

BACHELOR OF ARCHITECTURE (B.Arch.)

Term-End Examination

00193

June, 2018

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) below : $7 \times 2 = 14$
- (a) A propped cantilever has
- (i) one end fixed and other free
 - (ii) one end fixed and other roller support
 - (iii) both ends fixed
 - (iv) one end hinged and other roller support

(b) A simple supported beam of length 'L' is subjected to a UDL of intensity 'w' per unit length over its whole length. Bending moment at mid span is

(i) $\frac{wL^2}{8}$

(ii) $\frac{wL^2}{2}$

(iii) $\frac{wL^2}{4}$

(iv) wL^2

(c) Beams in a building generally require _____ reinforcement as compared to arches.

(i) less

(ii) equal

(iii) more

(iv) None of the above

(d) In a sloping truss, the member which supports the covering material is called

(i) Rafter

(ii) Purlin

(iii) Batten

(iv) Strut

(e) Maximum slope permissible in any staircase for vertical transportation is

(i) 25°

(ii) 40°

(iii) 50°

(iv) 35°

- (f) A three-dimensional representation of an arch is
- (i) Fixed support
 - (ii) Truss
 - (iii) Beam
 - (iv) Dome
- (g) A roller support can develop
- (i) a moment
 - (ii) a horizontal reaction
 - (iii) a vertical reaction
 - (iv) None of the above
2. (a) What is a bearing wall system ? Discuss load transmission in this system. 7
- (b) Discuss the precautions to be taken in the construction of domes. 7
3. (a) Define determinate structures. Explain the importance of these in structural analysis. 7
- (b) Discuss briefly structural systems for small buildings. 7
4. (a) Discuss various types of construction materials. Explain briefly the advantages of ductile materials. 7
- (b) Define prismatic forms. Discuss salient advantages of these forms. 7

5. (a) Discuss the importance of foundations in a structure. Explain the objectives of a good foundation. 7
- (b) Discuss why displacements should be controlled in a general type building. 7
6. (a) Discuss the use of a lintel in general building construction. Explain the forces resisted by lintels. 7
- (b) Discuss the advantages of symmetrical layouts of structural systems used in buildings. 7
7. Write short notes on any *two* of the following: $2 \times 7 = 14$
- (a) Use of columns in general building construction.
- (b) Stress-strain characteristics of mild steel.
- (c) Triangle law of forces and its application in structural analysis.
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