BICE-016

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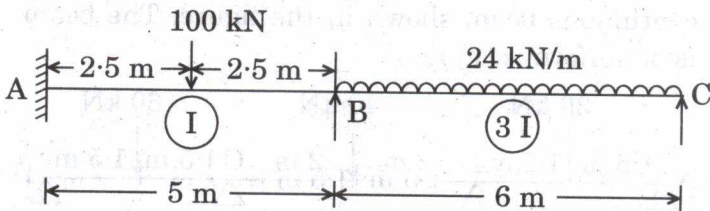
Term-End Examination

00664

June, 2017

BICE-016 : STRUCTURAL ANALYSIS – III

Time : 3 hours   *Maximum Marks : 70*

*Note : Answer any **five** questions. All questions carry equal marks. Assume missing data, if any. Use of scientific calculator is allowed.*
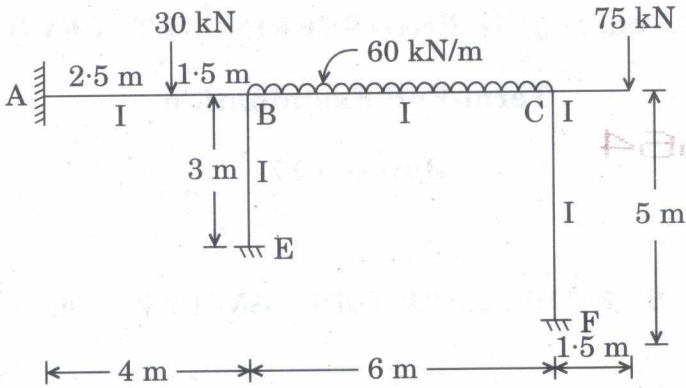
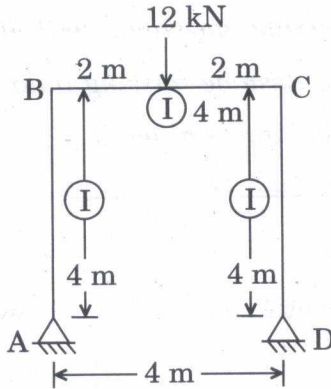1. Analyse the continuous beam shown in the figure.   *14*

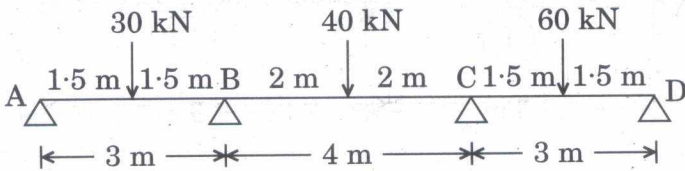**2.** Analyse the rigid frame shown in the figure, using Kani's method.　　14

30 kN　　　　　　　　　　　　　75 kN

A — 2·5 m — 1·5 m — B, I — 60 kN/m, I — C | I
3 m | I
E
I　5 m
F
1·5 m
|← 4 m →|← 6 m →|

3. Analyse the portal frame shown in the figure.　　14
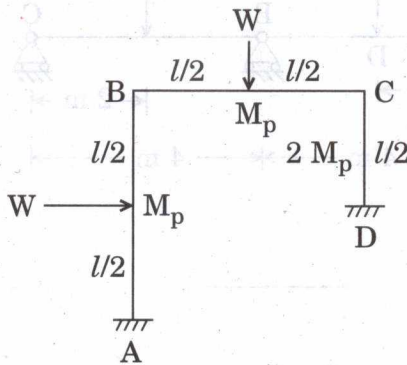
12 kN

B — 2 m — (I) 4 m — 2 m — C
(I) 4 m
(I) 4 m
A　　　D
|← 4 m →|

4. Find the moment at the supports of the continuous beam shown in the figure. The beam is of uniform section.　　14

30 kN　　　　40 kN　　　　60 kN

A, 1·5 m — 1·5 m B — 2 m — 2 m — C 1·5 m — 1·5 m, D
|← 3 m →|← 4 m →|← 3 m →|

5. Determine the value of the collapse load W for the portal frame shown in the figure. The plastic moments of the members of the frame are shown in the figure. *14*

6. The axial and flexural rigidities of the members of a plane frame shown in the figure are EA and EI respectively. Joint B is free to translate and rotate. Calculate the stiffness coefficients corresponding to the three displacements shown in the figure and assemble the stiffness matrix. *14*
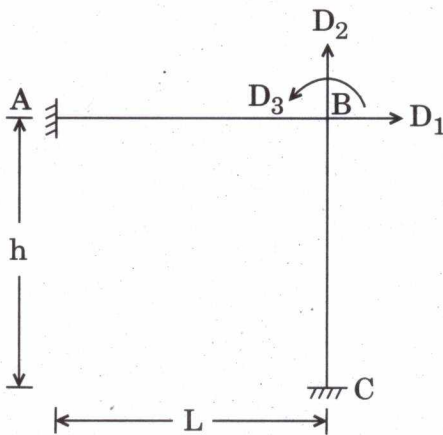
7. Analyse the continuous beam shown in the figure, using displacement method. *14*