No. of Printed Pages : 3 **BICEE-017**

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B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

June, 2019

BICEE-017 : ADVANCED STRUCTURAL ANALYSIS

Time : 3 hours *Maximum Marks : 70*

Note : *(i) Attempt any four questions.*

(ii) Assume any missing data suitably.

1. Analyse the building frame as shown in Fig. 1 subjected to lateral loads by CANTILEVER METHOD, assuming that all columns have same area of x-section. **17½**

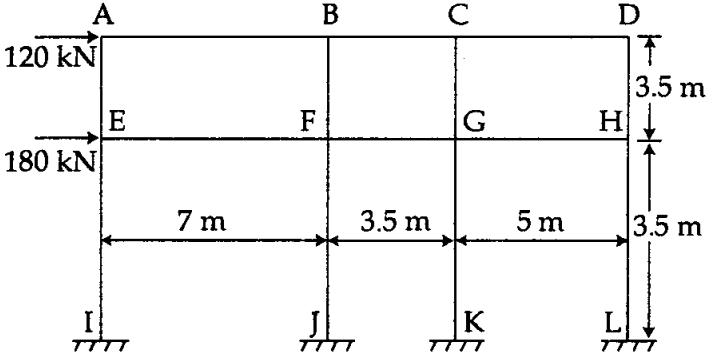

Fig. 1

2. Analyse the pin jointed plane frame by flexibility method, for truss shown in Fig. 2. 17½

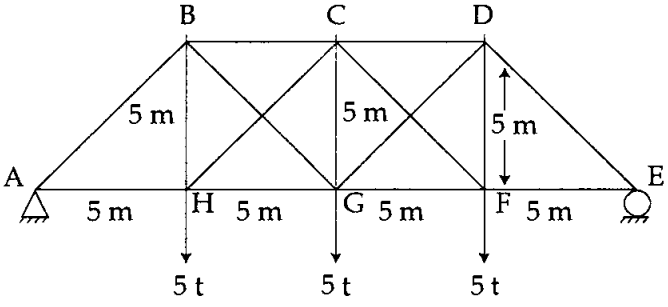

Fig. 2

Axial flexibility of each member of frame is $\frac{1}{50}$ cm/t.

3. (a) Prove the stiffness matrix and flexibility matrix are universe of each other. 9

(b) What are the properties of stiffness matrix and the assumptions for analysis of structures. 8½

4. (a) Develop the flexibility matrix of frame shown in Fig.3 9

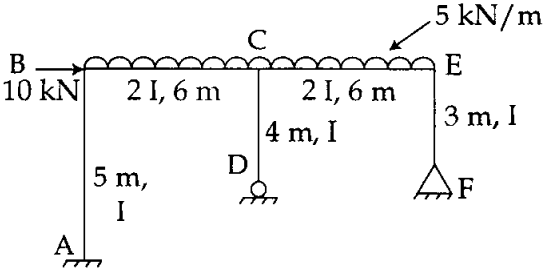

Fig. 3

(b) What is internal and external indeterminacy in rigid and pin jointed frames. Explain with example. 8½

5. (a) Discuss the corollary. 9
"Transverse displacement without rotation of one end of a prismatic member with other end fixed".

(b) Write note on analysis of beams by element stiffness method. 8½

6. Analyse the continuous beam by stiffness method as shown in Fig. 4. 17½

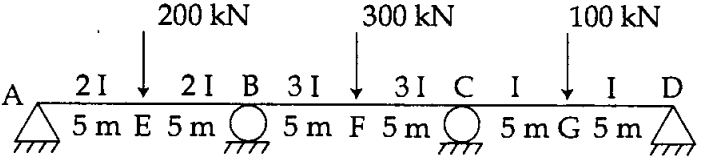

Fig. 4

7. (a) Develop the stiffness matrix for frame as shown in Fig 5. 9

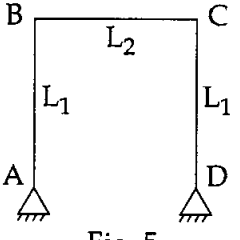

Fig. 5

(b) Write short note on **any one**. 8½

(i) Free body diagram
(ii) Assumptions in structural analysis
(iii) Analysis packages for analysis of structures.