



## CBCS SCHEME

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18ENG15

First Semester B.Arch. Degree Examination, Dec.2025/Jan.2026

### Building Structure – I

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

#### Module-1

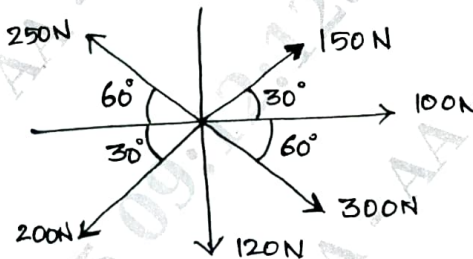
- 1 a. Explain the important properties of concrete. Also mention the advantages and disadvantages of concrete. (10 Marks)
- b. Explain the properties of steel aluminium and wood. (10 Marks)

OR

- 2 a. Explain with examples Static load and Dynamic load. (08 Marks)
- b. Explain load path in a structure with neat figure. (08 Marks)
- c. Explain briefly dead load and live load. (04 Marks)

#### Module-2

- 3 a. Explain force and classification of force system. (10 Marks)
- b. Find the magnitude and direction of the resultant force of the coplanar force system shown in Fig.Q3(b).



FigQ3(b)

(10 Marks)

OR

- 4 a. What is free body diagram? Draw neat sketches. (04 Marks)
- b. Define :
  - i) Resultant force
  - ii) Equilibrant force
  - iii) Moment.(06 Marks)
- c. Determine the magnitude and direction of the resultant of coplanar concurrent force system shown in Fig Q4(c).

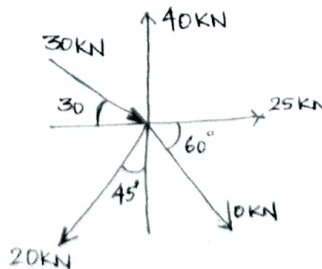


Fig Q4(c)

(10 Marks)

**Module-3**

- 5 a. Define couple and explain the characteristics of a couple. (08 Marks)  
 b. Find the resultant of the force system in Fig Q5(b) acting on a lamina of equilateral triangular shape.

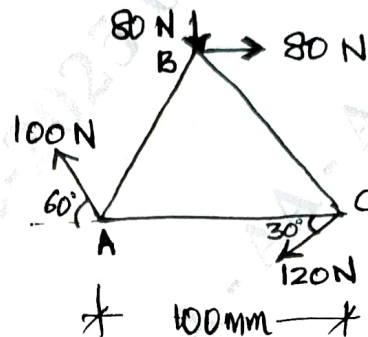


Fig Q5(b)

(12 Marks)

**OR**

- 6 a. Explain different types of supports, beams and loads. (10 Marks)  
 b. Determine the support reaction for the Fig.Q6(b).

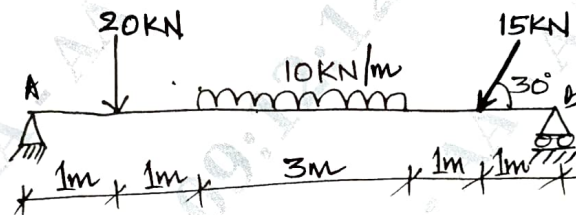


Fig.Q6(b)

(10 Marks)

**Module-4**

- 7 a. Define Centroid, center of gravity with center of gravity expression for circle, triangle, rectangle, semicircle. (05 Marks)  
 b. Determine Centroid of the shaded portion shown in Fig.Q7(b).

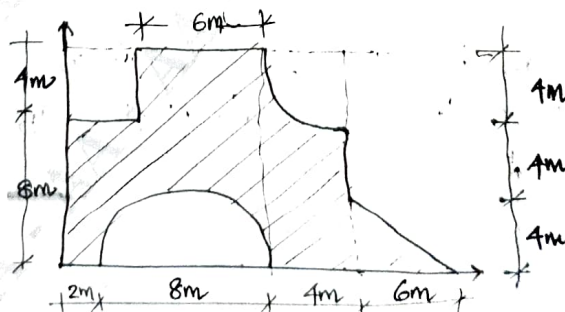


Fig.Q7(b)

(15 Marks)

OR

- 8 Find the polar moment of inertia and the least radius of gyration of the plane lamina shown in Fig Q8.

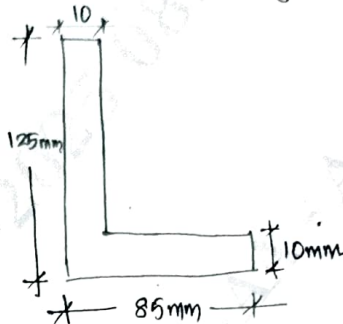


Fig Q8

(20 Marks)

**Module-5**

- 9 a. What are the assumptions made in the analysis of truss? (05 Marks)  
 b. Analyse the truss by method of joints and indicate the forces in BC, DC, DE, BE, AB and BD.

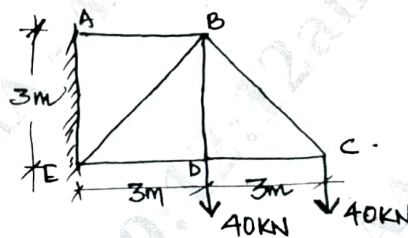


Fig Q9(b)

(15 Marks)

OR

- 10 a. With examples explain briefly :  
 i) Perfect frame  
 ii) Deficient frame  
 iii) Redundant frame. (09 Marks)  
 b. Analyse the truss by method of joints, determine forces in all members of truss shown in Fig Q10(b).

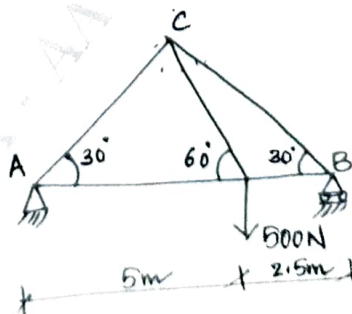


Fig Q10(b)

(11 Marks)

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