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BAR-004

00610

BACHELOR OF ARCHITECTURE (B.ARCH)

Term-End Examination

June, 2013

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 in each of questions (a) to (g) below. **2x7=14**

(a) Strain and Stress are related with the help of

(i) Newton's Law

(ii) D'Alembert's law

(iii) Bernoulli's law

(iv) Hooke's law.

(b) Number of reaction(s) in a roller support is / are

(i) 1

(ii) 2

(iii) 3

(iv) 4

(c) Analysis of a beam means

(i) applying external loads to the beam physically.

(ii) Finalising span and cross sectional dimensions.

(iii) Determining stresses , strains etc. in the beam.

(iv) Drawing a sketch of the beam and painting it.

(d) A hinged support is also called as a

(i) fixed support

(ii) roller support

(iii) pinned support

(iv) moving support.

(e) Models of structural members should have

(i) the same shape

(ii) the same proportions among various dimensions.

(iii) the same support conditions

(iv) all the above

(f) Primary elements of structures are normally

(i) main load bearing members

(ii) not important

(iii) less important than secondary members

(iv) none of the above

(g) Moving articles are considered in the category of

(i) dead loads

(ii) wind loads

(iii) live loads

(iv) seismic loads

2. (a) Discuss the behaviour of a fixed support in a structure. 7

(b) Describe the meaning of a 'Basic structural system ' with the help of a neat sketch. 7

3. (a) What do you understand by a brittle material ? Enlist names of any two such type of materials. 7

(b) Describe a possible way of finding the value of Young's modulus of elasticity of mild steel. 7

4. (a) Discuss some likely effects of temperature variation in structures. 7

(b) What is a stable structure ? Describe with neat sketches. 7

5. (a) What do you understand by stiffness ? Is it different from strength ? If yes , how ? 7

(b) Discuss how factor of safety is important for civil engineering structures. 7

6. (a) What are equations of static equilibrium for structures ? Write them and define various terms used. 7

(b) How analysis is different from design of structures ? Discuss important design criteria for structures. 7

7. Write short notes on **any two** of the following topics. **2x7=14**

(a) Natural and man made forms

(b) Forces of nature

(c) Criteria for design.