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**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 detail in 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)

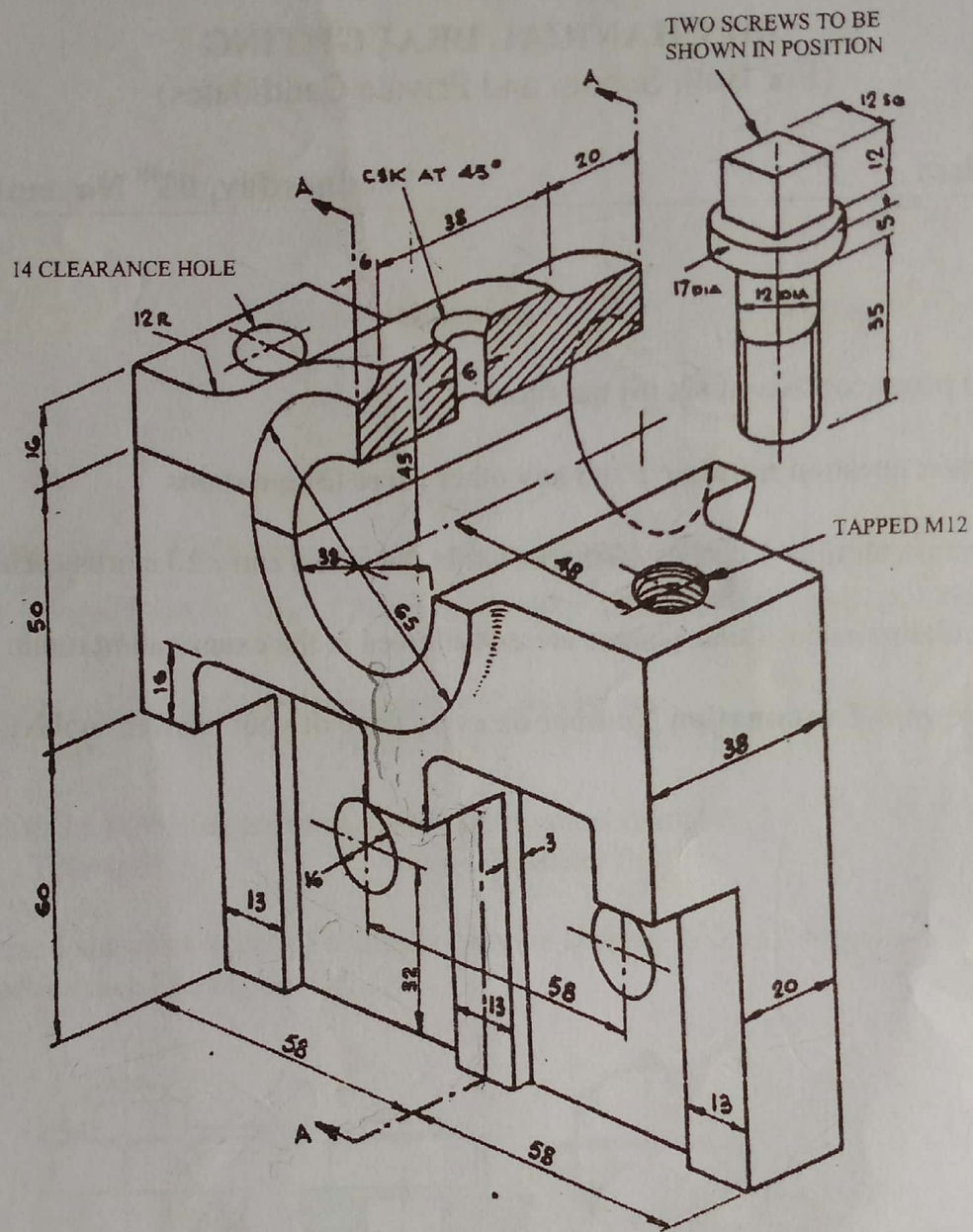


Figure 1

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)

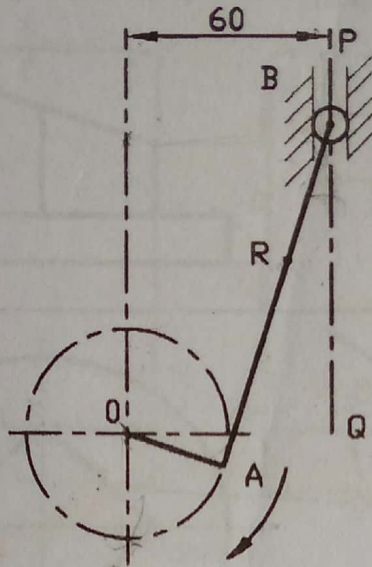


Figure 2

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)

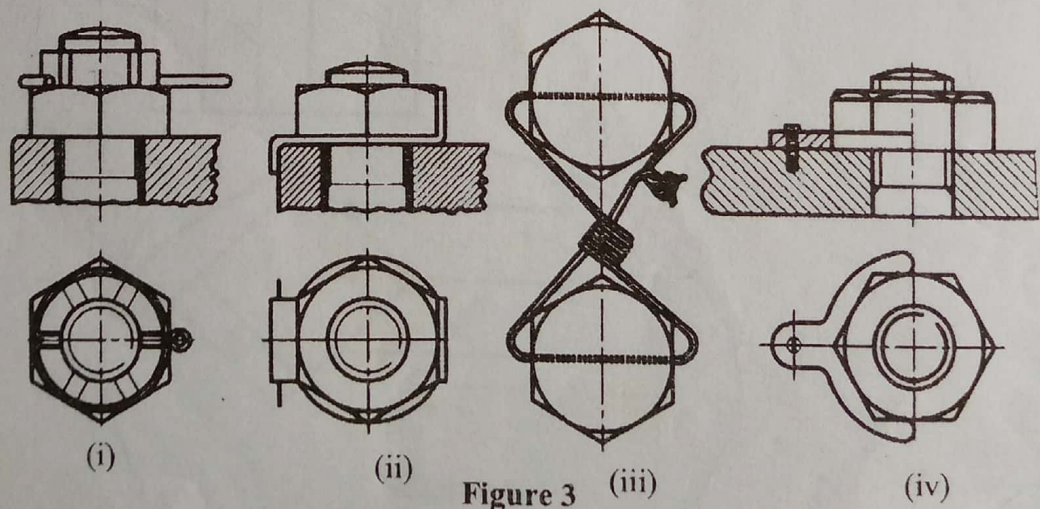


Figure 3

(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.

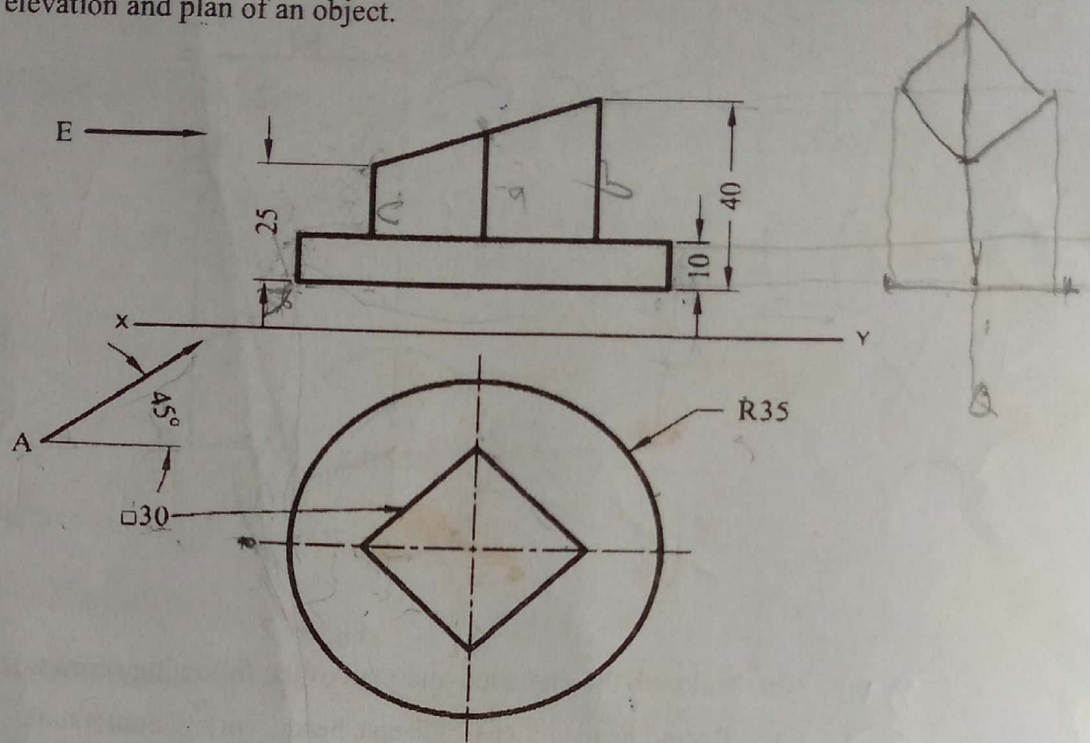
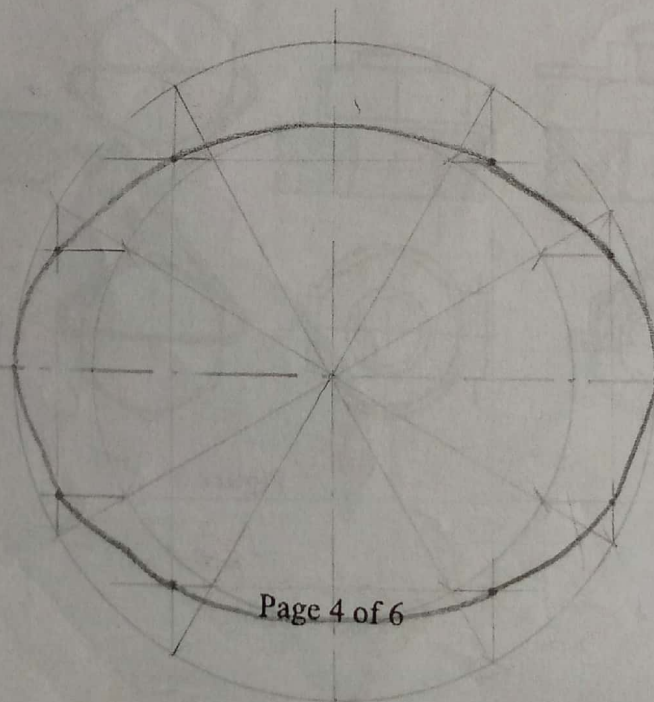


Figure 4

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)

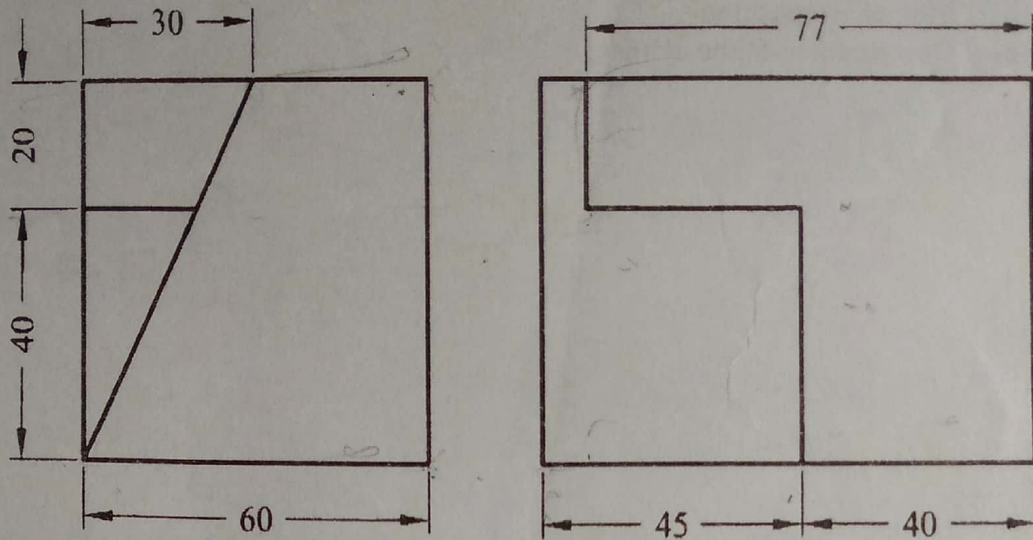


Figure 5

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

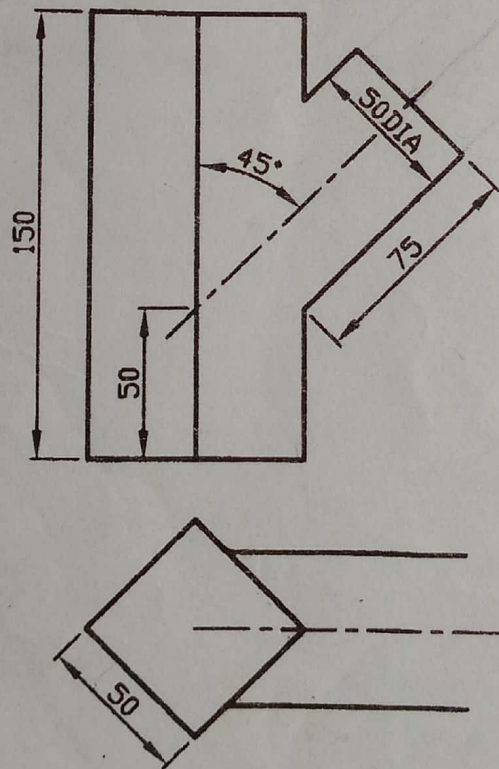


Figure 6

Draw the following:

- (a) Complete elevation and plan
- (b) Line of intersection
- (c) Development of the cylinder.

(08 marks)
(05 marks)
(07 marks)

