

BACHELOR OF ARCHITECTURE (B.Arch.)

Term-End Examination

00484

June, 2017

BAR-004 : THEORY OF STRUCTURES – I

Time : 3 hours *Maximum Marks : 70*

Note : Question no. 1 is compulsory. Answer any four questions from the remaining questions.

1. Choose the most appropriate answer from the options given in questions (a) to (g) below. $7 \times 2 = 14$
- (a) Stiffness (K) determined from force (F) and resulting deformation (Δ) is given as
- (i) $K = F/\Delta$
 - (ii) $K = F \cdot \Delta$
 - (iii) $K = \Delta/F$
 - (iv) $K = F^2/\Delta$
- (b) An example of a ductile material is
- (i) Brick
 - (ii) Mild steel
 - (iii) Stone
 - (iv) Glass

(c) Which of the following may give three reactions in a plane structure ?

(i) Fixed support

(ii) Hinged support

(iii) Roller support

(iv) All the above

(d) Which type of support develops a moment ?

(i) Fixed support

(ii) Hinged support

(iii) Roller support

(iv) None of the above

(e) Which of the following may depend on gravity effect ?

(i) Dead load

(ii) Live load

(iii) Both of the above

(iv) Wind load

(f) A building should be

(i) Safe

(ii) Economical

(iii) Safe and economical

(iv) Unsafe

- (g) A structure should be
- (i) Strong
 - (ii) Stiff
 - (iii) Stable
 - (iv) All of the above
2. (a) Explain Hooke's law with a neat sketch. 7
- (b) What do you understand by analysis of structures ? Discuss briefly. 7
3. (a) Discuss why factor of safety is taken in design of structures. 7
- (b) Explain how wind load is different from dead load for a structure. 7
4. (a) Describe the salient features of a natural farm. 7
- (b) What may be the likely effects of temperature variations on various materials used in construction ? Discuss briefly. 7
5. (a) Discuss why tests are conducted on models of structures in laboratories. 7
- (b) What do you understand by primary elements of a structure ? Discuss with the help of a neat sketch. 7
6. (a) Discuss the role of various factors which affect the stability of a structure. 7
- (b) Explain why strong materials are needed for construction. 7

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

- (a) Functions of Structures
 - (b) Criteria for Design
 - (c) Stiffness
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