

**BACHELOR OF ARCHITECTURE (B.Arch.)**

**Term-End Examination**

**December, 2015**

00021

**BAR-014 : THEORY OF STRUCTURES – II**

*Time : 3 hours*

*Maximum Marks : 70*

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

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1. Choose the most appropriate answer from the options given in questions (a) to (g) :  $7 \times 2 = 14$
- (a) Which of the following supports is provided to take care of effects due to temperature loading ?
- (i) Fixed support
  - (ii) Pinned support
  - (iii) Roller support
  - (iv) Hinged support

(b) Method of joints may be applied for the analysis of trusses having

- (i) Rigid joints
- (ii) Welded joints
- (iii) Pinned joints
- (iv) None of these

(c) The slenderness ratio of masonry walls should not be more than

- (i) 20
- (ii) 30
- (iii) 40
- (iv) 10

(d) A simple supported beam of length 'L' is subjected to a UDL of intensity 'w' per unit length over its full span. Bending Moment at mid-span will be

- (i)  $\frac{wL^2}{2}$
- (ii)  $\frac{wL^2}{8}$
- (iii)  $\frac{wL^2}{4}$
- (iv)  $wL^2$

(e) The member which supports the covering material of a sloping truss is

(i) Batten

(ii) Rafter

(iii) Purlin

(iv) Strut

(f) Building element used for vertical transportation is

(i) Windows

(ii) Column

(iii) Staircase

(iv) None of the above

(g) Beams in a building generally require \_\_\_\_\_ reinforcement as compared to arches.

(i) less

(ii) equal

(iii) more

(iv) None of the above

2. (a) Describe the locations where lintels are provided. Discuss the precautions to be taken for the construction of lintels. 7

(b) Explain any one type of structural system provided in buildings. 7

3. (a) Describe the various steps in the construction of a brick masonry arch. 7
- (b) Discuss any two important considerations in the construction of bearing wall systems in view of structural safety. 7
4. (a) Discuss various functions of a column in RC framed buildings. 7
- (b) Define simple geometric forms. Briefly discuss the salient properties of these. 7
5. (a) Explain the importance of foundation in a structure. Discuss the various functions of a foundation. 7
- (b) Discuss the transfer of load in a pin-jointed truss. Explain a method which may be used to analyse such a truss. 7
6. (a) What are the components of a reinforced concrete framed system ? Explain the behaviour and function of any one component. 7
- (b) Discuss how various loads transfer through members of a rigid frame. What are the various types of effects produced in the members ? 7
7. (a) Explain the advantages of ductile materials such as reinforced concrete over brittle ones such as brick masonry. 7
- (b) Define prismatic forms. Discuss the salient features of these forms. 7