CBCS SCHEME

USN | | | | | | | | | | 21ENG26

Second Semester B.Arch. Degree Examination, June/July 2026
Building Structures – I

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 Write structural properties of steel, concrete, wood and glass. **(20 Marks)**

OR

2 a. What are different types of loads building being subjected to as per IS875 Part I and II? **(10 Marks)**

b. Explain stress strain relationship of steel and aluminium with graph. **(10 Marks)**

Module-2

3 a. Brief classification of force system and characteristics of force. **(10 Marks)**

b. Explain the following :
i) Resultant of force
ii) Composition of force
iii) Principle of transmissibility
iv) Moment of force. **(10 Marks)**

OR

4 a. The resultant of four forces which are acting at a point 0 as shown in Fig.Q.4(a) is along Y-axis the magnitude of forces F_1, F_3 and F_4 are 10 kN, 20 kN and 40 kN respectively. Find the magnitude and direction of force F_2 if resultant is 72 kN. **(10 Marks)**

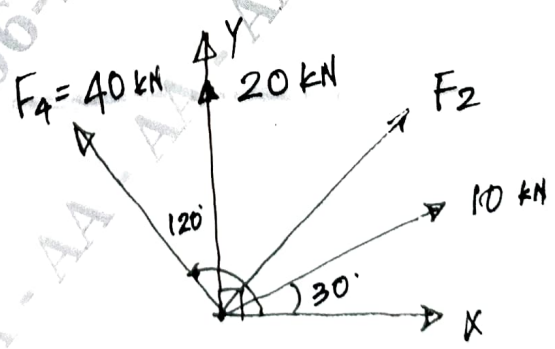

Fig.Q.4(a)

b. Four coplanar forces are acting at a point determine the resultant in magnitude and direction analytically Fig.Q.4(b)

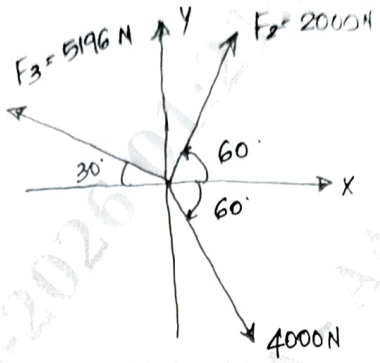

Fig.Q.4(b)

(10 Marks)

Module-3

5 a. What are different types of beams and supports? **(10 Marks)**

b. A simply supported beam AB of span 6m carries point loads of 3 kN and 6kN at a distance of 2m and 4m from left end A as shown in Fig.Q.5(b). Find the reaction at A and B analytically.

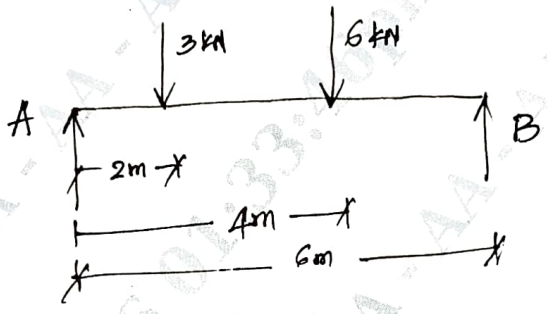

Fig.Q.5(b)

(10 Marks)

OR

6 The Home roof truss shown in Fig.Q.6 carries the given loads. The wind loads are perpendicular to the inclined members. Determine the magnitude of the resultant. Its inclination with the horizontal and where it intersects AB.

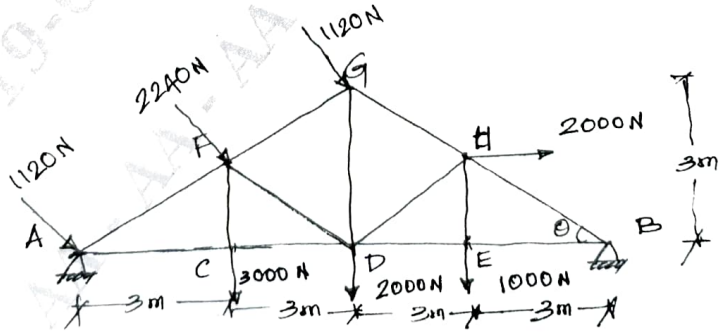

Fig.Q.6

(20 Marks)

Module-4

7 a. Derive Parallel Axis-Theorem. (10 Marks)

b. Derive Perpendicular Axis Theorem. (10 Marks)

OR

8 Find moment of inertia for Fig.Q.8 with respect to x-axis. (20 Marks)

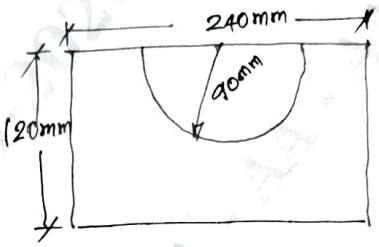

Fig.Q.8

Module-5

9 a. What are different types of trusses? (10 Marks)

b. What are the assumptions made in analysis of trusses? (10 Marks)

OR

10 Find forces in all members of the truss shown in Fig.Q.10 by method of joints. (20 Marks)

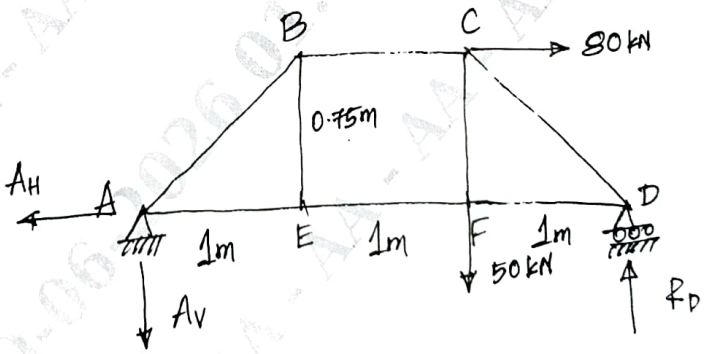

Fig.Q.10

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