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BAR-014

BACHELOR OF ARCHITECTURE (B ARCH)

00054

Term-End Examination

June, 2014

BAR-014 : THEORY OF STRUCTURES - II

Time : 3 hours *Maximum Marks : 70*

Note : *Question **No. 1** is **compulsory**. Answer **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). **7x2=14**

(a) For vertical loads, compared to an arch, a beam would normally have :
   (i) more axial thrust
   (ii) less axial thrust
   (iii) no axial thrust
   (iv) more axial thrust but less bending moment

(b) In which of the following supports, maximum number of reactions are present ?
   (i) Fixed (ii) Hinged
   (iii) Roller (iv) Pinned

(c) All the members of a pin jointed truss member are subjected to :
   (i) Tension
   (ii) Compression
   (iii) Bending
   (iv) Tension or Compression

(d) The bending moment at the free end of a cantilever, which is subjected to clock wise moment of 'M' acting at the mid span location, is :

(i) Zero (ii) $+M$

(iii) $-M$ (iv) $+2M$

(e) What is the bending moment value at the support in question (d) above ?

(i) Zero (ii) 4M

(iii) M (iv) $-2M$

(f) A slender compression member's dominant possible failure is because of :

(i) Material crushing

(ii) Buckling

(iii) Torsion

(iv) Shear

(g) In an arch, the bending moment value at every section is normally :

(i) zero

(ii) constant

(iii) infinite

(iv) non - zero

2. (a) Discuss as to how shapes of an arch and a dome can be related to each other. Are the mechanisms of load transfer same in both cases ? 7

(b) What is the use of a lintel in a building structure ? Explain briefly with a neat sketch. 7

3. (a) Describe different uses of arches as a structural element. Explain the load transfer mechanism in an arch. 7

(b) Draw a neat sketch of reinforcement detailing in a cantilever slab. 7

4. (a) What do you understand by a structure ? Explain with some examples. 7

(b) Enlist names of various methods of analysis of pin jointed plane trusses. Describe any one briefly. 7

5. (a) Describe cuboidal and prismatic forms with symmetric and asymmetric layouts. 7

(b) What do you mean by simple geometric forms ? Explain some of their characteristics briefly. 7

6. (a) What is the difference between a partition wall and load bearing wall in view of their design considerations ? Explain briefly. 7

(b) What do you mean by structural integrity in a building ? What are its advantages ? 7

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

(a) Types of truss

(b) Young's modulus of elasticity

(c) Construction of domes