Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

CE-605 (GS)

B.E. VI Semester

Examination, December 2017

Grading System (GS)

Structural Design and Drawing-II

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. The plates of a 6mm thick tank are connected by a single bolted lap joint with 20mm diameter bolts at 60mm pitch. Calculate the efficiency of the joint. Assume 4.6 grade bolts.

2. A tie member of a truss consisting of an angle section, ISA 65 × 65 × 6m is welded to an 8mm gusset plate. Design a weld to transmit a load equal to the full strength of the member. Assume shop welding is done on three sides of the angle.

3. Select a suitable angle section to carry a factored tensile force of 225kN assuming a single row of M20 bolts.

4. Design a single angle discontinuous strut to carry a factored load of 70kN. Assume that the distance between its joints is 2.5m and fixed conditon.

5. Design a simply supported beam of span 5m carrying a RCC floor. The UDL of 20kN/m imposed load and 15kN/m D.L.

6. The plate girder consist of web 1500×15mm and flange 650×25mm, is required to carry a factored shear of 2800kN. Assuming that tension field action is not utilized in design, determine whether intermediate stiffeners are necessary. How thick must the web be in order that this same load may be cavited without the need for intermediate stiffeners.

7. Two ISMC 300@ 363N/m placed back to back are used as column 10-m long. The column is restrained in position but not in direction at both ends. Design the single lacing system for the column to utilize the designed capacity of the column.

8. Answer any four of the following:
   a) What is the use of partial safety factors? How are they different from the factor of safety used in the working stress method?
   b) Write short notes on block shear failure in plates and angles.
   c) What is the effect of high shear force on plastic moment resistance and when should it be considered?
   d) State the different steps to be followed while designing a grillage foundation.
   e) Why is it necessary to design truss members for both compression and tension forces?
   f) Explain the design of transmission towers.

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