

14F-130**May-2015****B.Arch./ID/BCT Sem.-II (New)****Structures-II (AR-204)****Time : 2 Hours]****[Max. Marks : 50**

- Instructions :** (1) Figures to right indicate full marks.
 (2) Answer must be precise and upto the point.

1. (a) Differentiate between Centroid and Centre of gravity. 2

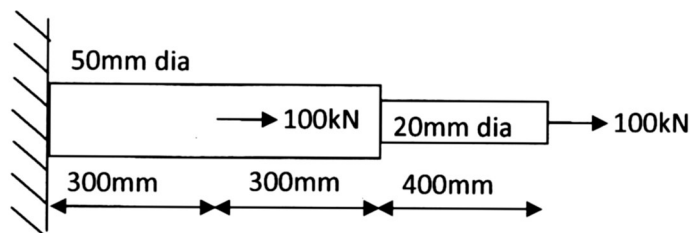
- (b) Match the appropriate area or volume. 2

1	Semi-circle	1	$\pi r^2 h$
2	Cylinder	2	$\frac{4}{3} \pi r^3$
3	Cone	3	$\pi r^2/2$
4	Sphere	4	$\pi r^2 h/3$
		5	$\pi r^2/4$

- (c) Principle of superposition. 2

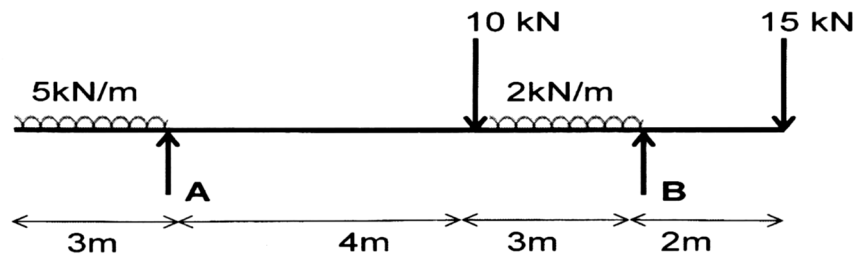
- (d) A rod of 1 m length and 25 mm × 25 mm in cross section is subjected to an axial pull of 25 kN. If the elongation of the rod is 0.12 mm, find the value of modulus of elasticity. 4

2. (a) Find the total deformation of a steel rod subjected to a force as shown in the below fig. Length of the rod is 1000 mm and elasticity of steel is 100 GPa. 5



- (b) A RCC column of 400 mm in diameter is reinforced with 6 nos 20 mm diameter bars. Find the stress in concrete and steel. Take value of E for steel as 2.1×10^5 N/sq mm and for concrete 1.4×10^4 N/sq mm. 5

3. Find bending moment and shear force values for the beam and draw the diagram. 10



4. (a) Explain stress strain curve for M.S. 5

- (b) Define the Linear strain, lateral strain, Poisson's ratio, volumetric strain & Bulk Modulus. 5

5. Calculate I_{xx} and I_{yy} of an unequal angle section $125 \times 75 \times 10$ mm keeping longer leg vertical. 10

