No. of Printed Pages : 4

BAR-014

00720

BACHELOR OF ARCHITECTURE (B ARCH)

Term-End Examination

June, 2013

BAR-014 : THEORY OF STRUCTURES - II

Time : 3 hours *Maximum Marks : 70*

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

1. Choose the most appropriate answer from the options given in questions (a) to (g) below. **2x7=14**

(a) Choose a ductile material :

(i) brick (ii) stone

(iii) rock (iv) steel

(b) A structural system should be :

(i) stable (ii) safe

(iii) economical (iv) all the above

(c) Loads of a building are ultimately transferred to soil through :

(i) columns (ii) beams

(iii) foundations (iv) slabs

(d) Which of the following develops horizontal reactions for vertical loads ?

(i) beam

(ii) bearing wall

(iii) rigid frame

(iv) arch

(e) Axial thrust is found, in general, in :

(i) arch

(ii) beam

(iii) column

(iv) arch & column

(f) Moment of inertia of a rectangle about an axis passing through its centre of gravity is given (where b is width and d is depth) as :

(i) $\frac{bd^4}{24}$ (ii) $\frac{b^2d^2}{24}$

(iii) $\frac{bd^3}{39}$ (iv) $\frac{bd^3}{12}$

(g) In pin - jointed trusses, members are subjected to :

(i) tension

(ii) compression

(iii) shear and torsion

(iv) tension or compression

2. (a) Explain how domes transfer forces, applied on them, to other elements on which they are supported. 7

(b) Provide any one classification of arches. 7

3. (a) Give an example where bearing wall system is used and briefly describe its construction. 7

(b) Write condition equations of static equilibrium and briefly describe their application. 7

4. (a) Draw shear force and bending moment diagrams for the structure shown in fig 1. 7

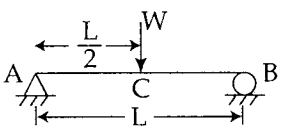

Fig. 1

Flexural rigidity of beam is EI.

(b) What do you understand by the term 'strain' ? Describe with an example. 7

5. (a) What are different types of forces or actions which are present in beams of a rigid RC frame ? Show them with the help of a neat sketch. 7

(b) Describe 'Law of polygon of forces'. 7

6. (a) Write some differences between a beam and a column of a reinforced concrete rigid frame. 7

(b) Determine the magnitude of the force F, shown in Fig. 2 so that the resultant of all forces is equal to zero in magnitude. 7

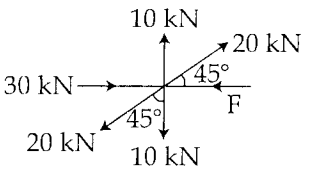

Fig. 2

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

(a) Cuboidal and prismatic forms

(b) Considerations in layout of structural systems

(c) Centre of gravity