

BACHELOR OF ARCHITECTURE (B.Arch.)

Term-End Examination

December, 2014

00065

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. (a) A propped cantilever has
- (i) one end fixed and other end free
 - (ii) both ends fixed
 - (iii) one end fixed and other having roller support
 - (iv) None of the above
- (b) Which of the following supports is provided to take care of effects due to temperature variation ?
- (i) Hinged support
 - (ii) Fixed support
 - (iii) Roller support
 - (iv) None of the above

- (c) Dead loads
- (i) change their position frequently
 - (ii) are normally taken as live loads
 - (iii) do not change their position
 - (iv) None of the above
- (d) Maximum Bending Moment in a beam occurs at a section where
- (i) deflection is zero
 - (ii) shear force is maximum
 - (iii) shear force is minimum
 - (iv) None of the above
- (e) In a plane structure, a hinged support has a number of reactions equal to
- (i) 1
 - (ii) 3
 - (iii) 4
 - (iv) 2
- (f) Deflection caused by unit force is defined as
- (i) stiffness
 - (ii) strain
 - (iii) flexibility
 - (iv) unit deflection

- (g) Dome is a 3-dimensional representation of
- (i) triangle
 - (ii) line
 - (iii) arch
 - (iv) circle 7×2=14

2. (a) Define temperature loads. Discuss briefly their effect in a structure. 7

(b) Define a fixed support. Explain its characteristics with the help of a neat sketch. 7

3. (a) What do you understand by shear stresses ? Can they affect the safety of a structural element ? How ? 7

(b) Define Modulus of elasticity. Explain how it is calculated. 7

4. (a) Discuss various requirement of stability for a typical structure. 7

(b) Discuss the importance of good foundation in a structure. 7

5. (a) Define the factor of safety. Discuss the factors affecting it. 7

(b) Discuss why adequate strength is needed for a structure. 7

6. (a) Describe stress-strain relationship of mild steel with a neat sketch. 7
- (b) Define stiffness. Discuss its importance in a structure. 7
7. (a) What do you understand by 'Design' of a structure ? Briefly discuss how design and analysis are connected to each other. 7
- (b) Explain transfer of vertical loads in a steel building in a factory. 7
-