

071604T5AMEM

**AGRICULTURAL MACHINERY & EQUIPMENT MECHATRONICS TECHNICIAN
LEVEL 5**

ENG/OS/AME/CC/2/5/A

PREPARE AND INTERPRET TECHNICAL DRAWINGS

July /August, 2024



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

WRITTEN ASSESSMENT

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. This paper consists of two sections **A** and **B**
2. Answer **ALL** the questions as guided in each section
3. Marks for each question are as indicated in the brackets
4. You are provided with a separate answer booklet to answer the questions
5. Do not write in this 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)

Answer **ALL** the questions in this section.

1. State one function of the following items in technical drawing. (3marks)
 - i. Set square;
 - ii. T square;
 - iii. Compass;
2. Draw the following lines used in technical drawing. (3marks)
 - i. Center line
 - ii. Leader line;
 - iii. Hidden details;
3. An equilateral triangle has sides of 60mm. construct a rectangle equal in area to a given triangle. (3marks)
4. Construct an ellipse within two concentric circles given the diameters of 100mm and 60mm. (4marks)
5. State the conventional abbreviation or symbol for the following engineering terms (4marks)
 - i. First angle projection;
 - ii. Centre line
 - iii. Radius
6. Construct a regular hexagon within an 80 mm diameter circle. The corners of the hexagon must all lie on the circumference of the circle. (3marks)
7. Construct a triangle of perimeter 190 mm with sides in the ratio 7:3:4. (4marks)
8. Construct each of the following angles. (4marks)
 - i. 30°
 - ii. 45°
9. Make free hand pictorial sketches of the following tools: (4marks)
 - i. Try square;
 - ii. Flat chisel.
10. **Figure 1** shows a crank BC rotating about a fixed center C. A rod AB is pin-jointed to the crank at B and freely moves in the guide at A. Draw the locus of a point P for one revolution of crank.

(8 marks)

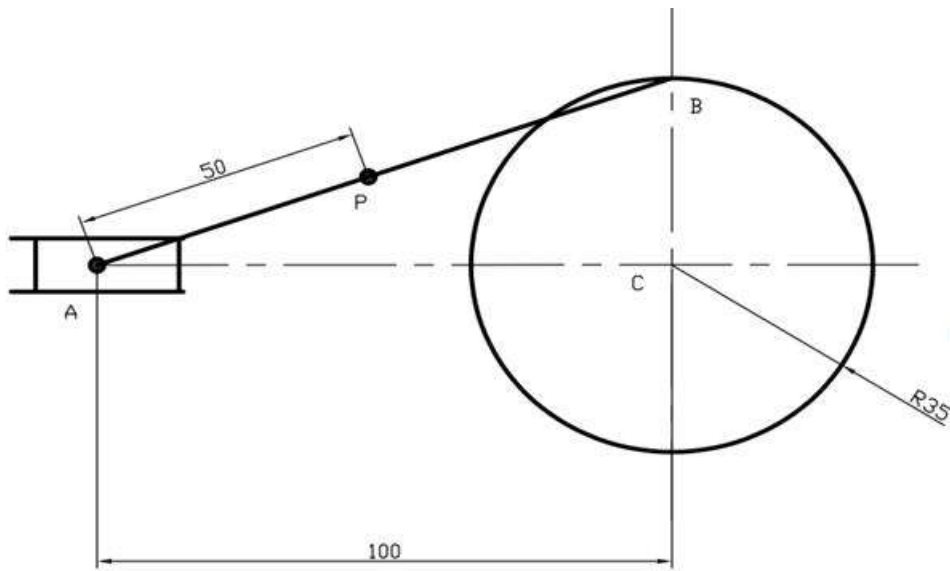


Figure 1

easytvet.com

SECTION B: (60 MARKS)

Answer any **THREE** questions from this section.

11. **Figure 2** shows an elevation of a truncated hexagonal pyramid. Draw the following views in first angle projection. (20 marks)

- i. The given elevation;
- ii. The plan;
- iii. End elevation in the direction of arrow EE;
- iv. True shape of the cut surface.

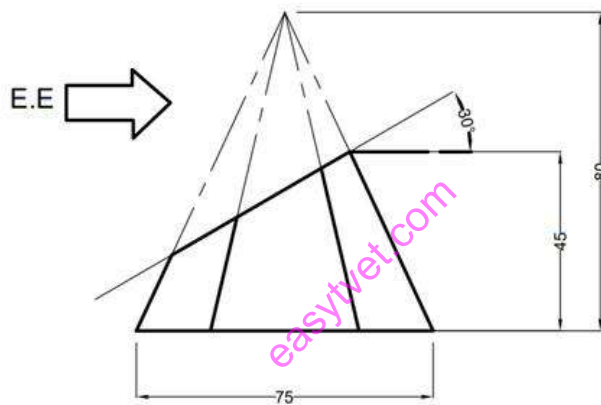


Figure 2

12.

- (a) Explain the following input devices used in computer Aided Design and Drafting (CADD).

(4marks)

- i. Digitizer;
- ii. Mouse.

- (b) Describe the role of the following drawing commands in computer Aided Design and Drafting (CADD).

(4marks)

- i. Trace;
- ii. Donut.

- (c) Highlight TWO function of ZOOM command as used in CAD drawing.

(2marks)

(d) **Figure 3** show a machine part to be draw using computer Aided Design and Drafting (CADD). Taking the origin to be the centre of the $\Phi 28$ circle, determine the following coordinates. (10marks)

- i. Lower left corner;
- ii. Lower right corner;
- iii. Upper left corner;
- iv. Centre of the right $\Phi 15$ hole.
- v. Centre of the left $\Phi 15$ hole.

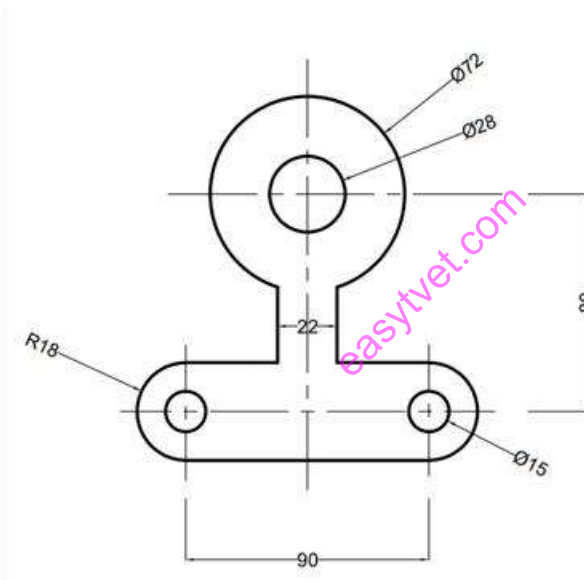


Figure 3

13. **Figure 4** shows an isometric drawing of a block. To a scale 1:1, Draw the following in first angle projection: (20marks)

- i. Plan;
- ii. Front elevation;
- iii. Side elevation.

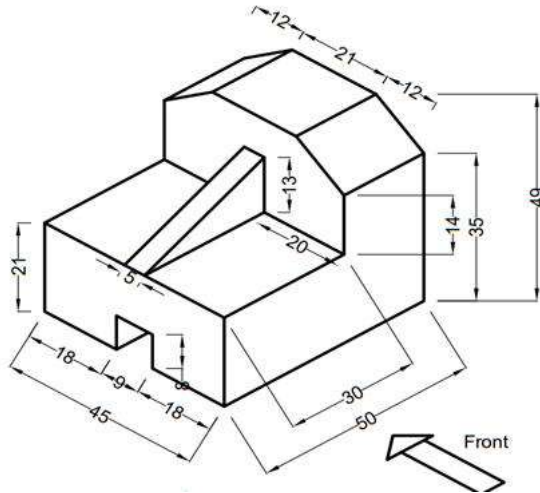


Figure 4

14.

(a) Sketch the following hydraulic symbols:

(2marks)

- i. Pressure gauge;
- ii. Hand lever.

(b) **Figure 5** shows a schematic diagram of a tractor ignition system. Name the symbols numbered 1 to 8.

(8marks)

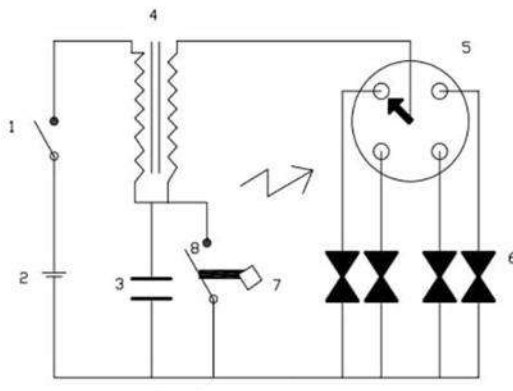


Figure 5

(c) State the designation and size of drawing paper according to Bs 308, ISO A series.

(10marks)

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