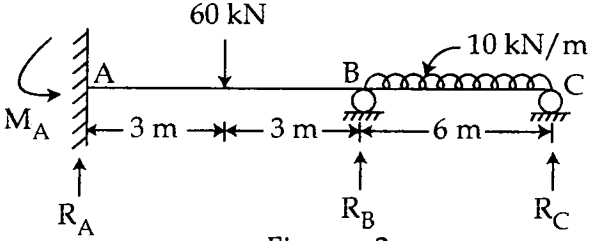

Figure - 2

4. Calculate the deflection and slope at the free end of a cantilever beam carrying uniformly distributed load W per unit length over the entire span. **14**

5. Analyse the continuous beam shown in figure - 3 by the slope deflection method if the support B sinks by 7.5 mm. Draw shear force and bending moment diagram. Sketch the deflection shape. Take EI = 48000 kNm^2 **14**

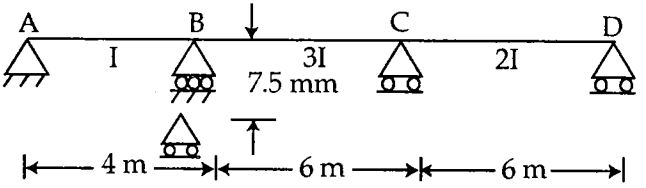

Figure - 3

6. Determine mid span deflection and end slopes of a simply supported beam of span L carrying a uniformly distributed load W per unit length over its entire span. **14**

7. Determine the collapse load for a propped cantilever shown in figure - 4 by static and kinematic methods. **14**

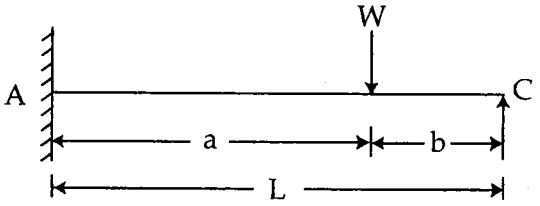

Figure - 4

8. Find the fixed end moments of a beam AB of span L which is loaded with a uniformly distributed load W per unit length over the left half of span. **14**