

071605T4AUT

AUTOMOTIVE ENGINEERING LEVEL 5

ENG/OS/AUT/CC/1/5/A

PREPARE AND INTERPRET TECHNICAL DRAWINGS

March/April 2025



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)**

WRITTEN ASSESSMENT

INSTRUCTIONS TO CANDIDATE

1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section A and **ANY THREE** (3) questions in section B.
3. Marks for each question are indicated in the brackets.
4. Candidates are provided with a separate answer booklet
5. Do not write on the question paper

This paper consists of SIX (6) printed pages

Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.

SECTION A: (40 MARKS)

Attempt ALL questions in this section.

1. A draftsman needs some basic tools and equipment to draw. State FOUR of the drawing equipment's and explain the use of each. (4 Marks)
2. Pencils with leads of different degrees of hardness or grades are available in the market. The selection of the grade depends on the line quality desired for the drawing. Identify TWO types of pencils, the nature and usage in the engineering drawing (4 Marks)
3. Plain geometry is an important area of study in engineering drawing. Using a ruler and a pair of compasses only construct the following angles (4 Marks)
 - a. 60°
 - b. 90°
4. Plane geometry is the geometry of figures that are two-dimensional, example being triangle, square, rectangle. Construct a triangle given the base 80mm, the altitude, 40mm and the vertical angle 70° (4 Marks)
5. A polygon is a plane figure bounded by more than four straight sides. Construct a regular polygon given a diagonal within a circle of diameter 60mm. (4 Marks)
6. Using 1st angle orthographic projections draw the front elevation plan and end elevation for the given solid in figure 1 below. (4 Marks)

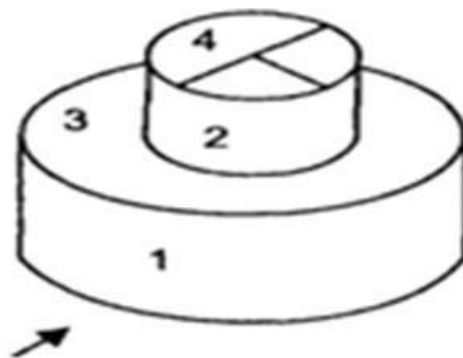


Figure 1

7. The true shape of an inclined surface can only be obtained by projecting it on to an imaginary plane which is parallel to it called an auxiliary plane. Explain TWO types of auxiliary view. (4 Marks)
8. Solid geometry is the graphic language used in the industry to record the ideas and information necessary in the form of blue prints to make machines, buildings and

structures by engineers and technicians who design, develop, manufacture and market

the products. Explain TWO types of projection used in solid geometry (4 Marks)

9. Oblique projection is method of pictorial drawing. Copy the block in figure 2 in Oblique projection. (4 Marks)

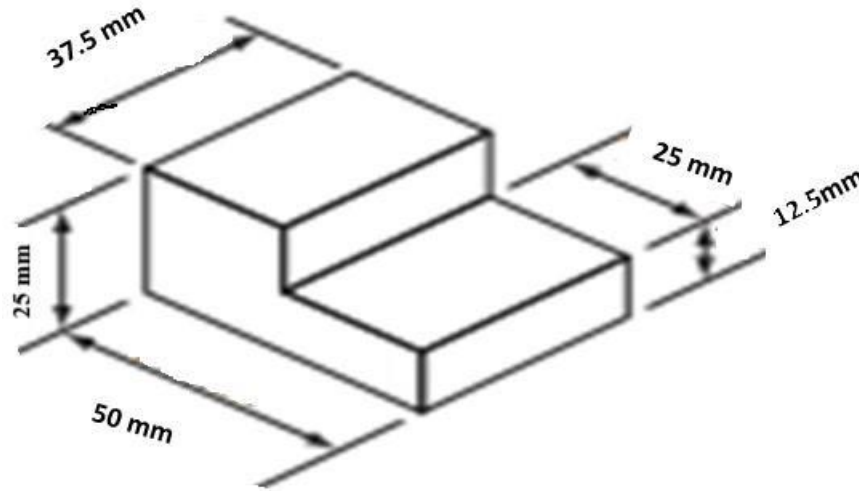


Figure 2

10. Using hand tools is something is to understand the purpose of the common types. Using free hand sketch , sketch the following hand tools used in an Automotive workshop (4 Marks)
- Centre
 - Double ended spanner

SECTION B: (60 MARKS)

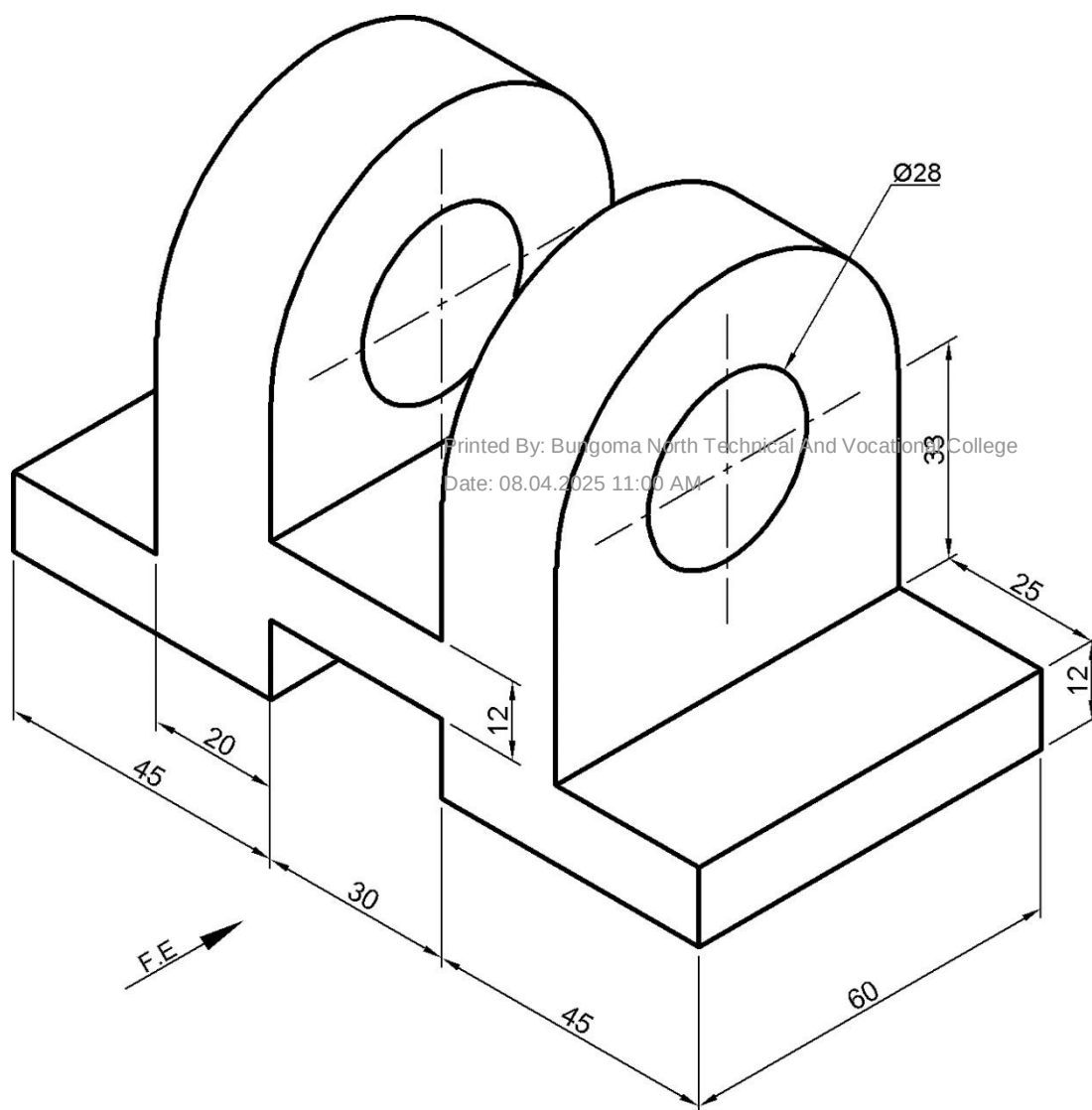
Attempt any **THREE** questions in this section.

11. The figure below shows a shaped block. Draw the following views in first angle orthographic projection.

- Front Elevation
- End Elevation
- Plan

Include six main dimensions.

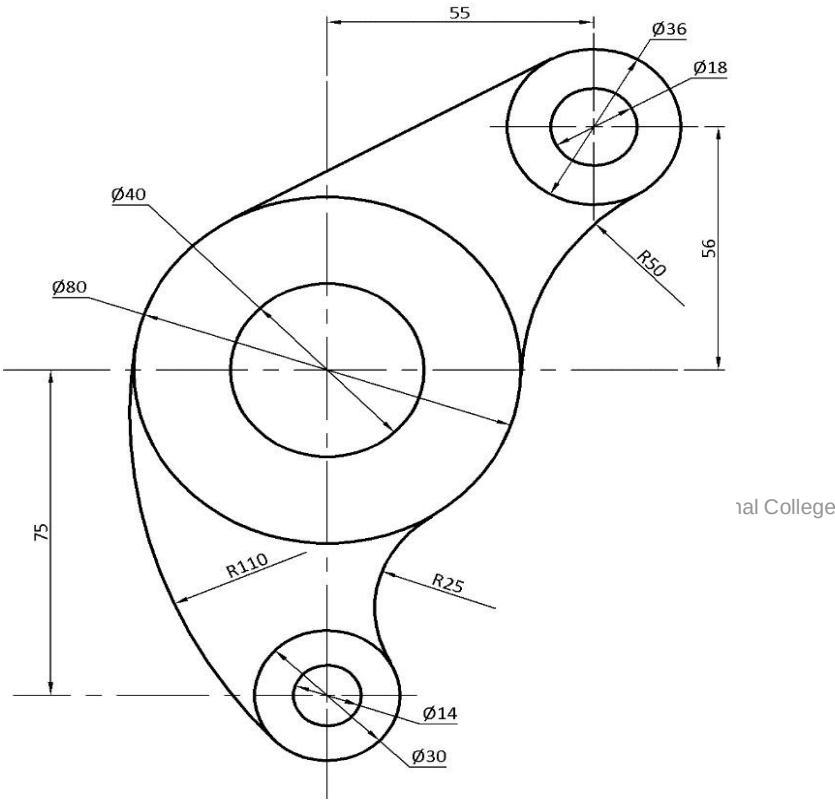
(20 Marks)



12.

- Construct the locus of point P on a wheel of radius 60mm for a complete revolution (10 marks)

- b) CADD's dimensioning functions provide a fast and accurate means for drawing dimensions. Briefly explain FIVE advantages for using Computer Aided Design in engineering. (5 Marks)
- c) Draw a parabola with the distance of the focus from the directrix at 50mm using eccentricity method. (5 Marks)
13. A pawl is shown in Figure 3. Construct the pawl and show all the construction lines. (20 Marks)



14. For automotive engineering, assembly drawing is essential to come up with an object. Explode the following object given the following details and figure 5. (20 marks)

Item No.	Title	No. off	Material
1	Bolt	1	080M40
2	Rivet	2	040A04
3	Lever arm	2	HS 40
4	Centre piece	1	080M40

