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 **Thursday, 02nd November 2017 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, cellular phones and any unauthorised materials are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

1. Figure 1 shows the insulator bracket. Draw the following views in first angle projection:

(a) The sectional front elevation taken on the cutting plane A-A. **(12 marks)**

(b) An end elevation. **(09 marks)**

(c) A plan showing cutting plan A-A. **(11 marks)**

(d) Standard paper format and Title block. **(08 marks)**

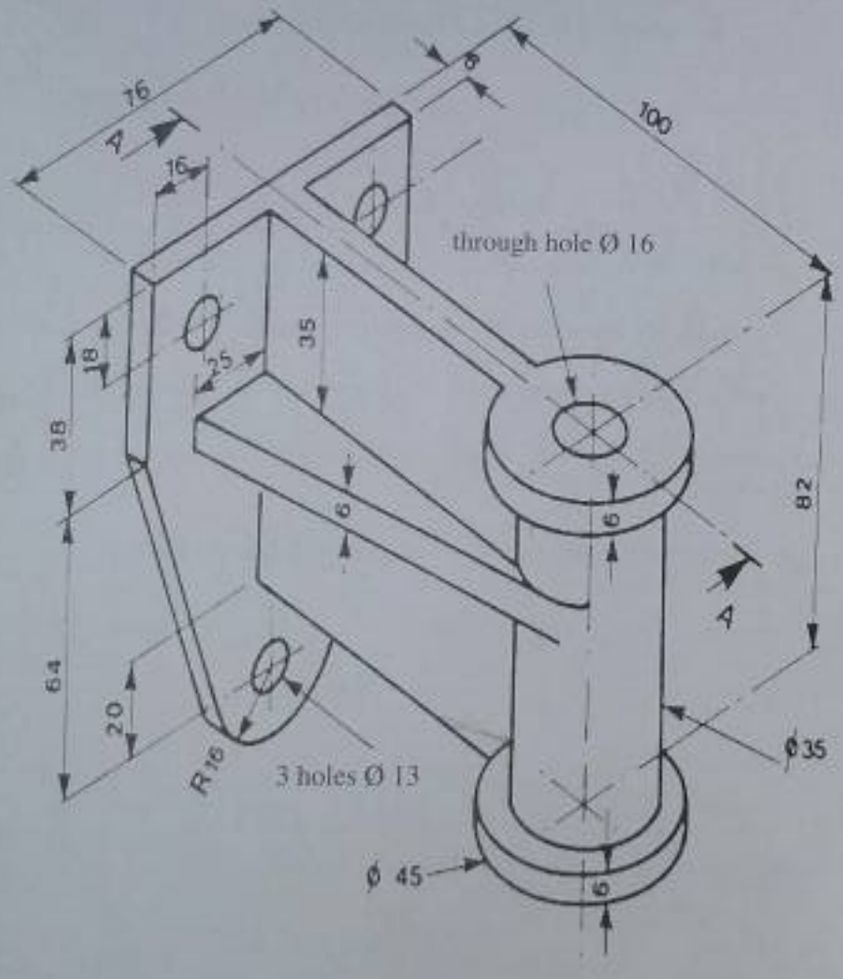

Figure 1

2. (a) Study Figure 2 (i-iv) then answer the following questions:
   (i) Give the names of plane figures represented in figure (i).
   (ii) What is the name of figure (ii)? State the angle included.
   (iii) Which types of pictorial projection are used to draw figures (iii) and (iv)?
   (iv) Name the angles indicated by symbols θ and Φ in figures (iii) and (iv).

(10 marks)

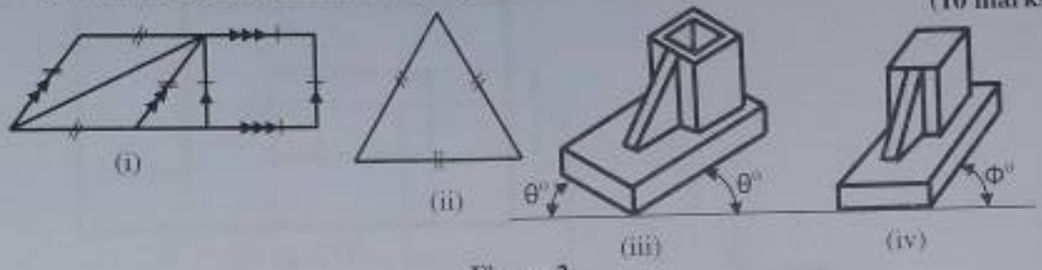

Figure 2

(b) Draw the following conventional represented in Mechanical Draughting:
   (i) Knurling. (ii) Square on shaft. (iii) Bearing on shaft.
   (iv) Round bar solid. (v) Round bar hollow. **(10 marks)**

3. A square pyramid which is tilted at 30° to horizontal is shown in Figure 3. Draw the following in first angle projection:

(a) the given view. **(09 marks)**

(b) the plan and left hand end elevation. **(11 marks)**

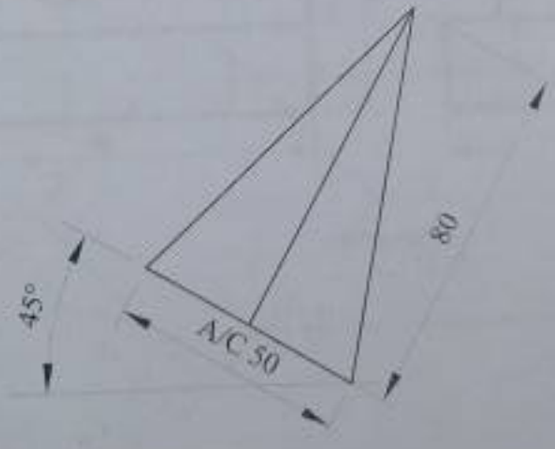

Figure 3

4. Figure 4 is the orthographic views of a bracket. Draw an isometric block in full size.**(20 marks)**

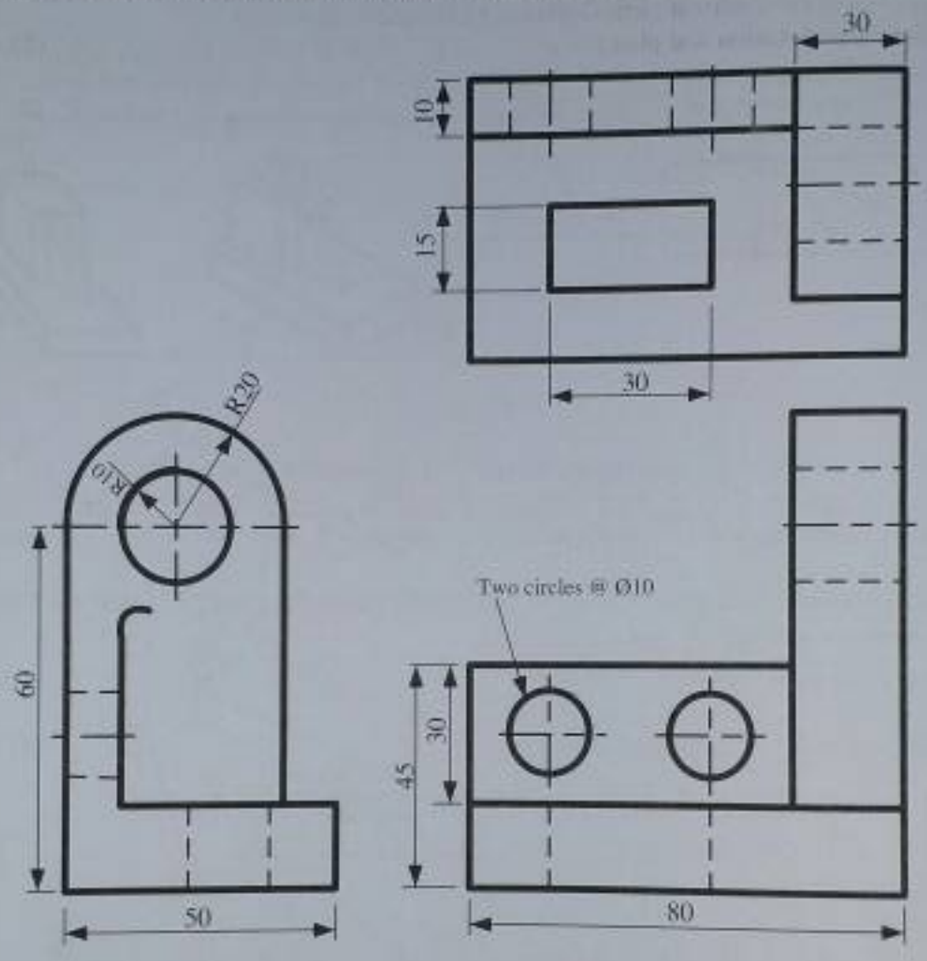

Figure 4

5. Figure 5 shows incomplete drawings of the elevation and plan of a junction between a square section pipe and a cylindrical pipe. Draw the following:

(a) Complete elevation and plan. **(08 marks)**

(b) Line of intersection. **(05 marks)**

(c) Development of the cylinder. **(07 marks)**

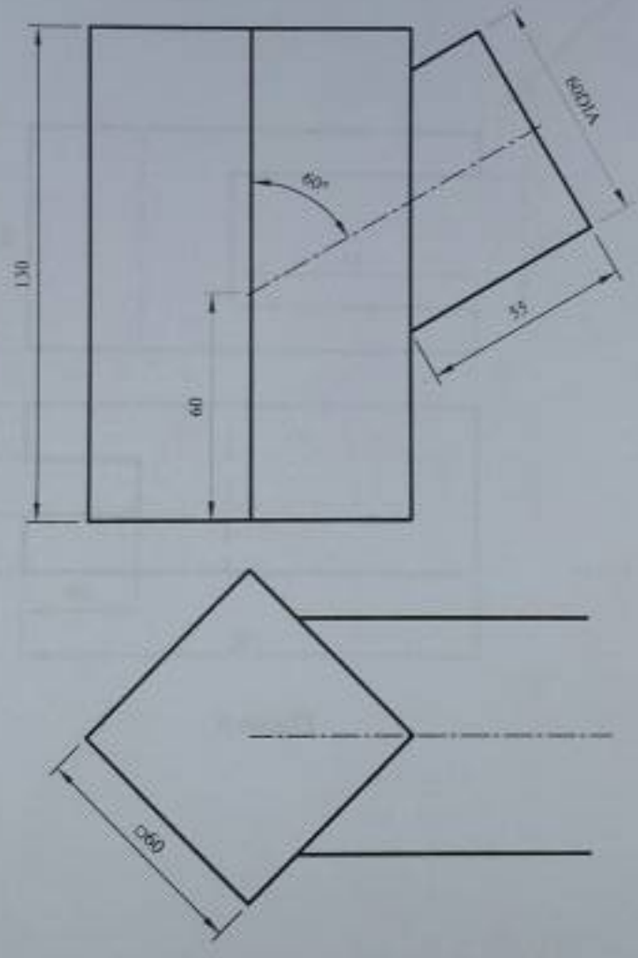

Figure 5

6. Figure 6 shows the front elevation and plan of a drive belt bracket in first angle projection. Study it and answer the following questions:

(a) Draw the given views. **(06 marks)**

(b) Construct the auxiliary plan as seen from the direction of an arrow A. **(14 marks)**

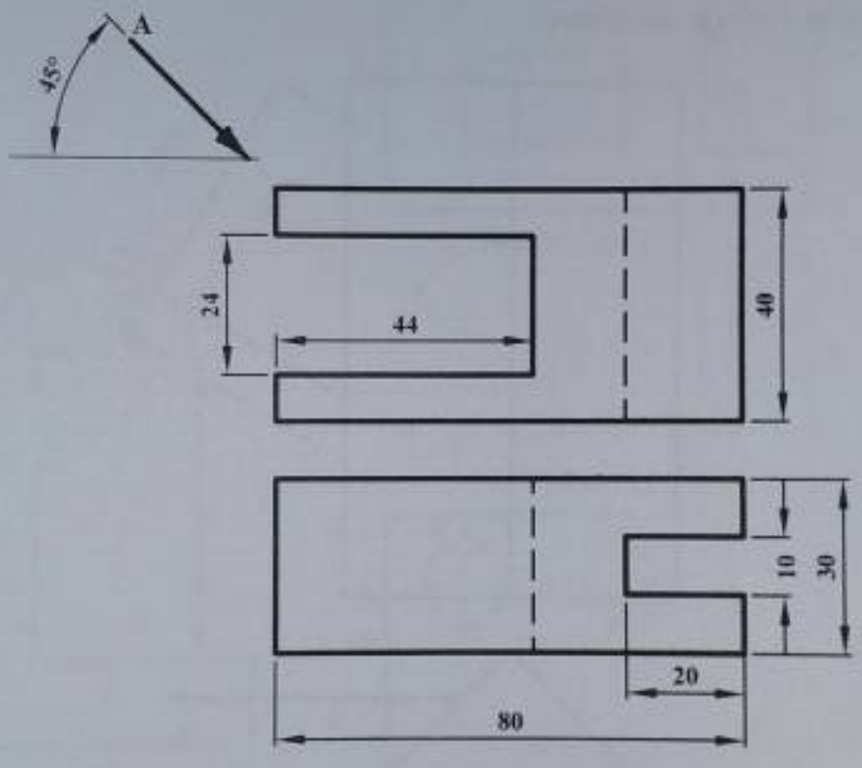

Figure 6