Question Paper Code : 41006

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Fifth Semester

Civil Engineering

080100028 — STRUCTURAL ANALYSIS – 1

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Explain Mohr's correction.

2. Mention the applications of Williot diagram.

3. What are indeterminate structures?

4. Explain Indirect model analysis.

5. What is fixed arch?

6. List the reaction components in a two hinged arch.

7. Give the relationship between slope and deflection of a simply supported beam.

8. What are the factors governing the symmetry of portal frames?

9. What is carry over factor?

10. Explain Naylor's simplification.

PART B — (5 × 16 = 80 marks)

11. (a) Explain the principles of virtual work for deflections of determinate structures.

Or

(b) Explain the behaviour of pin-jointed plane frames and rigid plane frames.

12. (a) Explain the applications of Muller Breaslau's principle with suitable examples.

Or

(b) Two wheel loads 90 kN and 300 kN, spaced 2.5m apart move on a girder of span 20 meters. Find the maximum positive and negative shear force at a section 6 meters from the left end. Any wheel load can lead the other.

13. (a) Discuss the applications of arches in structural engineering fields.

Or

(b) A three hinged parabolic arch of span 25 meters and rise 4 meters carries a uniformly distributed load of 30 kN per meter on the whole span and a point load of 250 kN at a distance of 5.5 meters from the right end. Find the horizontal thrust, bending moment and normal thrust at a section 6 meters from the left end.

14. (a) A continuous beam ABC consists of spans AB = 4 meters and BC = 5meters, the ends A and C being fixed. AB and BC carry uniformly distributed loads of intensity 5 kN / m and 6.kN / m respectively. Find the support moments and draw the bending moment diagram for the beam, using slope deflection method. The beam is of uniform section throughout.

Or

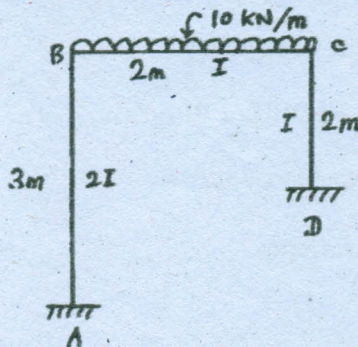(b) Analyse the frame shown in figure- 1, by slope deflection method.

Figure-1

15. (a) A beam ABC, 7 meters long is fixed at A and simply supported at B, 5 meters from A so as to provide an overhang BC, 2meters long. It carries a point load of 10 kN at C. Analyse the beam using moment distribution method.

Or

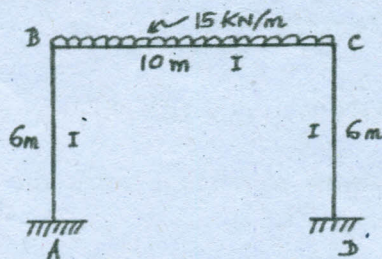(b) Analyse the frame shown in figure – 2 by moment distribution method.

Figure-2

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