	Alexandria Higher Institute of Engineering & Technology (AIET)		
	Industrial Department		First Year
	ME142	Design of Machine elements	Final, June, 12,2014
	Examiners:	Dr. Rola Afify and Prof. Ahmed Elaskary	Time: 3 hour

Answer the following questions:

Question one (10 marks)

The bracket as shown in Fig.1 is to carry a load of 45 kN. Determine the diameter of the rivet if the shear stress is not to exceed 40 MPa. Assume all rivets of the same size.

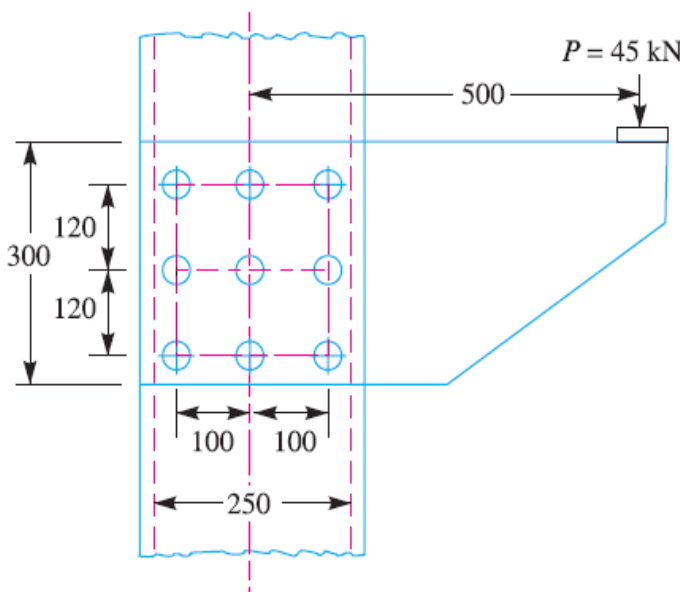
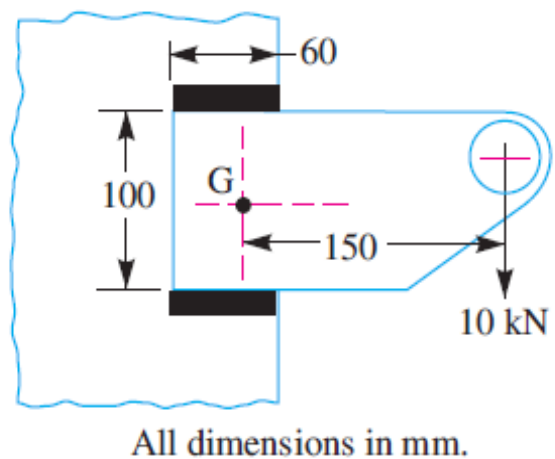


Fig. 1



All dimensions in mm.

Fig. 2

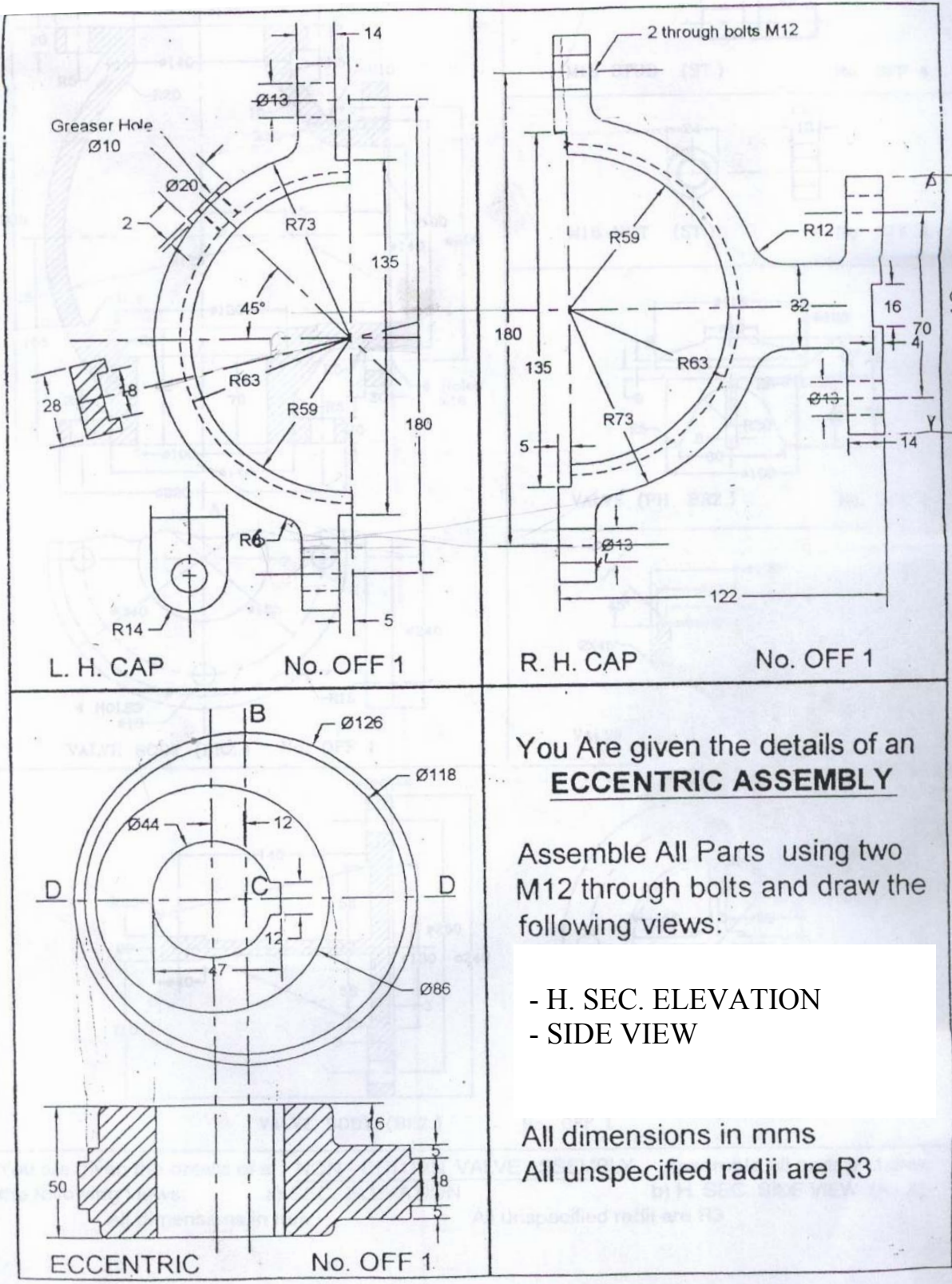
Question two (10 marks)

- Name and sketch types of fillet welding.
- A bracket, shown in Fig.2, is to carry a load of 10 kN. Find the size of the weld if the allowable shear stress is not to exceed 80 MPa.

Question three (10 marks)

- Name and sketch types of belt drives.
- Find the maximum power and its corresponding belt speed that can be transmitted through a V-belt drive. The drive specifications are: $\sigma_{all} = 2.5$ MPa, Belt cross-section area = 80 mm^2 , three belts are used, $\mu = 0.3$, $2\beta = 38^\circ$, Belt weight 11 kN/m^3 , Minimum angle of contact = 2.5 rad, and motor sheave diameter is 200 mm.

Question Four (30 marks)



You Are given the details of an **ECCENTRIC ASSEMBLY**

Assemble All Parts using two M12 through bolts and draw the following views:

- H. SEC. ELEVATION
- SIDE VIEW

All dimensions in mms
All unspecified radii are R3