071606T4AUT

AUTOMOTIVE TECHNOLOGY LEVEL 6

ENG/OS/AUT/CC/1/6 Prepare and Interpret Technical Drawings November/December 2025

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

WRITTEN ASSESSMENT

TIME: 4 HOURS

INSTRUCTIONS TO CANDIDATE:

1. You should have the following for this assessment
   i. Drawing instruments
   ii. A3 drawing paper
   iii. Computer installed with AutoCAD
   iv. A printer

2. This paper consists of **TWO** sections: **A** and **B**.
3. Answer **ALL** questions in section A.
4. Answer question **ELEVEN (11)** and any other **TWO (2)** questions in section B.
5. Marks for each question are indicated in brackets.
6. Do not write on the question paper.

This paper consists of SIX (6) printed pages.

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

SECTION A: (40 MARKS)

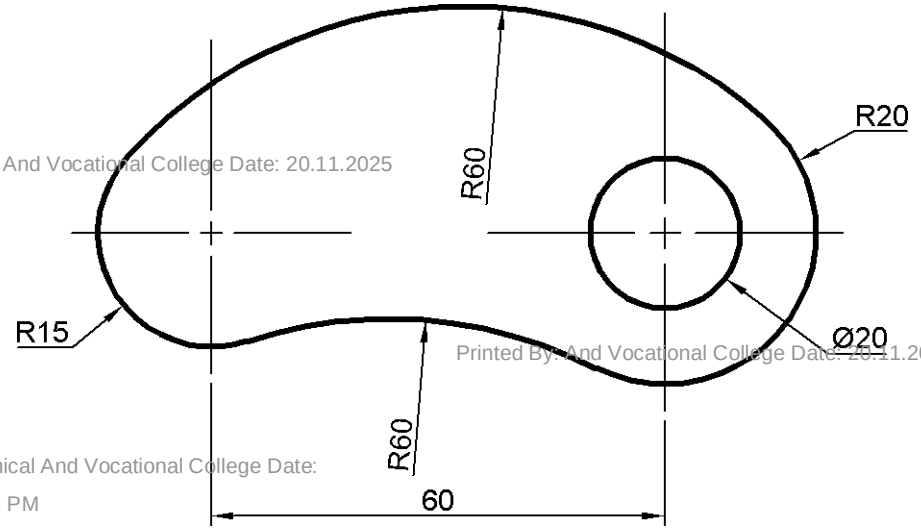
Answer ALL questions in this section

1. Give FOUR reasons why drawings are necessary in automotive engineering workshops. (4 Marks)

2. The loudspeaker grill of a car radio is elliptical in shape. Using intersecting arcs method, construct the elliptical grill, given the major and minor diameters as 120mm and 80mm respectively. (4 Marks)

3. Construct a regular heptagon given its diagonal as 80mm. (4 Marks)
4. Construct a scalene triangle whose perimeter is 180 mm lengths in the ratio 4:3:6. (4 Marks)

5. The figure below shows the outline of a machine part casting. Draw the outline of the casting showing all your constructions. (4 Marks)



6. By means of neat sketches, represent the symbols of the following locomotive electrical components:
   a) Switch
   b) Battery
   c) Filament lamp
   d) Ground (earth). (4 Marks)

7. Construct the common external tangent to two circles of radius 30 mm and 15mm with centres 80 mm (4 Marks)

8. Make pictorial free hand sketches of the following tools commonly used in the automotive industry:
   a) Ring spanner
   b) Flat file (4 Marks)
9. Explain FOUR advantages of using CAD software over manual drawing methods. (4 Marks)
10. Differentiate between orthographic projection and pictorial projection. (4 Marks)

SECTION B: (60 MARKS)

Answer question 11 (Compulsory) and any other questions in this section

11. Figure 1 below shows a part of a clamping jig drawn in isometric projection. Using a Computer Aided Drawing program, reproduce the given diagram. Include six major dimensions. (20 Marks)
    - Create a folder on your desktop named AUTL6-XXXXXXX where XXXXXXX is your CDACC registration number. Save all your work in this folder.
    - Save your work on the CD provided and indicate your CDACC registration number on the CD.
    - Work on an A4 paper and indicate your CDACC registration number on each printed page.
    - Hand over the CD and the printed paper to the invigilator at the end of this assessment.

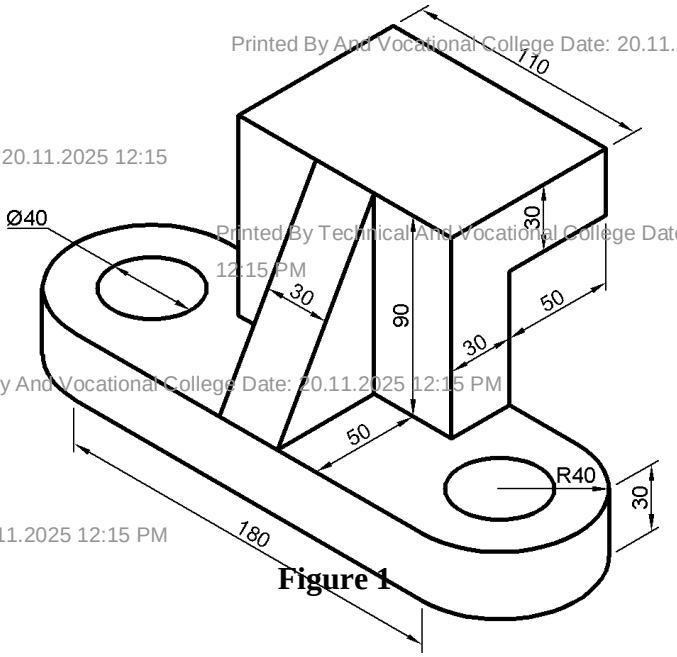
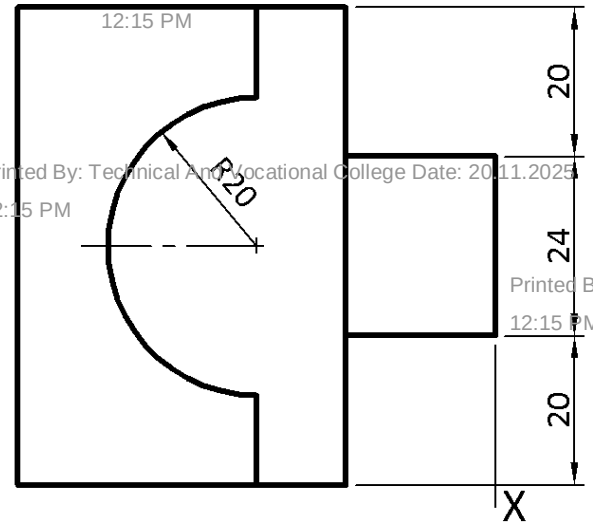
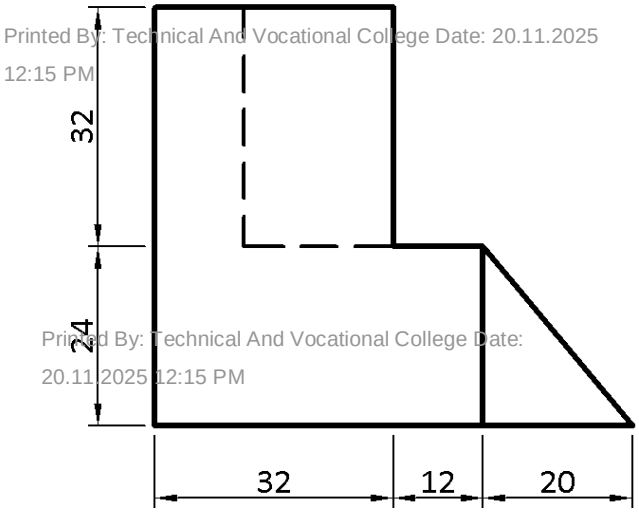
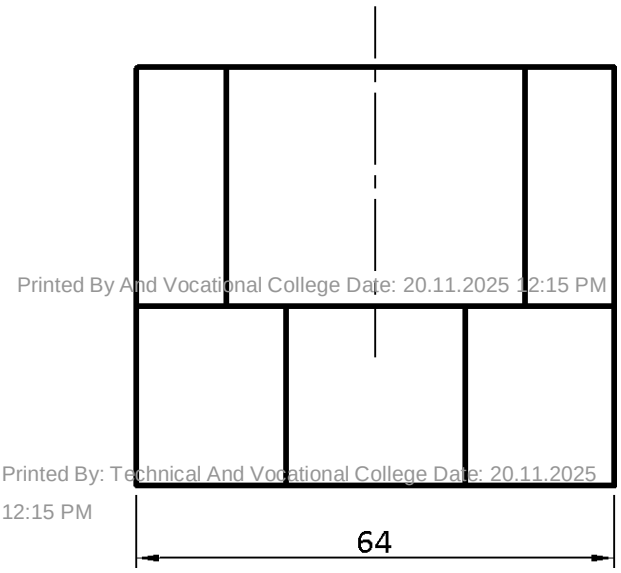


Figure 1

12. Figure 2 shows views of a machine block. Draw the block in isometric projection with corner **X** as the lowest point. (20 Marks)



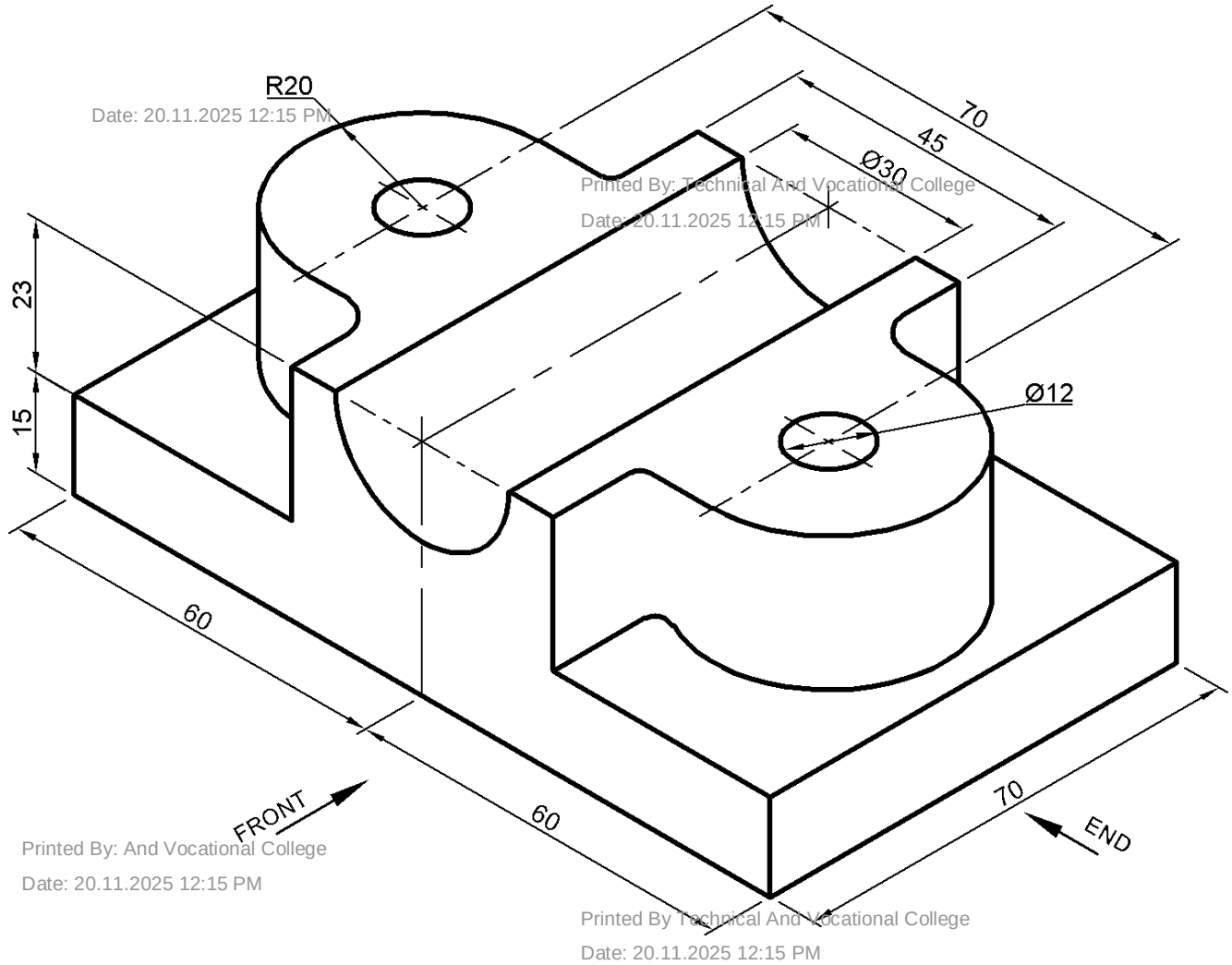




13. The isometric drawing in figure 3 shows a bearing block. Draw in first angle orthographic projection the following views:

    (a) A front elevation as indicated by the arrow

    (b) An end elevation as indicated by the arrow



    (c) A plan in projection with the front view

Include six major dimensions. (20 Marks)

Figure 3

14. The figure 4 below shows a right cone cut at an angle of 30°. Draw the;

    a) Plan

    b) Surface development cone taking joint line at jj. (20 Marks)

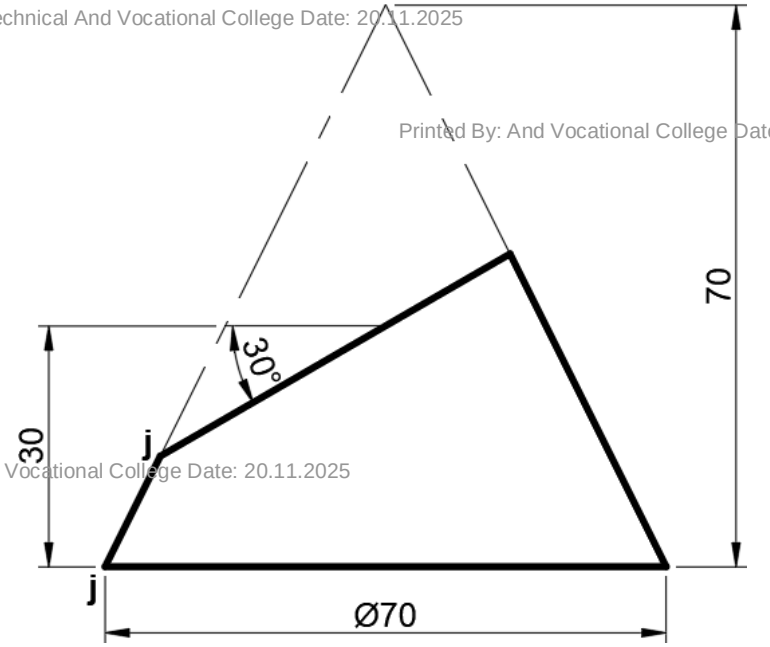


Figure 4