09B-102
May-2015
B.Sc. (Fire & Safety), Sem.-II
CC-203 : Mechanics of Solid & Town Planning

Time : 3 Hours]   **[Max. Marks : 70**

1.   (a)   Explain "Types of forces".   **7**

                                   OR

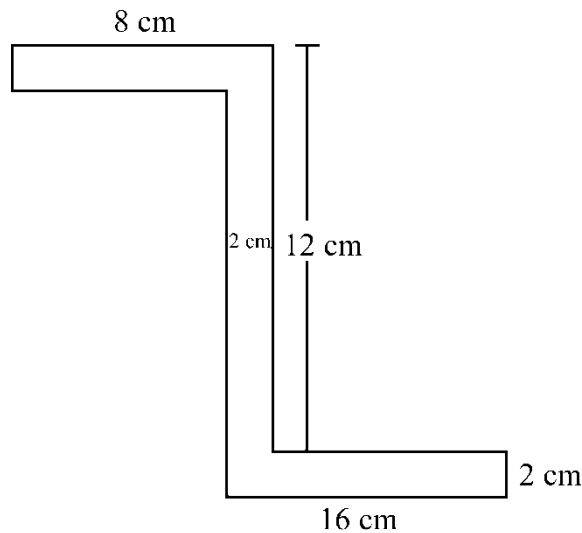   Stress in bars in varying sections.

     (b)   Explain "Types of materials".   **7**

   **OR**

         An elastic rod 25 mm in diameter, 200 mm long extends by 0.25 mm under a tensile load of 40 kN. Find the intensity of stress, the strain and the elastic modulus for the material of the rod.

2.   (a)   Find centroid of the section shown in figure.   **7**

                                   OR

A member ABCD is subjected to point loads, P_1, P_2, P_3 and P_4 as shown in figure. Calculate the force P_2 necessary for the equilibrium if P_1 = 45 kN, P_3 = 450 kN, P_4 = 130 kN. Determine the total elongation of the member, assuming modulus of elasticity to be 2.1×10^5 N/mm^2.
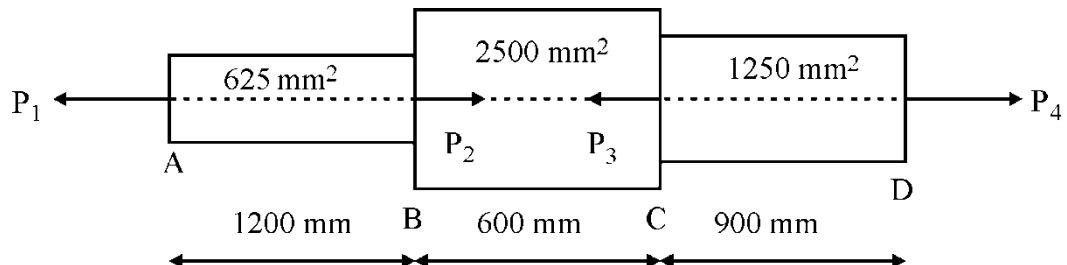
(b) Explain "Bars of composite section".   7

OR

A rod is 2 meter long at 10 °C. Find the expansion of the rod when the temperature is raised to 80 °C. If this expansion is prevented, find the stress in the material. Take E = 1.0×10^5 N/mm^2 and α = 0.000012 per °C.

3. (a) Give the classification of Urban Roads in short detail.   7

OR

Short notes on following : (any **two**)
(i) Arterial roads
(ii) Sub-arterial roads
(iii) Local roads

(b) Give the short notes on "Multistory Flats".   7

OR

Give the classification of Doors in short detail.

4. (a) Explain "Brick Lintels" with neat diagram.   7

OR

Explain "Water supply requirement for fire protection".

(b) Short notes on following :   7
(i) Ground water supplies
(ii) Surface water supplies

OR

Give the classification of water distribution system in detail.

5. (1) When a number of forces lie in the plane they are said to be _____ forces. **14**

   (2) 1 kilo Newton (kN) = _____ N

   (3) The gravitational force, magnetic force and the electric force are the examples of _____.

   (4) Define "Centre of Mass".

   (5) Define "Dynamic Friction".

   (6) Define "Simple Strain".

   (7) Industrial buildings fall in the group :
       (i) Group A
       (ii) Group D
       (iii) Group E
       (iv) Group G

   (8) Define "Average Daily Consumption".

   (9) List out any four types of composite floor.

   (10) Define Non-load bearing wall.

   (11) List out types of foundation.

   (12) It is not a part of building finishes.
        (i) Plastering
        (ii) Varnish
        (iii) Mortar
        (iv) Painting

   (13) A part of the supper structure located between the ground level and the floor level is known as _____.

   (14) Define "Topography".

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