Total No. of Questions : 5

Total No. of Printed Pages : 3



# EK-338

## B.E. (VIth Sem.) (CGPA) Civil Engg. Exam.-2016

## STRUCTURAL DESIGN & DRAWING-II (STEEL)

**Paper - CE-603**

***Time Allowed : Three Hours***

***Maximum Marks : 60***

*Note :* All questions are compulsory.
All question carry equal marks.

**Unit-I**

Q.I (a) What is servlceability limit state ? 4

(b) A tie member 75 mm x 8 mm is to transmit a load of 90 KN. Design fillet weld and calculate the necessary overlap. 8

**or**

(a) Describe the advantages and disadvantages of welded connection.

(b) Design a buttjoint to connect two plates 175 mm x 10 mm (Fe-415 grade) using $M_{20}$ bolts. Arrange the bolts to give maximum efficiency.

## Unit-II

Q.II Design a tension member of roof truss subjected to loads of 100 KN (DL) and 120 KN (LL). Use double angle section connected back to back on either side of gusset plate of 8 mm thickness. Use bolted connection fy=250 MPa, Fu=410 MPa. 12

**or**

Select a suitable angle section to carry a factoned tensile force of 220KN assuming a single row of M20 bolts and assuming design strength as Fy=250 N/mm$^2$. Draw the details.

## Unit-III

Q.III Design a simply supported beam of span 6m carrying a reinforced concrete floor capable of providing lateral restraint to the top compression flange. The UDL is of 20 KN/m imposed load and 25KN/m dead load, assume Fe-410 grade steel. Apply all checks. 12

**or**

Design a welded plate girder of a span 15 m to carry a superimposed load of 20 KN/m avoid use of bearing and intermediate stiffness. Take Fe-410 grade steel.

## Unit-IV

Q.IV Design a slab base footing for a column made of ISHB 250 @ 51.10 Kg/m to carry a compressive load of 750 KN. The grade of concrete used is M20. 12

**or**

Design a laced column 10 m long to carry a factored axial load of 1100 KN. The column is restrained in position but not in direction at both ends. Provide single lacing system with welded connections for the same column.

## Unit-V

Q.V Write short notes on the following— 12

(a) Types of transmission tower

(b) Design loads for high rise buildings

(c) Steel structures

(d) Bracings

**or**

(a) Explain the design of transmission towers with sketch.

(b) Write the stability analysis of foundation for transmission towers.

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