

Code: 1G651

III B.Tech. I Semester Supplementary Examinations August 2021

Structural Analysis-II

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questionsAll Questions carry equal marks (**14 Marks** each)

1. a) Determine the Horizontal Thrust for Three hinged arch which is subjected to effect of temperature.
b) Derive the expression for Three Hinged Circular arch.
2. a) Summarize the effect of rib shortening on two hinged circular arch?
b) Explain tied arches and fixed arches?
3. A single bay single storey portal frame ABCD is fixed at A and D. The height of the column AB is 4m and that of DC is 6m. The span of the beam BC is 8m. A uniformly distributed load of 70kN/m is acting on the whole span BC. $AB=DC=EI$ and $BC=2EI$. Calculate the support reactions and also draw the bending moment diagram for the portal frame. Use slope deflection method.
4. Analyse the beam shown in the Fig.1 by moment distribution method. Take $I = 100 \times 10^6 \text{ mm}^4$.

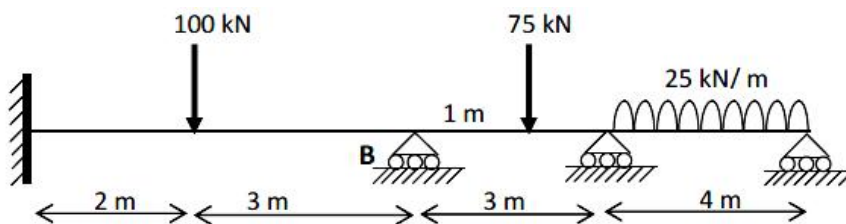


Fig.1

5. Detail the methodology of analysis by substitute frame method?
6. A two span continuous beam ABC rests on simple supports at A, B and C. All the three supports are at same level. The span $AB=7\text{m}$ and span $BC=5\text{m}$. The span AB carries a uniformly distributed load of 30kN/m and span BC carries a central point load of 30kN. EI is constant for the whole beam. Find the moments and reactions at all the support using flexibility method.
7. A two span continuous beam ABC is fixed at A and C and rests on simple support at B. All the three supports are at same level. The span $AB=4\text{m}$ and span $BC=6\text{m}$. The span AB carries a uniformly distributed load of 40kN/m and span BC carries a central point load of 80kN. EI is constant for the whole beam. Find the moments and reactions at all the support using stiffness method.
8. a) Define Shape factor?
b) Develop the Shape factor for a Triangular section.
