

00715

BACHELOR OF ARCHITECTURE

Term-End Examination

June, 2012

BAR-004 : THEORY OF STRUCTURE - 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) Dome is a three dimensional representation of a / an :
- (i) line (ii) triangle
(iii) arch (iv) circle
- (b) In a plane structure, a fixed support has a number of reactions which are equal to :
- (i) 2 (ii) 3 (iii) 4 (iv) 6
- (c) Dead Loads :
- (i) are live loads
(ii) change their positions frequently.
(iii) do not change their positions
(iv) are normally taken to be wind loads.

- (d) Which of the following supports is provided to take care of effects due to temperature variations ?
- (i) Fixed support
 - (ii) Hinged support
 - (iii) Pinned support.
 - (iv) Roller support
- (e) Structures should have :
- (i) strength (ii) stiffness
 - (iii) stability (iv) all of the above
- (f) Force required for unit displacement is known as :
- (i) strength (ii) stiffness
 - (iii) strain (iv) stress
- (g) A simply supported beam is provided with two roller supports at its both ends. If inclined external forces also act on it, it shall be termed as :
- (i) a fixed beam (ii) a cantilever
 - (iii) an arch (iv) unstable

2. (a) Explain why foundations are needed for buildings. 7
- (b) Define the terms : stress and strain and explain how Young's Modulus of Elasticity is calculated. 7
3. (a) What do you understand by 'Live loads ? Explain briefly. 7
- (b) Draw a neat sketch of a hinged support and explain its characteristics briefly. 7

4. (a) What are the effect of temperature variation in a rigid structure ? Explain with an example. 7
- (b) What do you understand by 'Analysis' of a structure ? 7
5. (a) Define 'Factor of safety' briefly. 7
- (b) Discuss why adequate strength is needed for a structure. 7
6. (a) Explain how stability of a structure is checked. 7
- (b) What do you understand by 'Primary elements of structures'? Discuss briefly. 7
7. Write short notes on *any two* of the following : 2x7=14
- (a) Use of models for study of behaviour of structures
- (b) Natural forces
- (c) Ductility property of mild steel
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