



ZIMBABWE

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

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

**MOTOR MECHANICS, D.P.F, AUTOMOBILE ELECTRICS AND
ELECTRONICS, PRECISION MACHINING, M.V.B.R.R AND MOTOR CYCLE
MECHANICS**

MODULE: Automotive Engineering Drawing PAPER NO: 346/21/S04

DURATION: 3 Hours

MARCH/APRIL 2024 EXAMINATION

REQUIREMENTS

- 1) Drawing instruments.
- 2) 6xA4 and 1 x A3 bond paper.

INSTRUCTIONS TO CANDIDATE

NB: Use pencil only and no pen in any way. Do not use answer booklet instead use a folder.

- 1) Section A: Answer all questions (10 marks).
- 2) Section B: Answer all questions (15 marks).
- 3) Section C: Answer any four (4) questions. Each question carries ten (10) marks.
- 4) Section D: Compulsory question (35 marks).

SECTION A

QUESTION 1

- a) Define engineering drawing. (2 marks)
- b) State the ratio of A series paper (1 mark)
- c) List any three (3) methods of dimensioning. (3 marks)
- d) State the size of an A5 paper. (1 mark)
- e) A scale of 1:3 is a ----- scale. (1 mark)
- f) At what angle are hatching lines drawn? (1 mark)
- g) Receding lines on isometric drawing are drawn at ---- angle. (1 mark)

SECTION B

QUESTION 2

- a) Define Auto CAD (2 marks)
- b) List five (5) advantages of using AutoCAD. (5 marks)
- c) CAD stands for ----- in full. (2 marks)
- d) State the functions of the following commands:
 - i) Circle (2 marks)
 - ii) Array (2 marks)
 - iii) Erase (2 marks)

SECTION C

QUESTION 3

Construct an inscribed circle to a triangle ABC of the following dimensions:

AB-60mm, BC- 70mm and CA-80mm. (10 marks)

QUESTION 4

Construct a square given the length of one side as 50mm. (10 marks)

QUESTION 5

Write down the conventional abbreviations of the following:

- | | |
|--------------------------|----------|
| a) Cylinder | (1 mark) |
| b) Not to scale | (1 mark) |
| c) Pattern | (1 mark) |
| d) Drawing | (1 mark) |
| e) Thread per inch | (1 mark) |
| f) Standard | (1 mark) |
| g) Center line | (1 mark) |
| h) Assembly | (1 mark) |
| i) Pitch circle diameter | (1 mark) |
| j) Cheese head | (1 mark) |

QUESTION 6

Construct a regular nonagon in a circle of diameter 80mm. (10 marks)

QUESTION 7

Construct a tangent to a circle from point P. Distance from centre to P being 90mm. (10 marks)

QUESTION 8

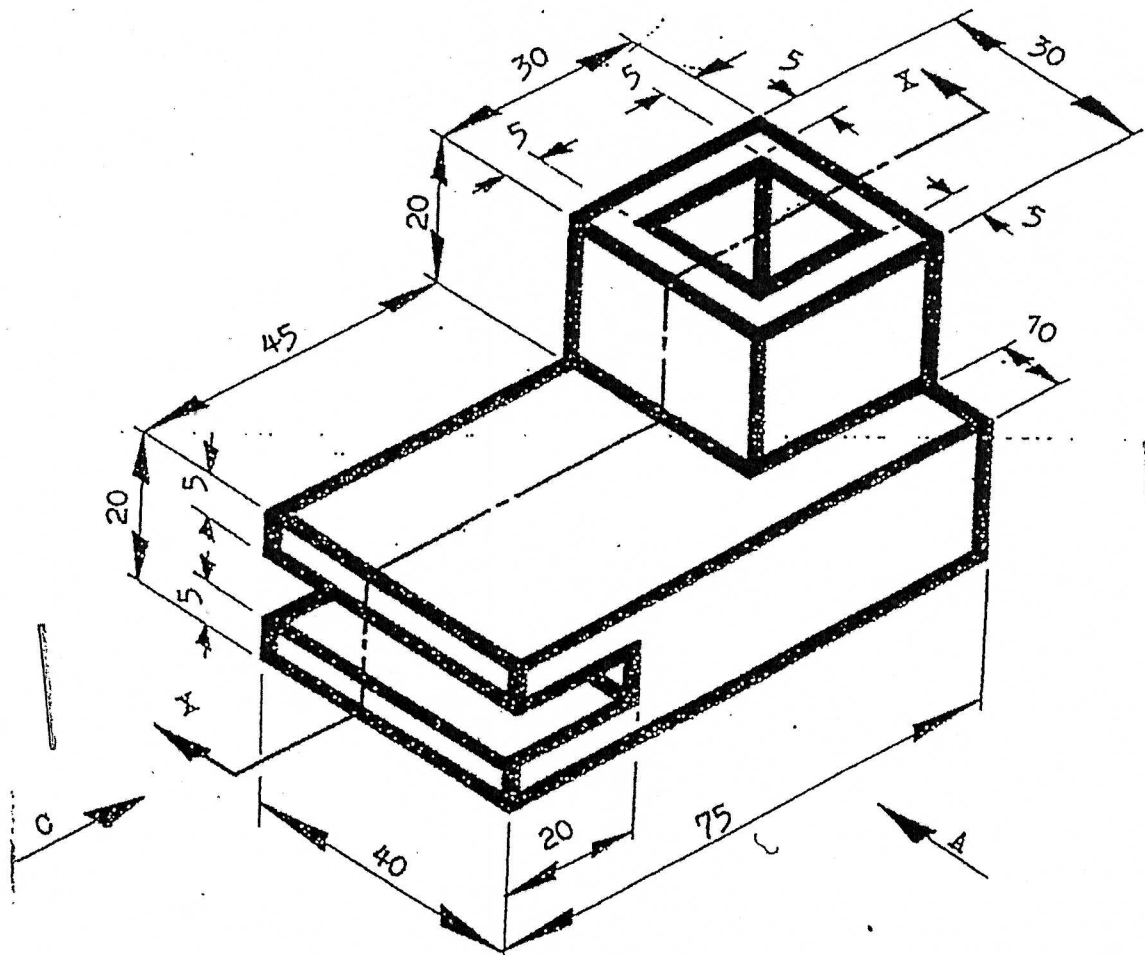
Using the four (4) centre method, construct an ellipse whose major diameter is 100mm and 80mm minor diameter. (10 marks)

SECTION D

QUESTION 9

The diagram above shows a square tube mounting bracket. Draw to a scale of 2:1 using third angle projection the following views.

- a) A sectioned front elevation as viewed from arrow A and cutting plane X-X.
- b) An end elevation as seen from arrow C.
- c) A plan view
Include six (6) dimensions, a symbol of projection and a title block.



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