



ZIMBABWE

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

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

**MOTOR MECHANICS, AUTOMOBILE ELECTRICS AND ELECTRONICS, DPF,
MVBBR, MOTOR CYCLE MECHANICS AND PRECISION MACHINING**

MODULE: Automotive Engineering Drawing PAPER NO: 346/22/M03

DURATION: 3 hours

OCTOBER/NOVEMBER 2024 EXAMINATION

REQUIREMENTS

Drawing instruments, ruler rubber, drawing paper

INSTRUCTIONS TO CANDIDATE

- 1) Section A: Answer all questions (10 marks).**
- 2) Section B: compulsory questions (15 marks).**
- 3) Section C: Answer any four (4) questions (40 marks).**
- 4) Section D: Compulsory question (35 marks).**

SECTION A

QUESTION 1

- 1.1 The thickness of the outline of a diagram is----- (1 mark)
- 1.2 In third angle projection the plan is located----- (1 mark)
- 1.3 Give the dimensions of an A3 drawing paper. (1 mark)
- 1.4 The other name for outline is ----- (1 mark)
- 1.5 What is the name given to a seven sided polygon? (1 mark)
- 1.6 State the abbreviation for counterbore according to BS308. (1 mark)
- 1.7 A sectioned object is shown by thin lines drawn preferably at ----- degrees to the outline. (1 mark)
- 1.8 Give an example of a reducing scale. (1 mark)
- 1.9 Show the symbol for 3rd angle projection. (1 mark)
- 1.10 A 2H pencil is in which grade of pencils. (1 mark)

SECTION B

QUESTION 2

- a) Give five (5) advantages of AutoCAD. (5 marks)
- b) Write the abbreviation CAD in full. (1 mark)
- c) Explain the following terms
 - i) Fillet (2 marks)
 - ii) Model space (2 marks)
 - iii) Zoom (2 marks)
 - iv) Command line (2 marks)
- d) State the command used to create a circle. [(1 mark)]

SECTION C

QUESTION 3

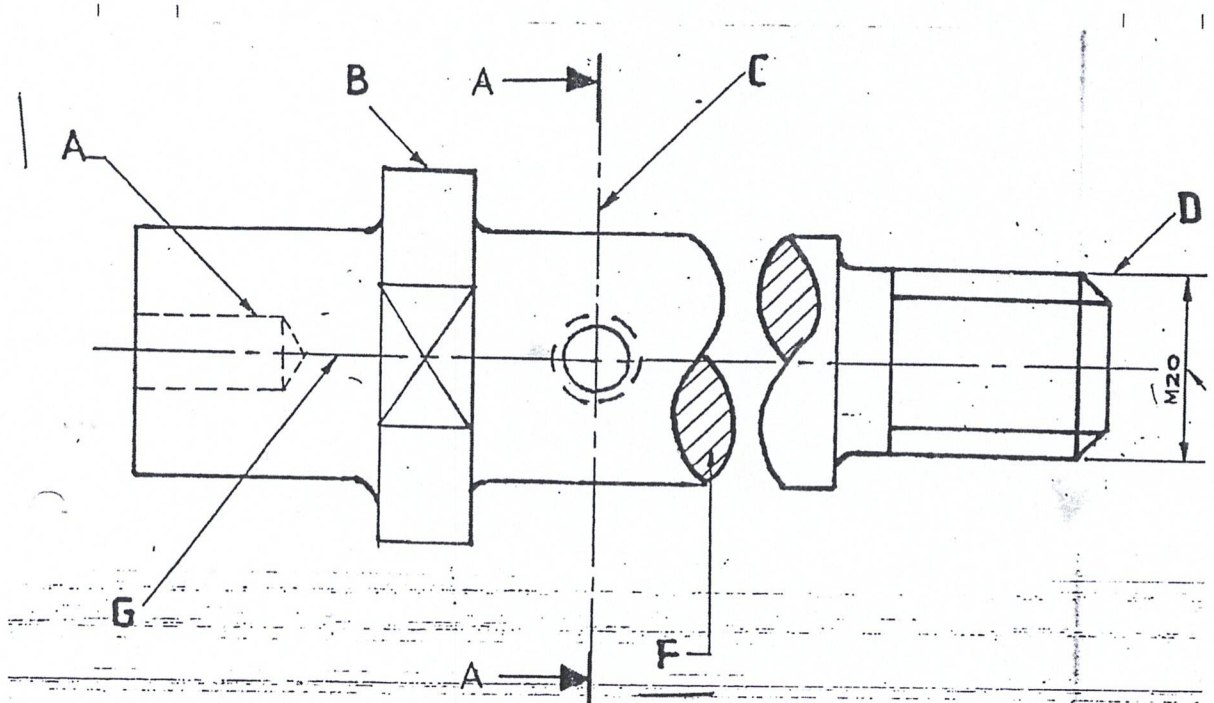
Construct the inscribed circle of a triangle with base angles of 60° and base line of 60mm. (10 marks)

QUESTION 4

- a) State any six (6) items provided by the title block. (6 marks)
- b) Give BS308 standard abbreviations for the following:
- i) Drawing (1 mark)
 - ii) Countersunk (1 mark)
 - iii) Centres (1 mark)
 - iv) Hexagon head (1 mark)

QUESTION 5

The diagram below (Fig 1.1) shows different types of lines represented by letters. Name the type of lines marked A, B, C, D and G. (10 marks)



QUESTION 6

Draw neat diagrams of the following conventional representations:

- | | | |
|----|-----------------------|-----------|
| a) | Ball bearing | (2 marks) |
| b) | Compression spring | (2 marks) |
| c) | Square on a shaft | (2 marks) |
| d) | Internal screw thread | (2 marks) |
| e) | Splined shaft | (2 marks) |

QUESTION 7

In place of the rectangular boxes redraw the circuit with any five (5) of the following electrical components in the lettered positions:

A=Battery B=switch

C=Variable resistor

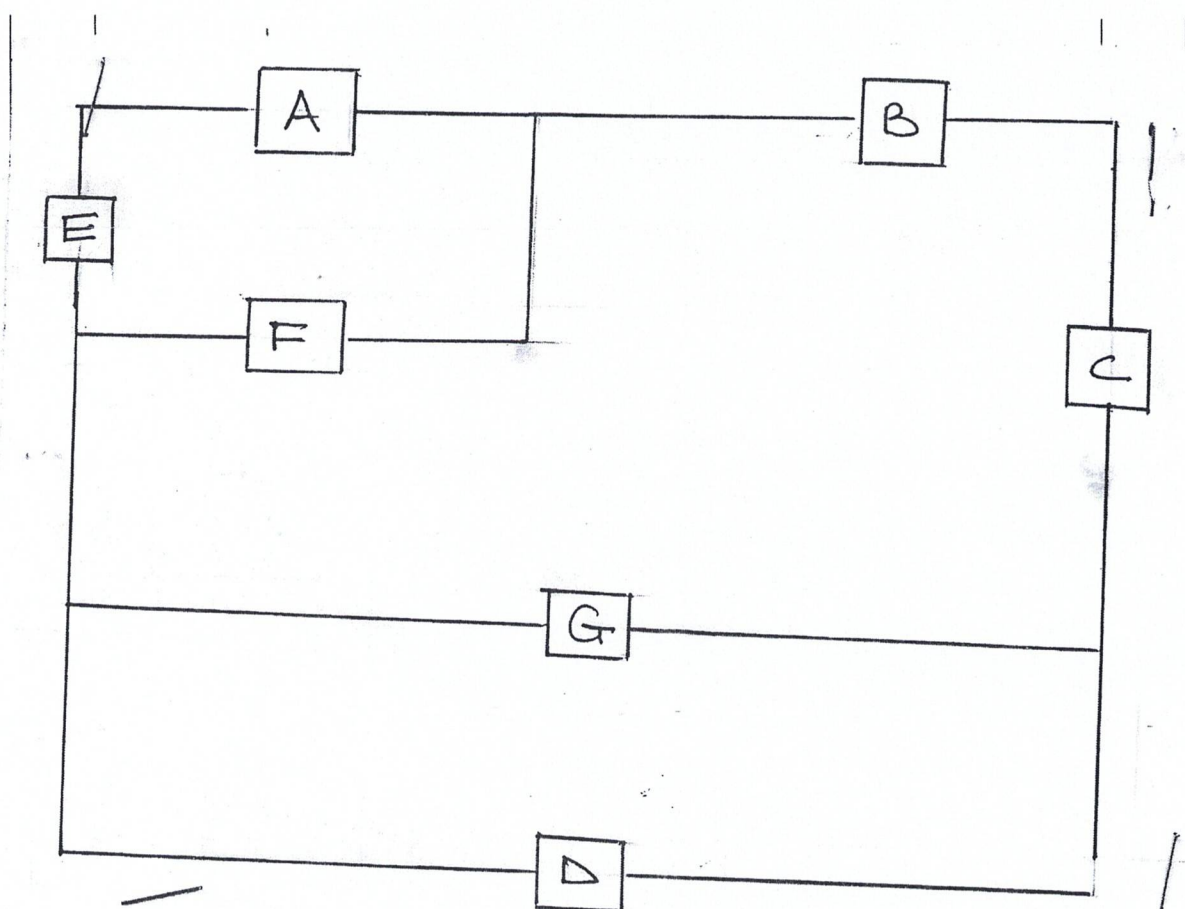
D=Signal bulb

E=Ammeter

F=Voltmeter

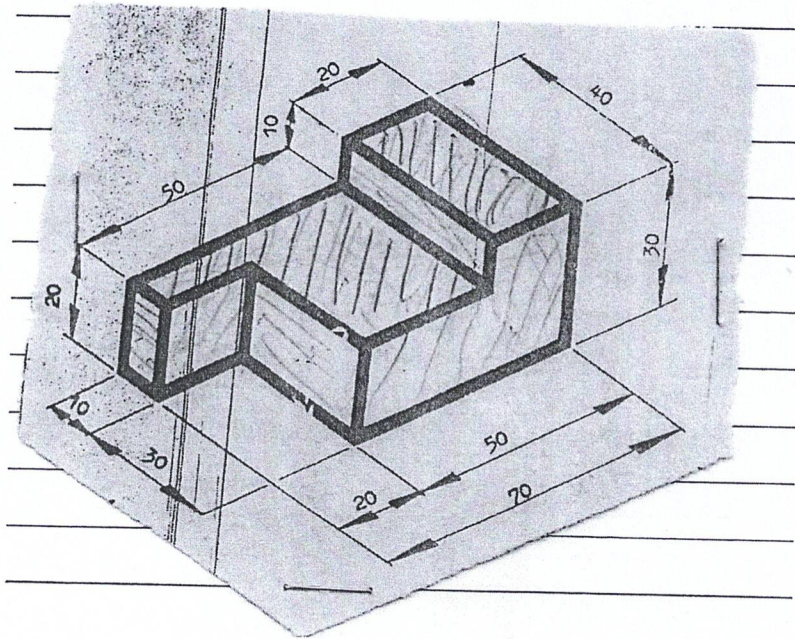
G=filament bulb

(10 marks)



QUESTION 8

Redraw the diagram below in oblique projection.



(10 marks)

