

CBGS SCHEME

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21ENG26

Second Semester B.Arch. Degree Examination, June/July 2023 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. Write important properties of Steel, Wood, Aluminium. (10 Marks)
b. Calculate the dead load of R.C.C beam of size 25cm × 50cm, length of beam is 5m, unit weight of R.C.C beam is given by 25kN/m³. (10 Marks)

OR

- 2 a. Explain the following :
i) Live load
ii) Dead load
iii) Gravity load
iv) Lateral load. (10 Marks)
b. What is Reinforced Cement Concrete? Mention the important properties of cement and steel. (10 Marks)

Module-2

- 3 a. Explain :
i) Force and classification of force system
ii) Parallelogram law of forces. (10 Marks)
b. Determine the magnitude and direction of the resultant force, for the coplanar concurrent force system shown in Fig.Q3(b).

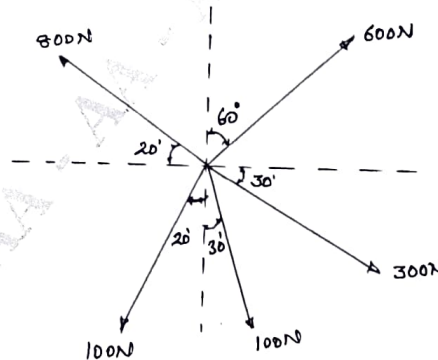


Fig.Q3(b)

(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

- 4 a. Explain the characteristics of a force. (05 Marks)
 b. Explain the principle of transmissibility. (05 Marks)
 c. For the coplanar concurrent force system shown in Fig.Q4(c). The magnitude and direction of the resultant force is 500kN and is acting along x – axis. Determine the unknown force P.

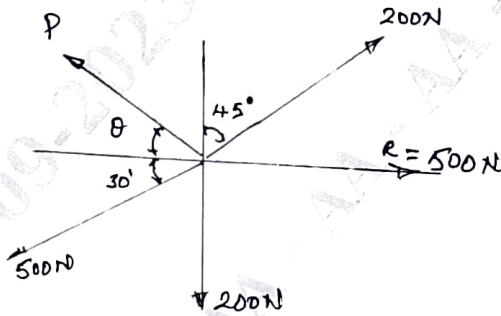


Fig.Q4(c)

(10 Marks)

Module-3

- 5 a. For the coplanar non-concurrent force system shown in Fig.Q5(a) below. Determine the magnitude direction and position of the resultant force with respect to point 'A'.

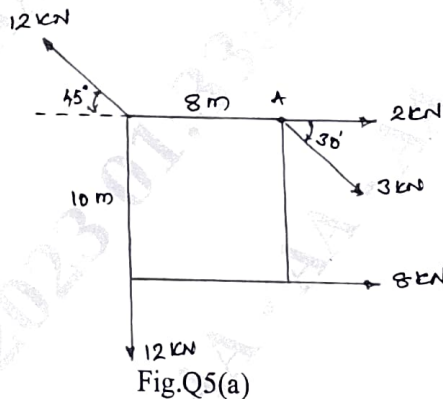


Fig.Q5(a)

(10 Marks)

- b. Differentiate between :
 i) Resolution of force and composition of force
 ii) Rigid body and deformable body.
 c. Find the moment of force $F = 600\text{N}$ about 'A' shown in Fig.Q5(c).

(06 Marks)

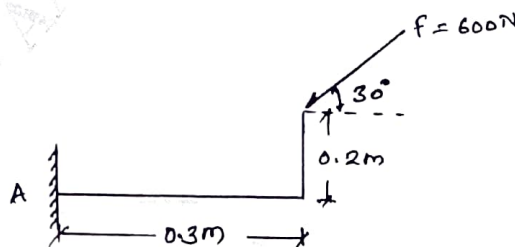


Fig.Q5(c)

(04 Marks)

OR

- 6 a. With neat sketch, explain different types of supports. (08 Marks)
 b. Find reactions for a cantilever beam shown in Fig.Q6(b).

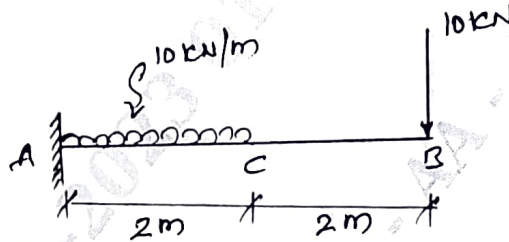


Fig.Q6(b)

(06 Marks)

- c. Determine the distance x such that R_A and R_D are equal for the beam shown in Fig.Q6(c).

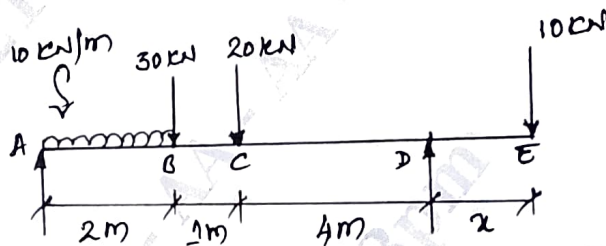


Fig.Q6(c)

(06 Marks)

Module-4

- 7 a. Determine the Centroid of the area shown in Fig.Q7(a).

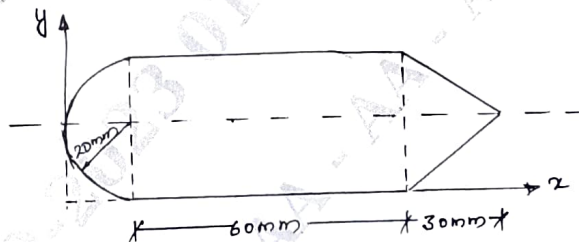


Fig.Q7(a)

(10 Marks)

- b. Locate the Centroid for the composite section shown in Fig.Q7(b).

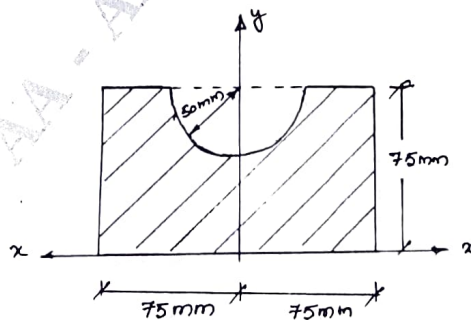


Fig.Q7(b)

(10 Marks)

OR

- 8 a. State and prove parallel axis theorem. (06 Marks)
 b. Determine the moment of inertia for T-section shown in Fig.Q8(b).

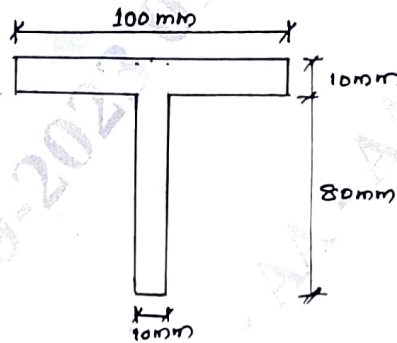


Fig.Q8(b)

(14 Marks)

Module-5

- 9 Briefly explain the methods used for the analysis of truss. (20 Marks)

OR

- 10 Analyse the truss shown in Fig.Q10 by method of joints.

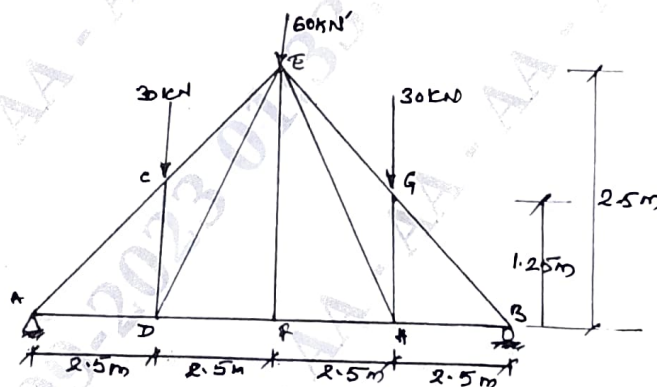


Fig.Q10

(20 Marks)
