# 2014

## STRUCTURE VI

Paper : ENG–6·5

*Full Marks : 100*

*Pass Marks : 40*

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

Answer **any five** questions.

1. *(a)* What are the assumptions in the analysis of riveted joint ?                    10

   *(b)* What are the usual rivet diameters taken in the following situations :                    2×5

   *(i)* Roof trusses

   *(ii)* Bridge works

   *(iii)* Workshops or buildings

   *(iv)* Transmission towers

   *(v)* Sign boards.

2. (a) Explain the types of riveted joints with diagrams. 10

(b) Explain the failures in a riveted joint. 10

3. (a) What are the advantages and disadvantages of welding ? 10

(b) What are the types of welds ? Explain with graphs. 10

4. (a) What are lacing and battens ? Explain with graphs. 5

(b) A column of 10$m$ effective length has to support an axial load of 1000$kN$. Design the column, which shall consist of two channels placed back to back at a suitable spacing. Design also a single lacing system for the column. Use steel of yield point 250$N/mm^2$. 15

5. (a) What are the design considerations in the design of beams ? 5

(b) A simply supported beam carried a superimposed load of 30$kN/m$ run on an effective span of 4·75$m$. Design the beam. Safe stresses in bending and shear may be taken as 165$N/mm^2$ and 100$N/mm^2$. 15

6. (a) What are the types of fires and types of fire protection systems ? 10

(b) What is the difference between active and passive fire protection systems ? 5

(c) Explain fire initiation. 5

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