

# CBCS SCHEME

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21ENG26

## Second Semester B.Arch. Degree Examination, July/August 2022 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. What is concrete? Discuss its advantages and disadvantages as a building material. (10 Marks)
- b. Explain briefly the various types of loads that act on a structure. (10 Marks)

OR

- 2 a. Discuss the factors that influence the choice of construction materials. (10 Marks)
- b. What is dead load and live load? Explain in detail with some examples. (10 Marks)

### Module-2

- 3 a. Define the following terms:  
(i) Particle (ii) Rigid Body (iii) Weight (iv) Vector quantity (v) Scalar quantity (10 Marks)
- b. What is a force system? Explain the different types of force systems with sketches. (10 Marks)

OR

- 4 a. Explain Parallelogram law of forces and moment of a force with relevant sketches. (10 Marks)
- b. Find the resultant of the force system shown in Fig.Q4(b).

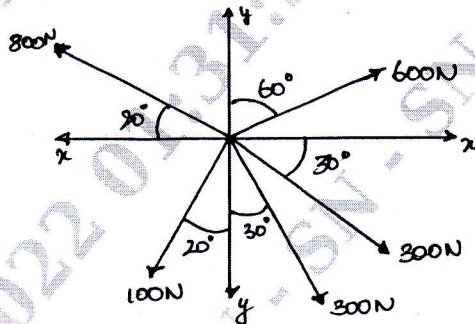


Fig.Q4(b)

(10 Marks)

### Module-3

- 5 a. What are the types of supports a beam can have? Explain. (05 Marks)
- b. Explain the types of loads a beam is subjected to. (05 Marks)
- c. A simply supported beam of span 6m is subjected to loading as shown in Fig.Q5(c). Determine reaction at A and B.

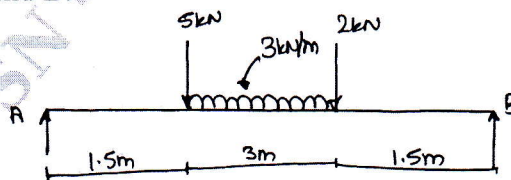


Fig.Q5(c)

(10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 6 a. Determine the reaction at A and E for the beam shown in below Fig.Q6(a).

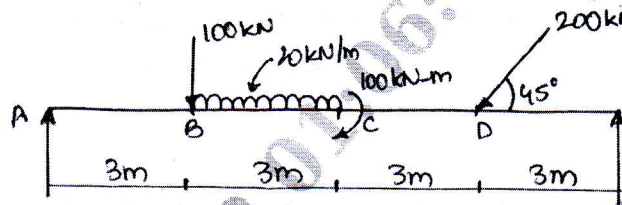


Fig.Q6(a)

(10 Marks)

- b. The Fig.Q6(b) below shows a rope supporting 2 loads W and P. If BC is horizontal and  $W = 600\text{N}$ , determine P. Also, find the tensile forces developed in the different segments of the rope.

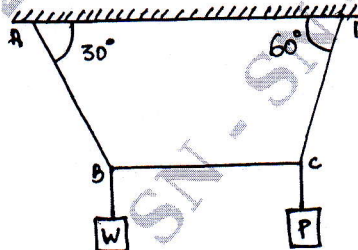


Fig.Q6(b)

(10 Marks)

**Module-4**

- 7 a. Define centroid, center of gravity, radius of gyration, parallel axis theorem. (10 Marks)  
 b. Determine the centroid of figure [Refer Fig.Q7(b)].

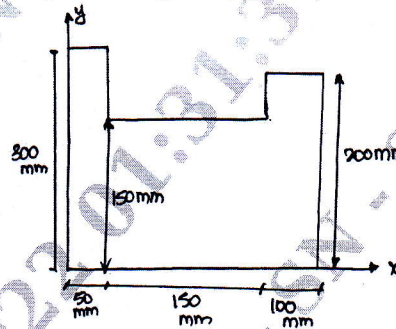


Fig.Q7(b)

(10 Marks)

OR

- 8 a. Find the moment of inertia of the plane lamina about point O. (Shaded portion) [Refer Fig.Q8(a)]

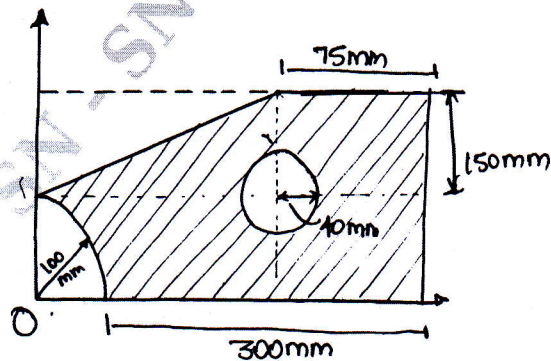


Fig.Q8(a)

(12 Marks)

b. Find the centroid of the Fig.Q8(b) below:

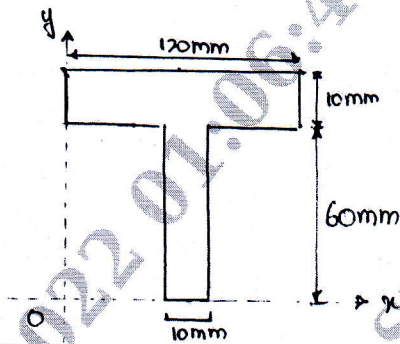


Fig.Q8(b)

(08 Marks)

**Module-5**

- 9 a. List the assumptions made in analysis of trusses.  
 b. Analyse the truss shown in below Fig.Q9(b) :

(07 Marks)

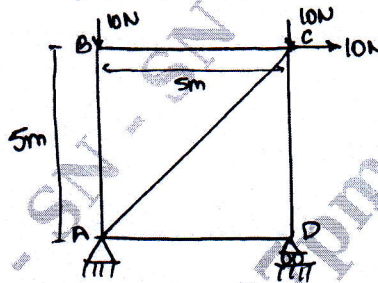


Fig.Q9(b)

(13 Marks)

OR

- 10 a. What are the classification of trusses? Explain types and sketch.  
 b. Analyse the truss shown in the Fig.Q10(b) below, by the method of joints.

(10 Marks)

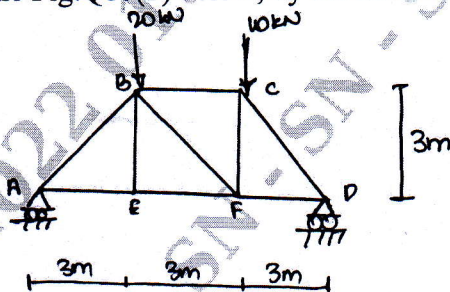


Fig.Q10(b)

(10 Marks)

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