

B.Tech. CIVIL ENGINEERING (BTCLEVI)**Term-End Examination**

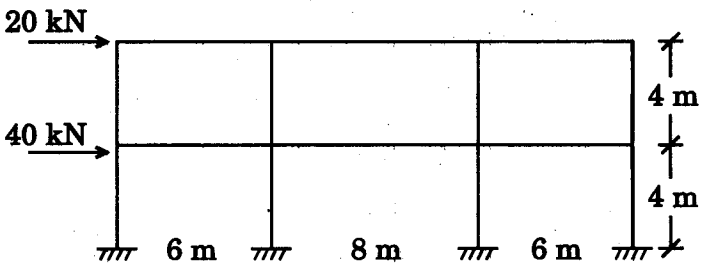
00203

December, 2016**BICEE-017 : ADVANCED STRUCTURAL ANALYSIS***Time : 3 hours**Maximum Marks : 70*

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

1. Analyse the rigid frame subjected to horizontal forces as shown in Figure 1 by Portal method of analysis.

14

*Figure 1*

2. (a) Explain static and kinematic indeterminacy of structures. 4
- (b) Develop stiffness matrix for a cantilever beam having two co-ordinates at free end as shown in Figure 2. 10

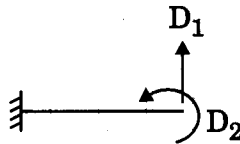


Figure 2

3. Explain cantilever method of approximate analysis of rigid frames. Write the assumptions taken in this method. 14
4. Using displacement method, analyse the continuous beam shown in Figure 3. Possible displacements are shown in the figure as D_1 and D_2 . EI is the same throughout. 14

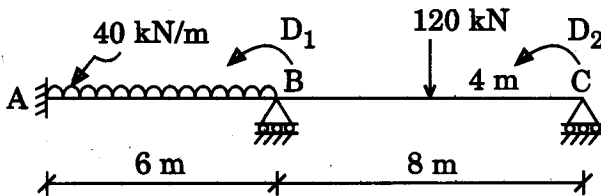


Figure 3

5. (a) What do you understand by a stiffness influence coefficient ? Explain briefly. 7
- (b) Discuss how lack of fit of members may induce the forces in members of a rigid truss. 7
6. (a) Discuss some requirements anticipated from commercial analysis packages. What are the advantages of the use of such packages ? Explain briefly. 7
- (b) Explain why equations of compatibility (or geometry) are needed in some structures in addition to condition equations of equilibrium. 7
7. Write short notes on any *two* of the following topics : $2 \times 7 = 14$
- (a) Merits of Stiffness Matrix Method in comparison to Flexibility Method
- (b) Modulus of Rigidity
- (c) Substitute Frames
-