No. of Printed Pages : 4 **BAR-014**

BACHELOR OF ARCHITECTURE (B.Arch.)

Term-End Examination

00204

June, 2017

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 : *7×2=14*

(a) A cantilever of length 'L' is subjected to a UDL of intensity 'w' per unit length over its whole length. The shear force near to the support will be

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

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

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

(iv) wL

(b) A simply supported beam of length 'L' is subjected to a point load at the mid-span. The bending moment at mid-span will be

(i) $\frac{WL}{4}$

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

(iii) $\frac{WL}{8}$

(iv) None of these

(c) For vertical transportation, the maximum slope in any staircase should be

(i) 15°

(ii) 55°

(iii) 40°

(iv) 65°

(d) Which of the following is a ductile material ?

(i) Cement concrete

(ii) Brick

(iii) Mild steel

(iv) None of these

(e) Which of the following supports is provided to take care of effects due to temperature variation ?

(i) Roller Support

(ii) Hinged Support

(iii) Fixed Support

(iv) None of these

(f) The member which supports the covering material of a sloping roof is

(i) Strut

(ii) Batten

(iii) Rafter

(iv) Purlin

(g) Modulus of rupture is a measure of

(i) Direct tensile strength

(ii) Direct compressive strength

(iii) Flexural tensile strength

(iv) None of these

2. (a) Describe various components in a reinforced concrete framed building. 7

(b) Discuss the behaviour of a brick masonry arch. Explain how it resists the applied load. 7

3. (a) Define pin jointed trusses. Explain why these trusses are made of triangular portions. 7

(b) Write down the names of some ductile and brittle materials used in construction. Explain how a ductile material is better than a brittle material in some cases. 7

4. (a) Discuss the use of a lintel in a building. 7

(b) Define indeterminate structures. Explain the utility of these structures. 7

5. (a) Describe briefly, the distribution of loads through rigid frames. 7

(b) Define symmetrical layouts. Explain the utility of these in the construction of buildings. 7

6. Write short notes on any ***two*** of the following : $2 \times 7 = 14$

(a) Stability of a structure

(b) Purpose of foundation for a structure

(c) Types of forces experienced by columns

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

(b) Discuss the precautions to be taken in the construction of domes. 7