AJAY KUMAR GARG ENGINEERING COLLEGE
DEPARTMENT OF CIVIL ENGINEERING
SESSIONAL TEST -2

Course:	B.Tech		Semester:	VII
Session:	2017-2018		Section:	CE-1/CE-2
Subject :	Design of Steel Structures		Sub. Code:	NCE-701
Max. Marks:	50		Time:	2 hour

Note: Answer all the sections.

Section-A

1. Attempt all the parts.   (5×2=10)

   a) Draw the patterns of riveted joints.
   b) Write down the types of bolted joints.
   c) Define Pitch and Gauge distance.
   d) Define tension members.
   e) What do you mean by tacking of bolts?

Section-B

2. Attempt all the parts.   (5×5=25)

   a) A tie member in a truss girder is 250 mm×14 mm in size. It is welded to a 10 mm thick gusset plate by a fillet weld. The overlap of the member is 300 mm and the weld size is 6 mm. Determine the design strength of the joint ,if the welding is done as shown in fig. What is increase in strength of the joint, if welding is done all around. Assume shop welding.
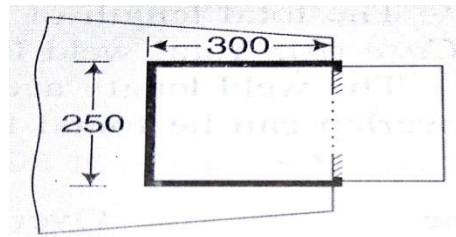

Fig.1

   b) Determine the strength and efficiency of lap joint as shown in fig. The bolts are of 20 mm diameter and of grade 4.6. The two plates to be jointed are 10 mm and 12 mm thick (steel is of grade Fe 410).
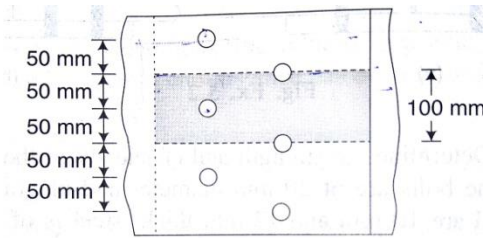
Fig. 2

c) Determine the effective net area for section shown in fig. the angles are connected as shown in fig. the steel is of grade Fe 410. The bolt holes have been punched.
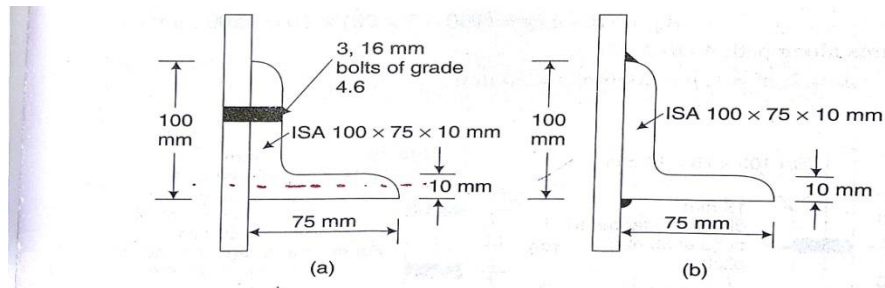

Fig. 3

d) Determine the block shear strength of the tension member as shown in fig. The steel is of grade Fe410.
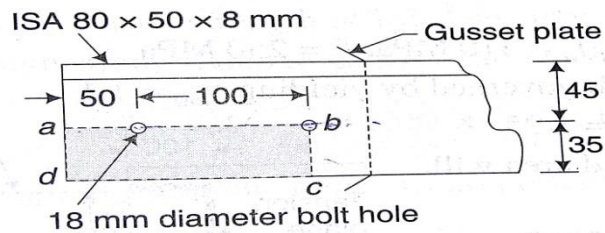

Fig.4

e) Design the fillet weld for the angle section shown in figure, if the weld is to be done on its three sides as shown in figure.
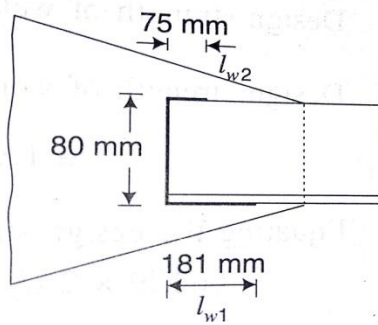

Fig.5

3. Attempt all the parts.   **(2×7.5)**

   a) A 75 mm× 8 mm tie member is to transmit a factored load of 145 kN. Design fillet welds and necessary overlaps for following cases as shown in fig. The steel used is of grade Fe 410.Assume gusset Plate to be 12 mm thick.
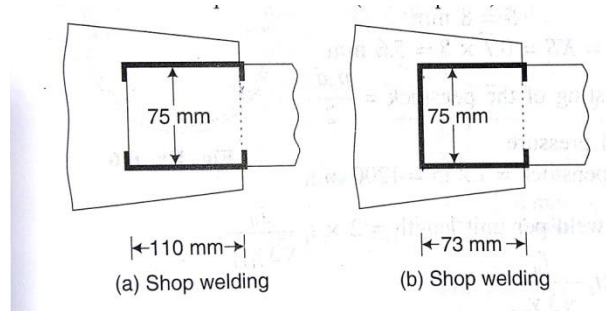

   Fig.6

   b) Write down the steps for Design of tension member subjected to axial load.