THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

097

MECHANICAL DRAUGHTING
(For Both School and Private Candidates)

Time: 3 Hours **Wednesday, 05th November 2014 p.m.**

Instructions

1. This paper consists of **six (6)** questions.
2. Answer question **number 1** and any other **three (3)** questions.
3. Question number 1 carries 40 marks while the others carry 20 marks each.
4. Calculators and cellular phones are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

1. Figure 1 shows a BRACKET BEARING [illegible] pictorial projection. With all parts assembled, draw in full size the following views:

(a) A front elevation with the right hand screw shown in partial section at its position. **(22.5 marks)**

(b) A sectional end elevation on cutting plan A-A. **(11.5 marks)**
Use standard format paper and title block **(6 marks)**

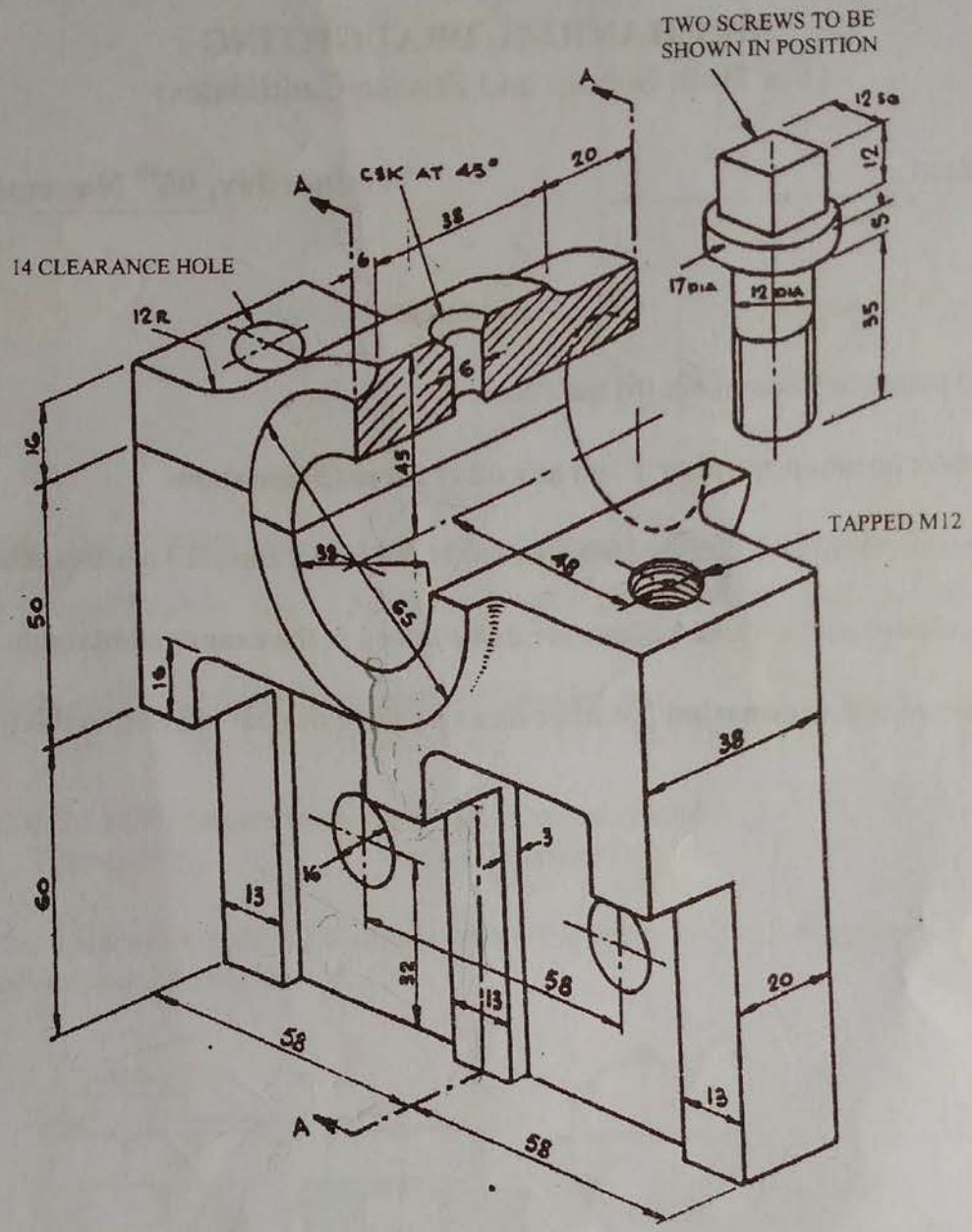


Figure 1

2. Figure 2 shows a mechanism of the crank OA which revolves clockwise about O at constant speed. The end B of the rod AB moves along PQ. Plot the locus of R for one revolution of OA if OA is 30 mm, AB is 105 mm and AR is 68.5 mm. **(20 marks)**

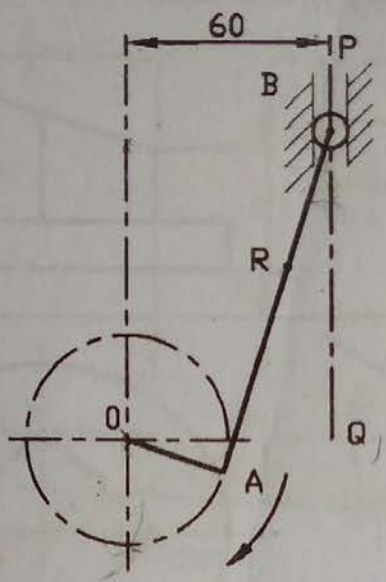


Figure 2

3. (a) Neatly sketch the elevation and plan of the following screws.

(i) Round head (ii) Cheese head (iii) Countersunk (iv) Sockets head

(08 marks)

(b) Write in long form the following given abbreviations:

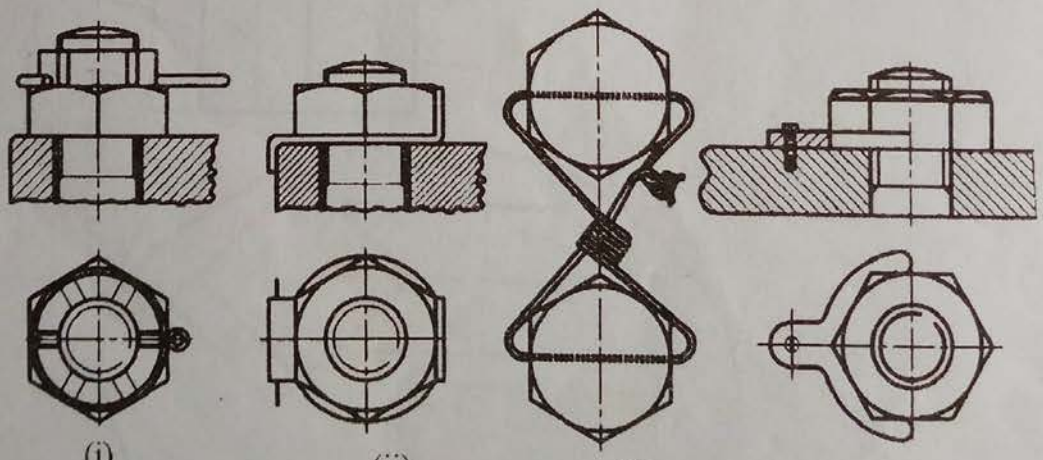
(i) PCD (ii) CL (iii) CHAM (iv) MATL **(02 marks)**

(c) Define the following terms as used in mechanical draughting:

(i) Tolerance (ii) Clearance fit

(02 marks)

(d) Figure 3 shows sketches of common positive locking devices. Write the corresponding name for each locking device. **(02 marks)**



(i) (ii) (iii) (iv)

Figure 3

(e) Construct an ellipse by using a concentric circle method, given that major axis is 80 mm and minor axis is 60 mm. **(06 marks)**

4. Figure 4 shows elevation and plan of an object.

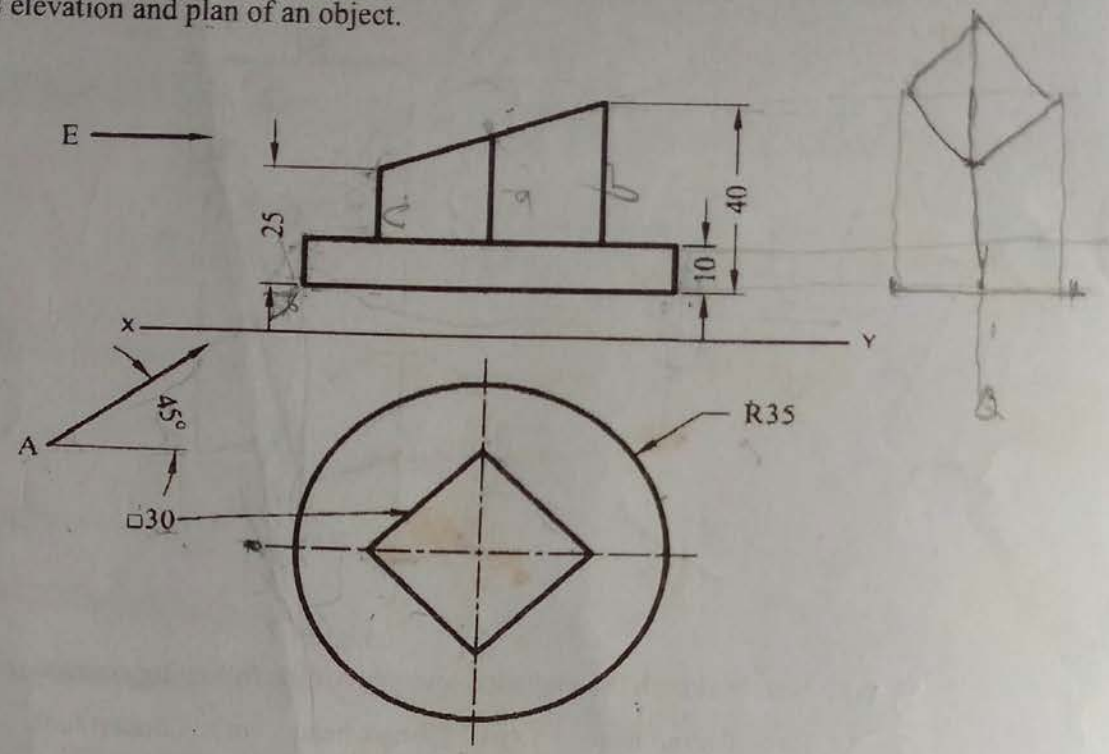
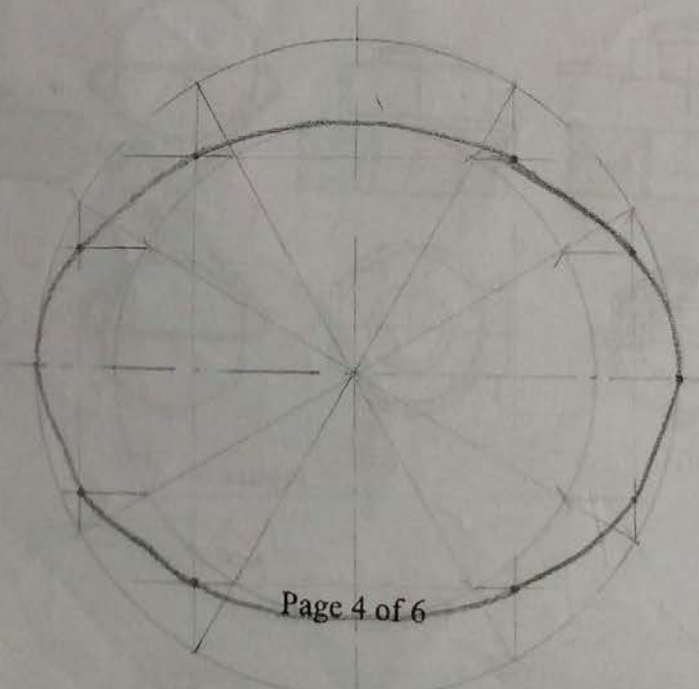


Figure 4

Draw:

(a) the given views **(5.5 marks)**
(b) the end elevation as seen from direction of arrow E **(04 marks)**
(c) an auxiliary view as seen from the direction of arrow A. **(10.5 marks)**



5. Figure 5 shows front and end elevation of a block. Draw the isometric drawing of a block.

(20 marks)

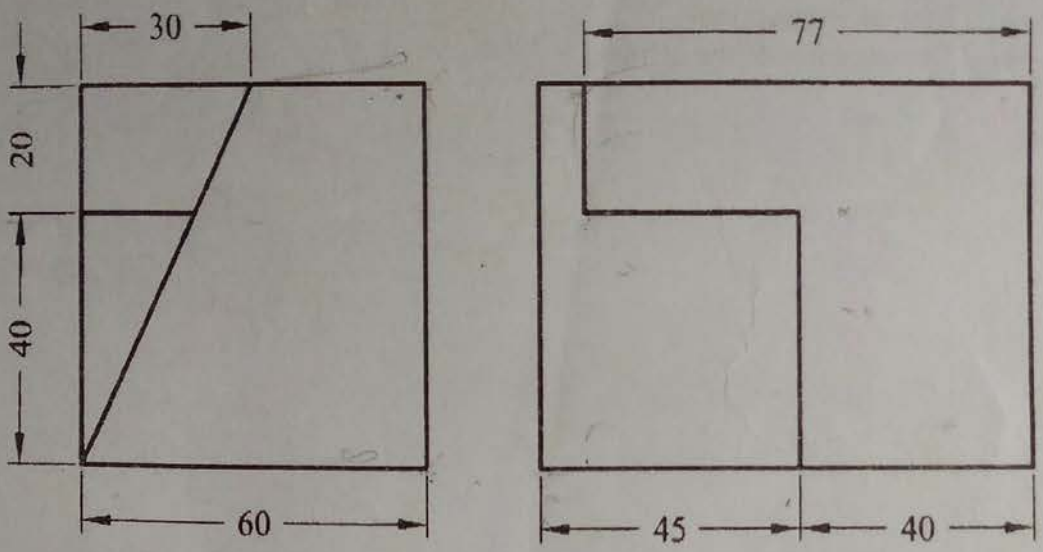


Figure 5

6. Figure 6 shows incomplete drawings of the elevation and plan of a junction between a square section pipe and a cylindrical pipe.

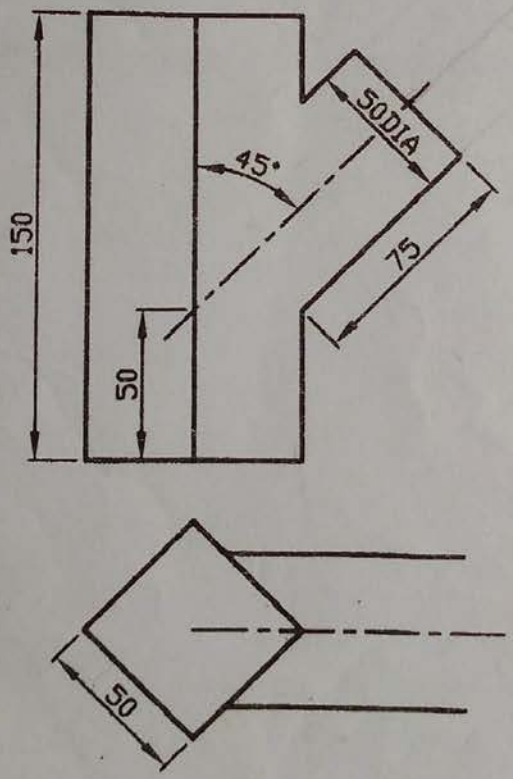


Figure 6

Draw the following:

(a) Complete elevation and plan **(08 marks)**
(b) Line of intersection **(05 marks)**
(c) Development of the cylinder. **(07 marks)**