

BACHELOR OF ARCHITECTURE (B.ARCH)**Term-End Examination****June, 2014**

00344

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 questions. Use of Scientific calculator, IS 800 code and steel table is permitted.

1. Choose the most appropriate option in questions (a) to (g) below : **7x2=14**

- (a) Degree of indeterminacy of the rigid frame shown in figure 1 is :

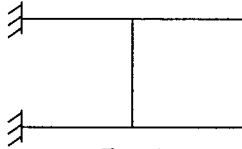


Fig. 1

- (i) 3 (ii) 5
 (iii) 6 (iv) 9
- (b) In pin jointed plane trusses, members are subjected to :
- (i) axial forces
 (ii) axial and shear forces
 (iii) axial, shear and torsional forces
 (iv) axial and shear forces with bending moments

- (c) Indeterminate structures :
- (i) Should not be constructed
 - (ii) Should be made determinate before construction
 - (iii) offer certain advantages
 - (iv) look bad
- (d) Deflections in structures :
- (i) are proportional to stiffness
 - (ii) are inversely proportional to stiffness
 - (iii) are not related to stiffness
 - (iv) may be reduced by reducing stiffness
- (e) A link element in an indeterminate beam reduces its indeterminacy by :
- (i) 1 (ii) 2 (iii) 3 (iv) 4
- (f) Which one of the following is the most ductile material ?
- (i) mild steel (ii) stone
 - (iii) medium tensile steel (iv) brick
- (g) Columns in a building may be subjected to horizontal forces due to :
- (i) dead loads
 - (ii) live loads
 - (iii) wind loads
 - (iv) dead and live loads

2. (a) Discuss the concept of 'Relative stiffness' as used in moment distribution method briefly. 7
 (b) Describe how loads are transferred towards supports in an arch. 7
3. Analyse the beam shown in fig 2 by moment distribution method and draw the BMD. 14

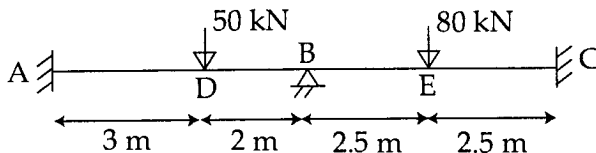


Fig. 2

EI for the beam spans is constant.

4. (a) Draw stress strain curve for mild steel. 7
 (b) Discuss why ductility of steel is important under earthquake conditions ? 7
5. Describe the procedure of designing a steel built up column briefly. 14
6. (a) Write disadvantages of welded connections. 7
 (b) Compare bolted connections to welded connections in steel construction. 7
7. Write short notes on **any four** of the following : 4x3½=14
 (a) Post and limited system
 (b) Use of rivets in steel construction
 (c) Three hinged arch
 (d) Design of steel girders
 (e) Arch in history