BACHELOR OF ARCHITECTURE (B ARCH)

00453

Term-End Examination

December, 2012

BAR-014 : THEORY OF STRUCTURES - II

Time : 3 hours *Maximum Marks : 70*

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

1. Choose the most appropriate answer from the options given in questions (a) to (g). **2x7=14**

(a) A structure must be

(i) Strong (ii) Stiff

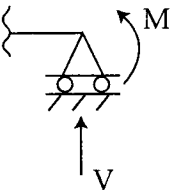
(iii) Stable (iv) All the above

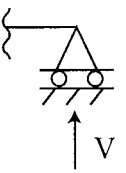
(b) A load (W) is applied on the free end of a cantilever along its longitudinal axis. Bending moment developed at the fixed support would be equal to

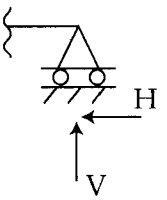
(i) $\omega L^2/8$ (ii) $WL/4$

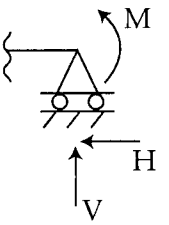
(iii) $\omega L^3/24$ (iv) Zero

(c) Identify in which case the reaction at a roller support is shown correctly.

(i) 

(ii) 

(iii) 

(iv) 

(d) Lintels provided at the top of a door cavity in a wall

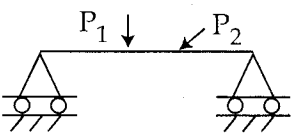
(i) Transfer loads to door shutters

(ii) Are actually not required

(iii) Should be made of weak material

(iv) Bear the load coming on them.

(e) The structure, shown below



(i) Stable (ii) Determinate

(iii) Indeterminate (iv) Unstable

(f) Bending moment at centre of a simply supported beam subjected to a UDL (ω per unit length) over its full length (L) is given as

(i) $\omega L^2/2$

(ii) $\omega L^2/8$

(iii) $\omega L^4/384$

(iv) None of the above

(g) The symbol ⇵ is normally used for depicting.

(i) Bending moment

(ii) Shear force

(iii) Torque

(iv) None of the above.

2. (a) Explain how wind load is different from Dead load. 7

(b) Describe the behaviour of a ductile material against impact forces. 7

3. (a) Explain the purpose of providing foundations. 7

(b) Differentiate between a pin - jointed truss and a rigid frame. 7

4. (a) Describe a cuboidal form briefly. 7

(b) Explain how loads are transferred in a bearing wall system. 7

5. (a) Draw neat sketches of any two types of arch, used in construction. 7

(b) Describe the law of Polygon of forces. 7

6. (a) What do you understand by static equilibrium equations ? Discuss briefly. 7

(b) Draw BMD and SFD for the beam, shown in figure 1. 7

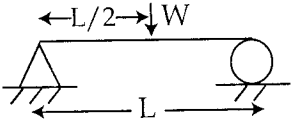


Figure - 1

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

(a) Stability

(b) Stiffness

(c) Functions of beams