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BAR-014

BACHELOR OF ARCHITECTURE
(B. ARCH)
Term-End Examination
June, 2019
BAR-014 : THEORY OF STRUCTURE–II

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) below : 7×2=14

   (a) If a simply supported beam of span 'l' is subjected to UDL of intensity 'w' throughout its span length, vertical reaction at any support will be :

   (i) $\frac{wl^2}{2}$

   (ii) $\frac{wl}{2}$

   (iii) wl

   (iv) $\frac{wl^2}{8}$

(b) When a beam carries external load, the beam section is subjected to :

(i) Bending moment

(ii) Shear force

(iii) Both of the above

(iv) None of the above

(c) Compared to beams, arches will normally require :

(i) more reinforcement

(ii) less reinforcement

(iii) same amount of reinforcement

(iv) None of the above

(d) A roller support can develop :

(i) a horizontal reaction

(ii) a moment

(iii) a vertical reaction

(iv) None of the above

(e) In a sloping truss, the member which support covering material is called :

(i) Batter

(ii) Rafter

(iii) Strut

(iv) Purlin

(f) For vertical transportation, maximum slope in any staircase should be :

(i) 40°

(ii) 25°

(iii) 50°

(iv) 35°

(g) Cement concrete is a/an :

(i) ductile material

(ii) elastic material

(iii) brittle material

(iv) None of the above

2. (a) An arch is provided with a hinge and a roller support respectively at its two ends. Describe how the load transfer mechanism is different to that of simple supported beam. 7

(b) Explain the role of foundation in a structure. Discuss the various considerations related to design of foundation. 7

3. (a) Define a load bearing wall system. Discuss load transmission through this system. 7

(b) Discuss, why transverse reinforcement is provided in beams of RC framed building. 7

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

   (a) Cuboidal and Prismatic forms

   (b) Principle of triangle of forces and its application in structural analysis

   (c) Utility of beams in general building construction

5. (a) Define lintels. Discuss how various forces are resisted by them. 7

   (b) Discuss why displacements should be controlled in buildings. 7

6. (a) Define symmetrical layouts. Explain advantages of these layout for structural system in buildings. 7

   (b) Draw shear force diagram for a simply supported beam subjected to concentrated load W acting at 1/3rd of space from left hand support. 7

7. (a) Compare the working aspects of a fixed support to those of a hinged one. 7

   (b) Discuss how ductile material of construction may perform better to brittle materials for impact loads. 7