

GANPAT UNIVERSITY
B. TECH SEM-5TH (CIVIL) REGULAR EXAMINATION- NOV-DEC 2016
2CI501: Structural Analysis -II

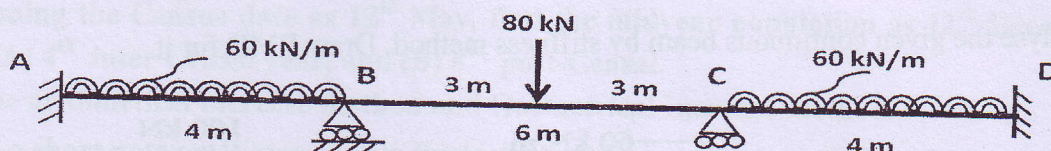
TIME: 3 HRS

TOTAL MARKS: 60

- Instructions:** (1) This Question paper has two sections. Attempt each section in separate answer book.
 (2) Figures on right indicate marks.
 (3) Be precise and to the point in answering the descriptive questions.
 (4) Assume suitable data wherever if necessary.

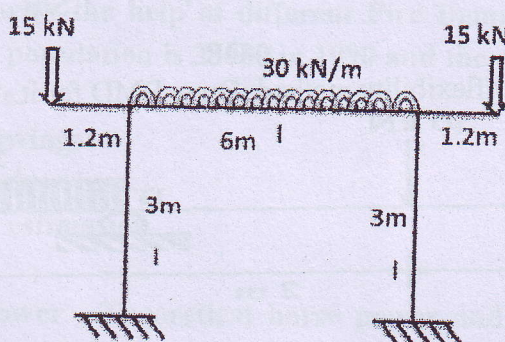
SECTION: I

- Q.1** Solve the following problem by using rotation factor method and plot shear force diagram and bending moment diagram of it. (10)

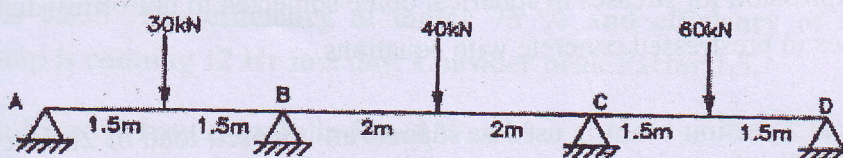


OR

- Q.1** Solve the following problem by using rotation factor method and plot shear force diagram and bending moment diagram of it. (10)

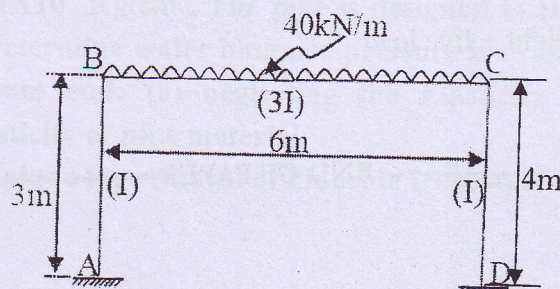


- Q.2** Determine the support moments by using moment distribution method for a given beam if support B sink by 10 mm. Take $E=210 \times 10^3 \text{ N/mm}^2$ and $I=2.4 \times 10^6 \text{ mm}^4$. Plot BMD and SFD for the said condition. (10)

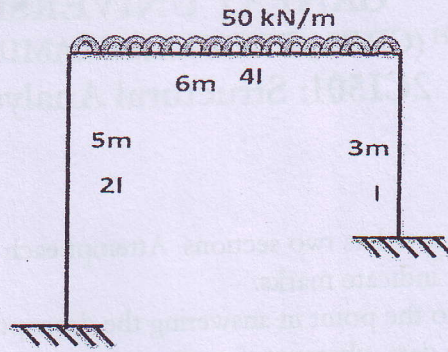


OR

- Q.2** Determine shear and moment by using distribution method for the problem given below. Plot SFD and BMD of it. (10)



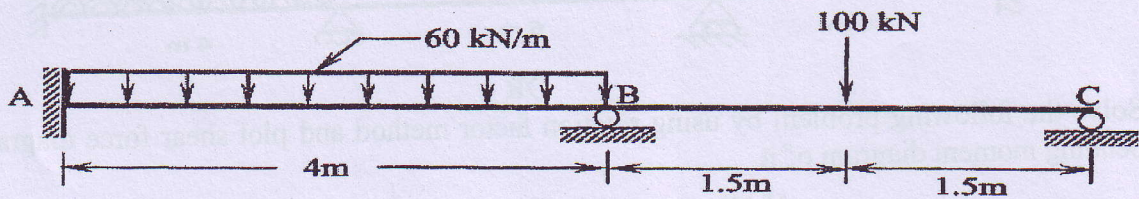
- Q.3 (A) Solve this problem by using deflection method and plot moment diagram for the said example. (06)



- (B) Mention the equation for statically indeterminacy and kinematic indeterminacy for various structural system. (02)

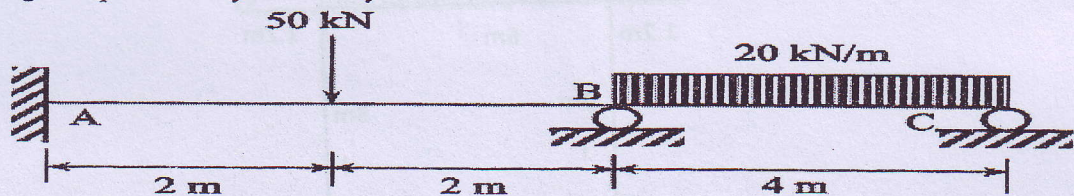
SECTION: II

- Q.4 Analyse the given continuous beam by stiffness method. Draw BMD for it. (10)



OR

- Q.4 Solve the given problem by flexibility method. Draw BMD for it. (10)



- Q.5 (a) Derive an expression for stresses in conical dome subjected to concentrated load at crown. (05)
(b) What is prestressing? What are the advantages of prestressed concrete over R.C.C ? (05)

OR

- Q.5 (a) Derive an expression for stresses in spherical dome subjected to uniformly distributed load. (05)
(b) Explain losses in prestressed concrete with equations. (05)

- Q.6 An unsymmetrical I-section beam is used to support an imposed load of 2kN/m over a span of 8m. The sectional details are top flange, 300mm wide and 60mm thick; bottom flange, 100mm wide and 60mm thick; thickness of the web 80mm; overall depth of the beam 400mm. Effective prestressing force of 100kN is located at 50mm from the soffit of the beam. Estimate the stresses at the centre of span section of the beam for the following load condition: (10)

- Prestress + self-weight
- Prestress + self-weight + live load

-----END OF PAPER-----