No. of Printed Pages : 4

BAR-014

BACHELOR OF ARCHITECTURE

Term-End Examination

June, 2011

BAR-014 : THEORY OF STRUCTURES - II

00811

Time : 3 hours *Maximum Marks : 70*

Note : *Question* ***No. 1*** *is* ***compulsory****. Answer* ***any four*** *questions from the remaining questions. Use of calculator is* ***permitted****.*

1. Choose the most appropriate answer from the options given in questions (a) to (g) **7x2=14**

(a) Young's modulus of elasticity of a material indicates

(i) stiffness (ii) strength

(iii) stress (iv) strain

(b) Triangular portions are provided in pin jointed trusses to give them

(i) strength

(ii) stability

(iii) stiffness

(iv) good appearance

(c) In rigid frames, members are subjected to

(i) axial forces

(ii) shear forces

(iii) Bending moments

(iv) all the above

(d) Which of the following is normally subjected to transverse forces ?

(i) beams

(ii) columns

(iii) both beams and columns

(iv) none of the above

(e) In a simply supported beam, subjected to a UDL over its full span, the shear force is maximum

(i) at the centre span section

(ii) at quarter span section

(iii) near the supports

(iv) in a portion between the centre and quarter span section

(f) Normal thrust is there in a/an

(i) beam

(ii) pin jointed truss

(iii) column

(iv) arch

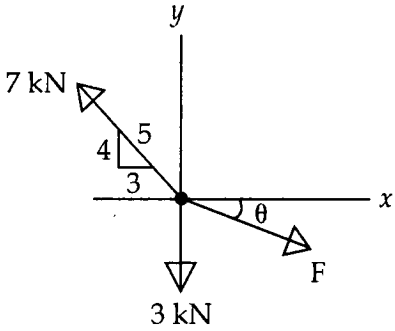
(g) Moment of inertia of a rectangle of width 'b' and depth 'd' above an axis parallel to width and passing through the centroid is

(i) $db^3/36$ (ii) $bd^3/36$

(iii) $bd^3/8$ (iv) $bd^3/12$

2. (a) What do you understand by a 'free body diagram' ? Explain with the help of an example. 7

(b) Determine the magnitude and direction of force F so that the particle is in equilibrium. 7



3. (a) What do you understand by equations of equilibrium ? Discuss briefly with the help of an example. 7

(b) Draw the BMD and SFD for the beam shown in Figure 1. 7

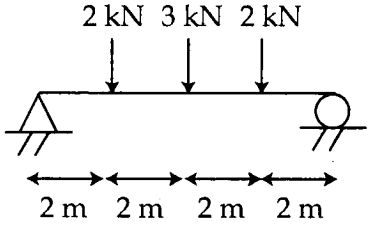


Fig. 1

4. (a) What is a bearing wall system ? Discuss any one of its characteristic features briefly. 7

(b) Describe the use of a lintel in building construction with a neat sketch. 7

5. (a) Discuss how a pin jointed truss is different from a rigid welded truss. 7

(b) Describe how forces/loads are transferred in a dome. 7

6. (a) Determine forces in each member of the truss, shown in Figure 2. 7

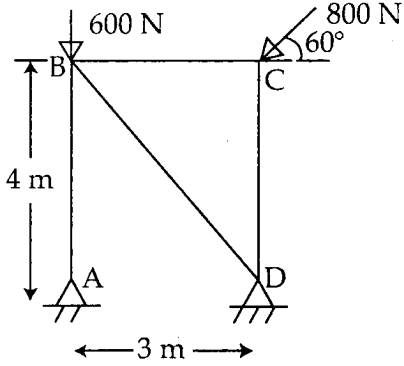


Fig. 2

All joints are pin joints.

(b) Describe the Law of Polygon of forces briefly. 7

7. Write short notes on ***any two*** of the following : **2x7=14**

(a) Centre of gravity

(b) Function of a column

(c) Toughness of a material