Visit **www.brpaper.com** for downloading previous years question papers of 10th and 12th (PSEB and CBSE), B-Tech, Diploma, BBA, BCA, MBA, MCA, M-Tech, PGDCA, B-Com, BSC-IT, MSC-IT.

Roll No. Total No. of Pages: 03

Total No. of Questions: 09

B.Tech.(CE) (2011 Onwards) (Sem.-5) STRUCTURAL ANALYSIS - II

Subject Code: BTCE-503 Paper ID: [A2080]

Time: 3 Hrs. Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1) Write briefly:

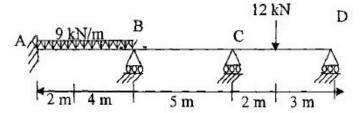
- a) What is the difference between static and kinematic indeterminacies of a structures?
- b) Differentiate between system coordinates and element coordinates in the element approach of structural analysis.
- c) State castigliano's theorem.
- d) Define generalize Slope Deflection equation for a member AB, having Modulos of Elasticity E, Moment of Inertia I and span L.
- e) Differentiate force method and displacement method of structural analysis.
- f) What are forces developed in a prismatic member when a unit rotation (without translational displacement) is given to its one end and other end is fixed?
- g) Define the term Distribution Factor.
- h) What is an influence line? Discuss its applications.
- i) Explain how Muller Breaslar principle can be used for drawing influence line.
- j) What is basic difference between Portal method and Cantilever method of approximate analysis of frames?

1 M-70514 (S2)-559

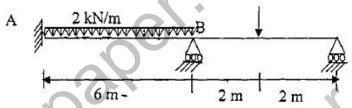
Visit **www.brpaper.com** for downloading previous years question papers of 10th and 12th (PSEB and CBSE), B-Tech, Diploma, BBA, BCA, MBA, MCA, M-Tech, PGDCA, B-Com, BSC-IT, MSC-IT.

SECTION-B

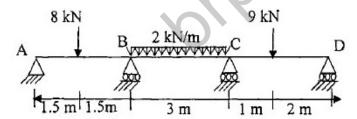
- 2) A cantilever beam AB of uniform stiffness is propped at end B. The span of the beam is L and it carries a udl of W kN/m. Calculate the deflection at the point where B.M is maximum on the span by the method of Consistent Deformation.
- Using clapeyron's theorem, solve the continuous beam ABCD, 16 m long is continuous over three spans. Span AB = 6 m; BC = 5 m and CD = 5 m. EI is constant throughout.



- 4) A 2-hinged parabolic arch has a span of 100 m and a rise of 25 m. It carries a uniformly distributed load of 20 kN/m intensity of the horizontal span over its left half span. Determine the reactions and draw bending moment diagram. Take $I = I_o \sec \theta$.
- 5) A bean ABC 10 m long is shown below. Use Slope Deflection method to compute the end moments and plot the bending moment diagram. The beam has constant EI for both the spans.



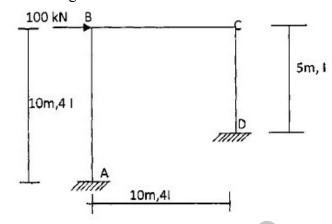
A horizontal beam ABCD is carried on simply supports and is continuous over three equal spans of 3 m. All the supports are initially at the same level. The loading on the beam is shown below. Analyse the beam using moment distribution method if the settlement of support A, B and C are 10mm, 30 mm and 20mm respectively. The moment of inertia of whole beam is 2.4×10^6 mm⁴. Take $E = 2 \times 10^5$ N/mm².



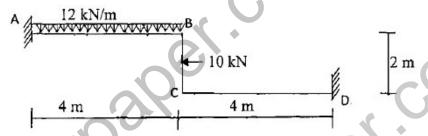
2 M-70514 (S2)-559

SECTION-C

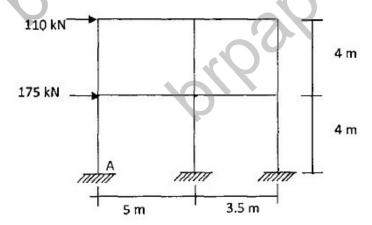
7) A portal frame ABCD is fixed at A and D and has rigid joints at B and C. The frame is loaded as shown below. Analyse the frame using Slope Deflection method and draw bending moment diagram. Take EI constant.



8) A portal frame ABCD is fixed at A and D. The frame is loaded as shown below. It carries a point load of 10 kN at centre of BC. Analyze the frame using Moment Distribution method and draw bending moment diagram.



9) Analyse the building frame subjected to horizontal forces by using Portal Method.



3 M-70514 (S2)-559