CBCS SCHEME

USN | | | | | | | | | | |

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/m^3. **(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).

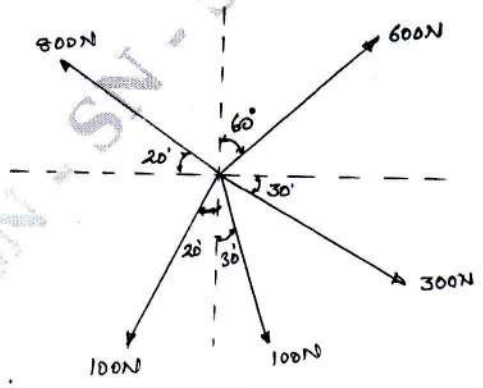

Fig.Q3(b) **(10 Marks)**

OR

4 a. Explain the characteristics of a force. **(05 Marks)**

b. Explain the principle of transmissibility. **(05 Marks)**

c. For the coplanar current 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.

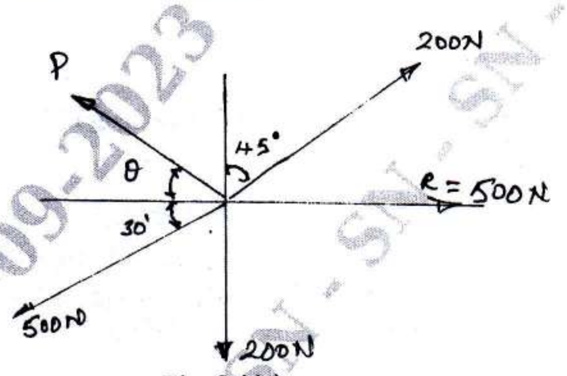

Fig.Q4(c) **(10 Marks)**

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'.

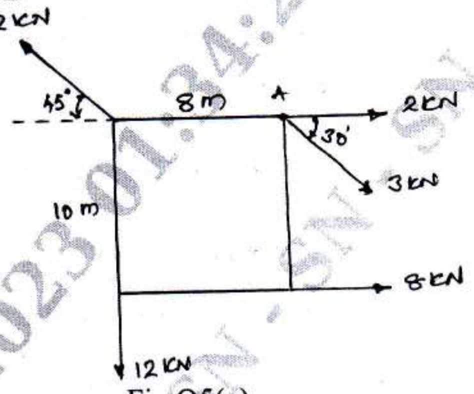

Fig.Q5(a) **(10 Marks)**

b. Differentiate between :

i) Resolution of force and composition of force

ii) Rigid body and deformable body. **(06 Marks)**

c. Find the moment of force F = 600N about 'A' shown in Fig.Q5(c).

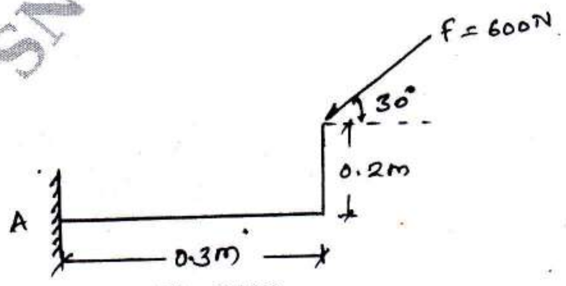

Fig.Q5(c) **(04 Marks)**

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).

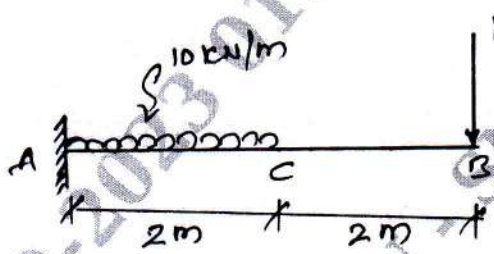

Fig.Q6(b) **(06 Marks)**

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

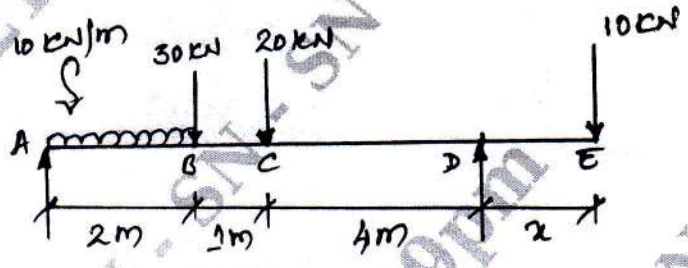

Fig.Q6(c) **(06 Marks)**

Module-4

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

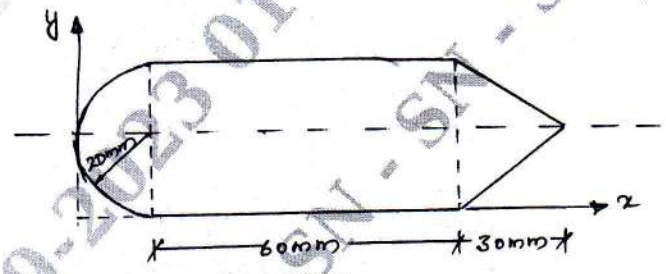

Fig.Q7(a) **(10 Marks)**

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

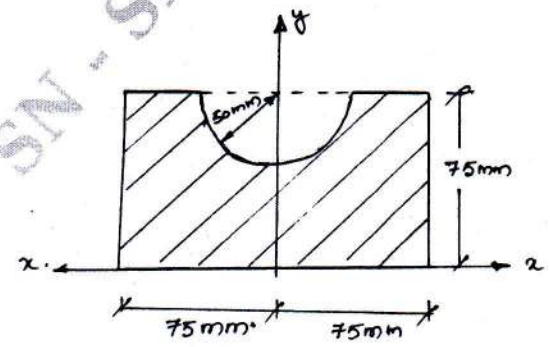

Fig.Q7(b) **(10 Marks)**

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).

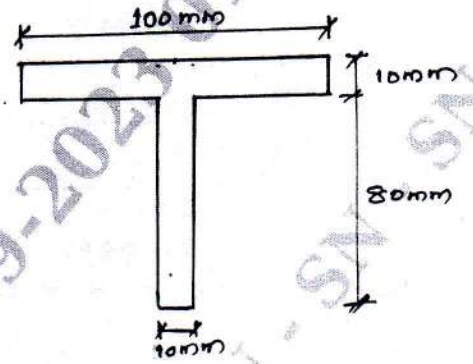

Fig.Q8(b) (14 Marks)

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.

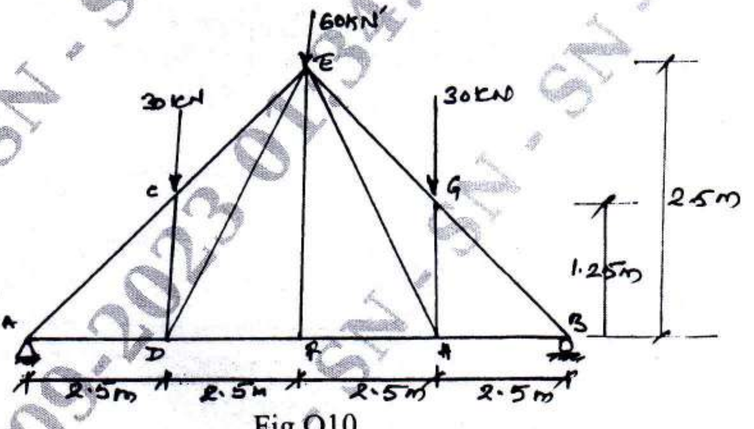

Fig.Q10 (20 Marks)

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