ZIMBABWE

MINISTRY OF HIGHER AND TERTIARY EDUCATION, INNOVATION, SCIENCE AND TECHNOLOGY DEVELOPMENT

HIGHER EDUCATION EXAMINATIONS COUNCIL (HEXCO)

NATIONAL CERTIFICATE

IN

MACHINESHOP ENGINEERING

SUBJECT: Engineering Drawing 1

PAPER NO: 340/22/M04/1
340/24/M04/1

DURATION: 3 Hours

NOVEMBER/DECEMBER 2025 EXAMINATION

REQUIREMENTS

1) Drawing board
2) A3 drawing papers
3) Drawing instruments
4) Serialised HEXCO cover

INSTRUCTIONS TO CANDIDATE

1) Section A: Attempt all questions (30 marks).
2) Section B: Attempt any two (2) out of three (3) questions (30 marks).
3) Section C: Attempt this question (40 marks).
4) Do not write your name inside or outside the answer script.
5) Do not write anything on the question paper.

This paper consists of 8 printed pages.

SECTION A: COMPULSORY

QUESTION 1

1.1 State any three (3) drawing instruments. (3 marks)

1.2 State the abbreviations for the following terms:

i) Standard (1 mark)

ii) Screwed (1 mark)

iii) Diameter (proceeding a dimensions) (1 mark)

1.3 Describe the types of lines used for the following:

i) Hidden details (1 mark)

ii) Projection line (1 mark)

iii) Cutting plane (1 mark)

1.4 Sketch the conventional representations of the following:

i) Diamond knurling (1 mark)

ii) Holes on a linear pitch (1 mark)

iii) serrated shaft (1 mark)

1.5 Sketch the following sectional views:

i) Half section (1 mark)

ii) Removed section (1 mark)

iii) offset section (1 mark)

1.6 Draw a line 80mm long and divide it into six (6) equal parts by construction. (3 marks)

1.7 Draw a circle and clearly show the following parts:

i) Segment (1 mark)

ii) Sector (1 mark)

iii) Secant (1 mark)

1.8 State the measurements of the following drawing papers:

i) A4 (1 mark)

ii) A3 (1 mark)

iii) A2 (1 mark)

1.9 Draw the geometrical characteristic symbols for the following:

i) Parallelism (1 mark)

ii) Squareness (1 mark)

iii) Concentricity (1 mark)

1.10 Draw the symbols for the following welds:

i) Square butt (1 mark)

ii) Single bevel butt (1 mark)

iii) Spot (1 mark)

SECTION B
ANSWER ANY TWO (2) QUESTIONS IN THIS SECTION

QUESTION 2

Fig Q2 shows a pictorial view of a casting. Draw the following views in 1st angle orthographic projection:

a) Front view in the direction of arrow A. (7 marks)

b) End view (4 marks)

c) Plan (4 marks)

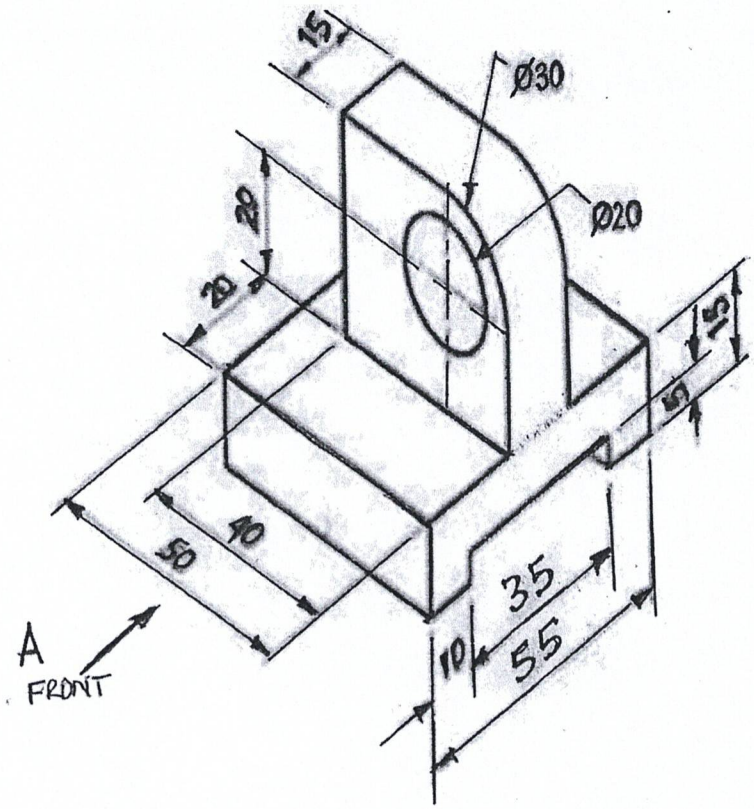

Fig Q2

QUESTION 3

Fig Q3 shows a locating table in isometric projection. Draw the following views in 3rd angle orthographic projection:

a) Front elevation as viewed in the direction of arrow F (7 marks)

b) Plan (8 marks)

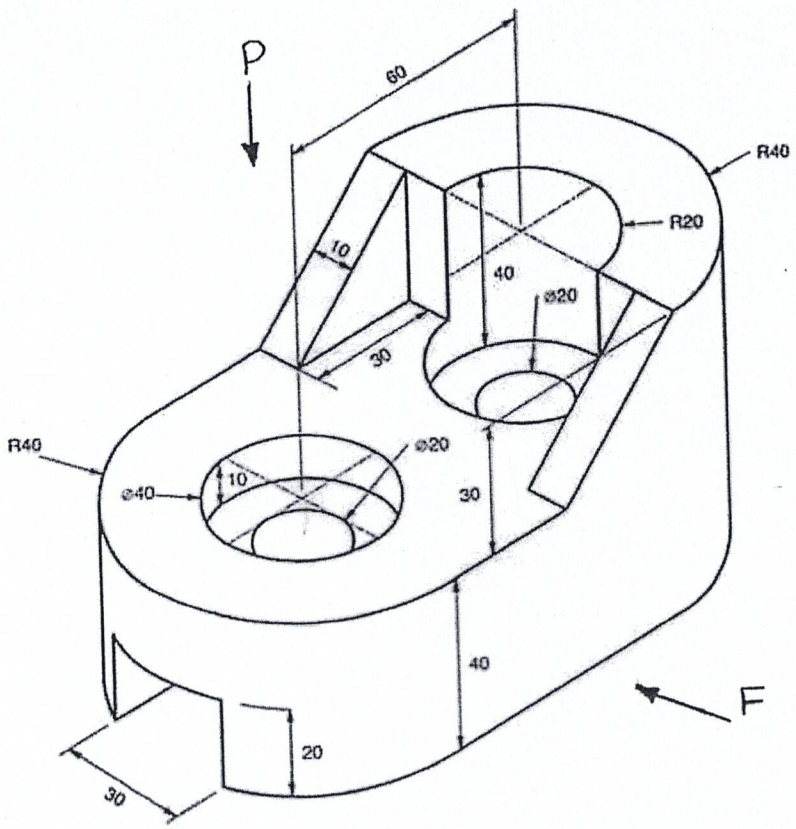

Fig Q3

QUESTION 4

Fig Q4 shows a template of an engineering component. Draw full size the template using geometrical construction techniques. (15 marks)

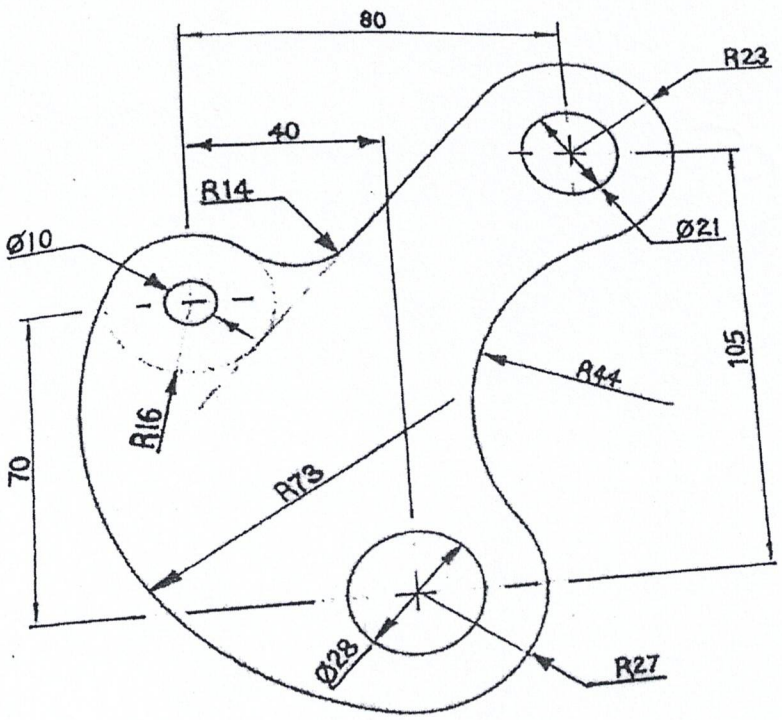

Fig Q4

SECTION C: COMPULSORY

QUESTION 5

Fig Q5 shows a machine bracket drawn in Isometric projection. Draw full size, the following views in 1st angle orthographic projection:

a) Sectional front elevation through X-X (20 marks)

b) End elevation (7 marks)

c) Plan (8 marks)

d) Include a title block and projection symbol (5 marks)

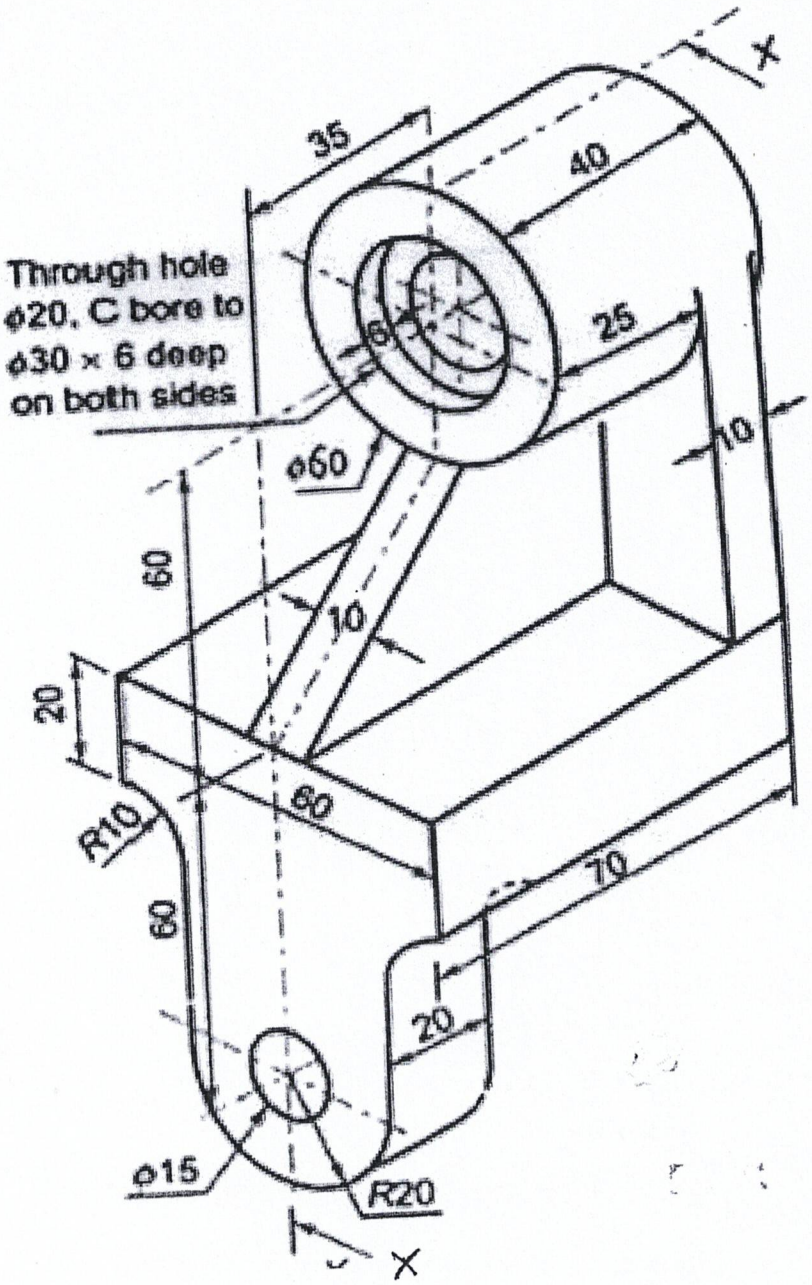
X
35
40
Through hole
ϕ20, C bore to
ϕ30 × 6 deep
on both sides
25
10
ϕ60
60
10
20
R10
60
70
60
20
ϕ15
R20
X

Fig Q5

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