



**K. K. Wagh Institute of Engineering Education & Research, Nashik**  
(An Autonomous Institute From A.Y. 2022-23)

InSem Examination-II Summer 2025	
Exam Seat No.:	
Academic Year: 2024-2025	Semester: IV
Class: SY	Program: B.Tech
Branch Code: CIV	Pattern: 2023
Name of Course: Structural Analysis	Course Code: 2304213
Max. Marks: 30	Duration: 1 Hrs 15 Min.

**Instructions:** Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains three pages.
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome

**Marks CO**

**Question No. 1**

- 1 a) Determine the degree of static and kinematic indeterminacy of a given frame shown in figure 1 a. (7) CO1

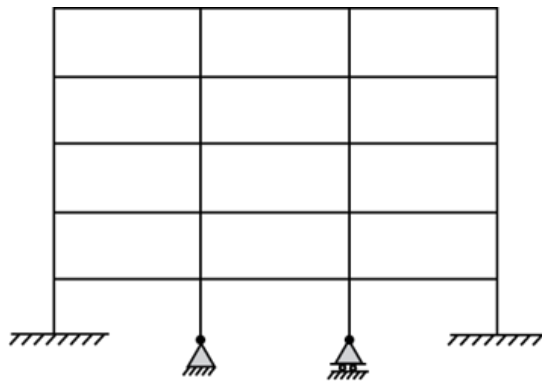


Figure 1 a

**Question No. 2**

- 2 a) For a simply supported beam shown in figure 2 a. Find the deflection at point C using Macauleys method.  $EI = 25 \times 10^3 \text{ kN m}^2$  (8) CO1

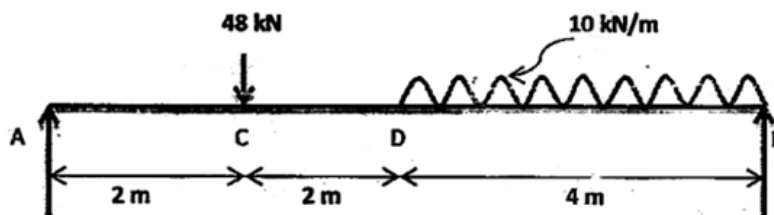


Figure 2 a

OR

2 b) Determine reaction at A & B for given propped cantilever beam shown in figure 2 b.

(8) CO1

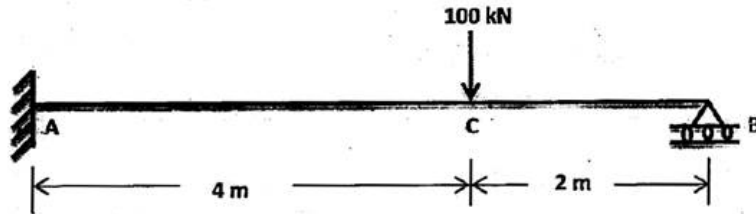


Figure 2 b

**Question No. 3**

3 a) Find only the reactions at internal hinges for a given frame shown in figure 3 a using portal frame method.

(7) CO2

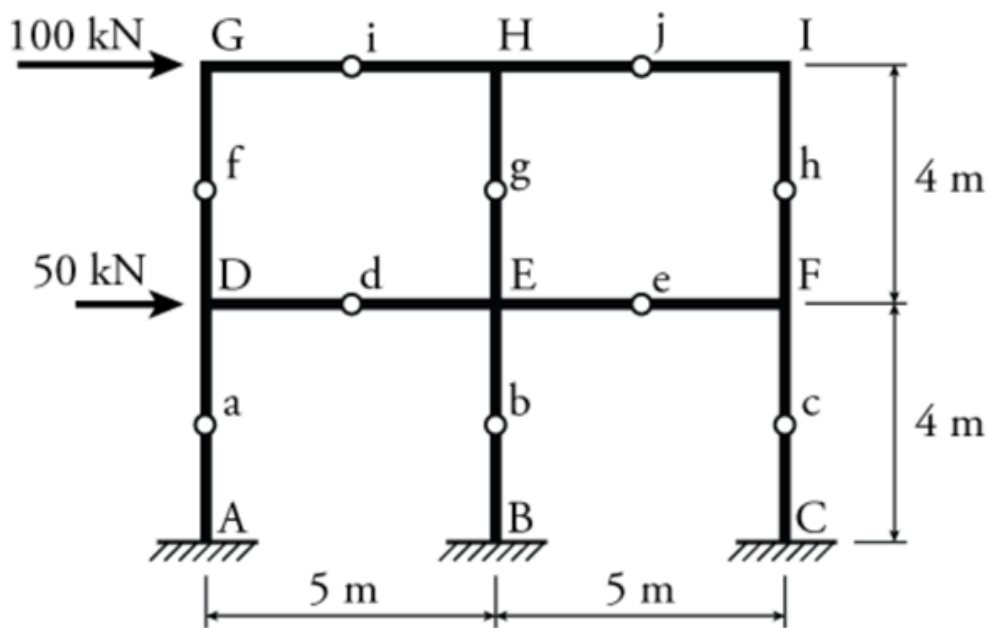


Figure 3 a

**Question No. 4**

4 a) Find only the reactions at internal hinges for a given frame shown in figure 4 a using portal frame method.

(8) CO2

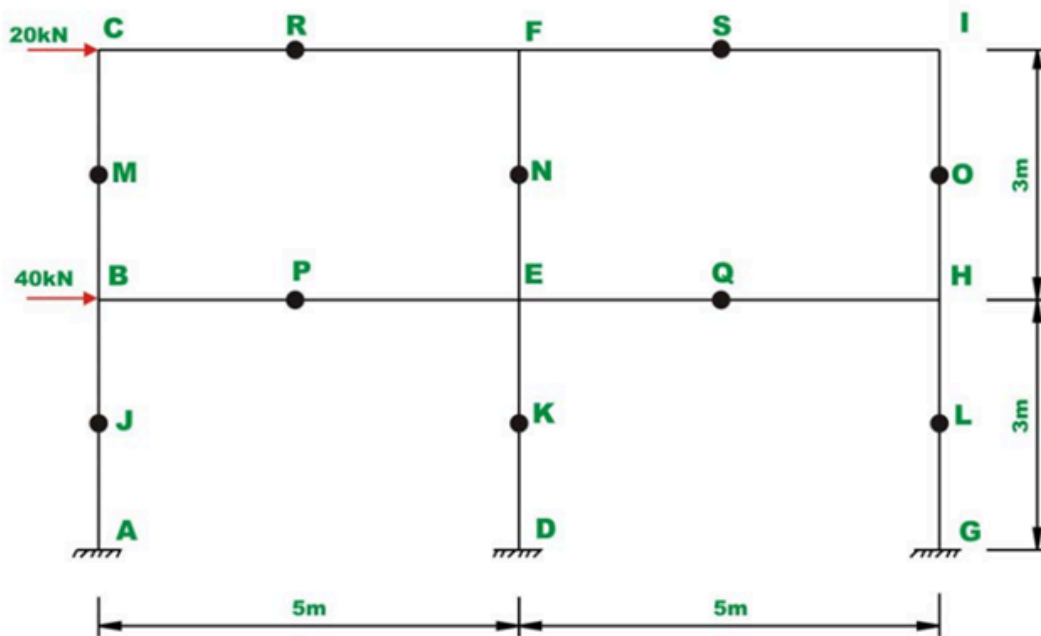


Figure 4 a

OR

4 b) Determine only P-forces required for the analysis of given truss shown in figure 4 b

(8) CO2

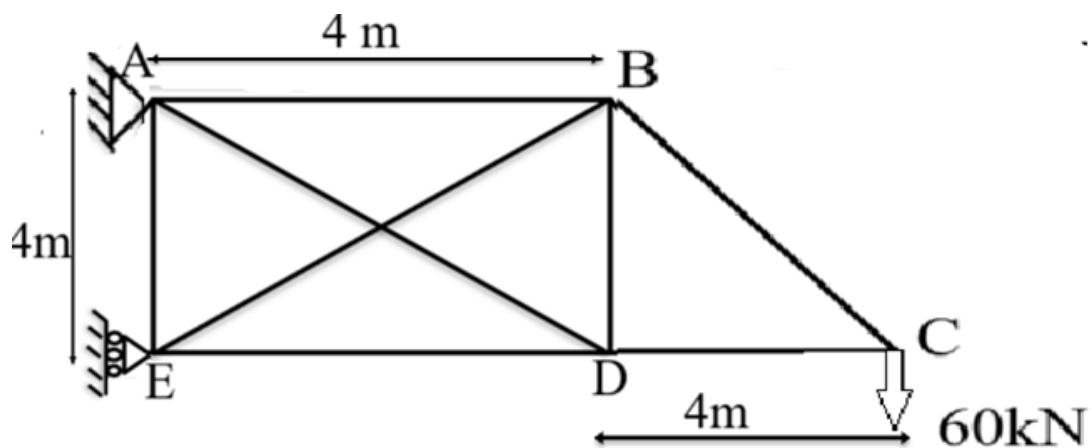


Figure 4 b

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