BACHELOR OF ARCHITECTURE (BARCH)

00963

Term-End Examination

December, 2012

BAR-034 : THEORY OF STRUCTURES-IV

Time : 3 hours *Maximum Marks : 70*

*Note : Question no. **1** is **compulsory**. Attempt **any four** questions from the remaining ones. Use of **scientific calculator**, IS 800 code and **steel table** is permitted.*

1. Choose the most appropriate answer from the options given in questions (a) to (g) below. **7x2=14**

   (a) Structure which have excess number of members are called :

   (i) determinate (ii) stable

   (iii) indeterminate (iv) unstable

   (b) A triangular BMD is obtained in a simply supported beam for :

   (i) a UDL

   (ii) a point load

   (iii) a triangular load

   (iv) a moment

   (c) For a plane structure, number of reactions in a fixed support may be.

   (i) 1 (ii) 3 (iii) 4 (iv) 6

(d) Structure, shown in Fig, 1, is :

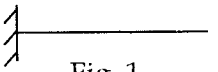

Fig. 1

(i) determinate

(ii) indeterminate

(iii) unstable

(iv) simply supported

(e) Arches are analysed for determining :

(i) axial thrust

(ii) bending moment

(iii) shear force

(iv) all the above

(f) Member of a rigid frame may be subjected to :

(i) axial force

(ii) shear force

(iii) bending moment

(iv) all the above

(g) Select the incorrect statement.

(i) Built up columns are made of steel sections.

(ii) Only stable structures can be termed as determinate.

(iii) Mild steel is not a ductile material.

(iv) There is no need of making holes in welded connections unlike riveted connections.

2. (a) Write any three disadvantages of indeterminate structures. 7

(b) Define stiffness of a spring. Write its unit in SI system. 5+2

3. (a) What do you understand by 'Distribution Factor' as used in Moment Distribution method of analysis of structures ? 7

(b) Describe in brief the procedure of design of a typical built up steel column. 7

4. (a) What are the various considerations which are important in the design of steel beams ? Discuss briefly. 7

(b) Give step by step procedure for analysis of a structure by Moment Distribution method. 7

5. (a) What do you understand by a 'Post and lintel system' ? Explain. 7

(b) Draw strain stress curve of mild steel and mark various stages and points on it. 7

6. (a) Discuss briefly different types of failures of columns. 7

(b) Describe the arrangement of a Lap joint with the help of a neat sketch. 7

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

(a) Types of weld

(b) Three hinged arch

(c) Use of gusset plates in steel construction.
