



ZIMBABWE

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

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

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

**MODULE: Automotive Engineering
Drawing**

PAPER NO: 346/22/M03

DURATION: 3 Hours

REQUIREMENTS

NOVEMBER/ DECEMBER 2025 EXAMINATION

1. Drawing instruments.
2. 6x A4 and 1 x A3 bond paper.
3. Folder.

INSTRUCTIONS TO CANDIDATE

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

NB: - Use pencil only and no pen in any way

- Do not use answer booklet, answer section A to D on bond paper

This paper consists of 6 printed pages.

SECTION A

QUESTION 1

- a) Give an example of a reducing and an enlarging scale. (2 marks)
- b) State the purpose of a title block when producing an engineering drawing. (1 mark)
- c) State the application of a thick continuous line. (1 mark)
- d) Name a nine sided regular polygon. (1 mark)
- e) When drawing in orthographic projection, all views should be at an angle of _____ to the side being observed. (1 mark)
- f) The abbreviation CSK stands for _____. (1 mark)
- g) Lines drawn at 30°, 45° and 60° are drawn with the aid of _____. (1 mark)
- h) To find the centre of an inscribed circle to a triangle you bisect _____ of the triangle. (1 mark)
- i) Oblique projection is a _____ dimensional drawing. (1 mark)

SECTION B

QUESTION 2

- 2.1. State any three commands that are found on the draw panel. (3 marks)
- 2.2. What is the advantage of using the erase command in AUTOCAD compared to erasing in manual drawing? (2 marks)
- 2.3. State the functions of each of the commands listed below:
 - a) Trim
 - b) Offset
 - c) Copy
 - d) Hatch
 - e) Rotate(5 marks)
- 2.4. Briefly describe how you would draw a line using the line command in AUTOCAD. (5 marks)

SECTION C

QUESTION 3

Make neat sketches of the following convectional representations:

- | | |
|------------------------------|-----------|
| a) Holes on a circular pitch | (2 marks) |
| b) Hollow shaft | (2 marks) |
| c) Square on a shaft | (2 marks) |
| d) Splined shaft | (2 marks) |
| e) Serrated shaft | (2 marks) |

QUESTION 4

Draw a circle of radius 40mm and indicate the following:

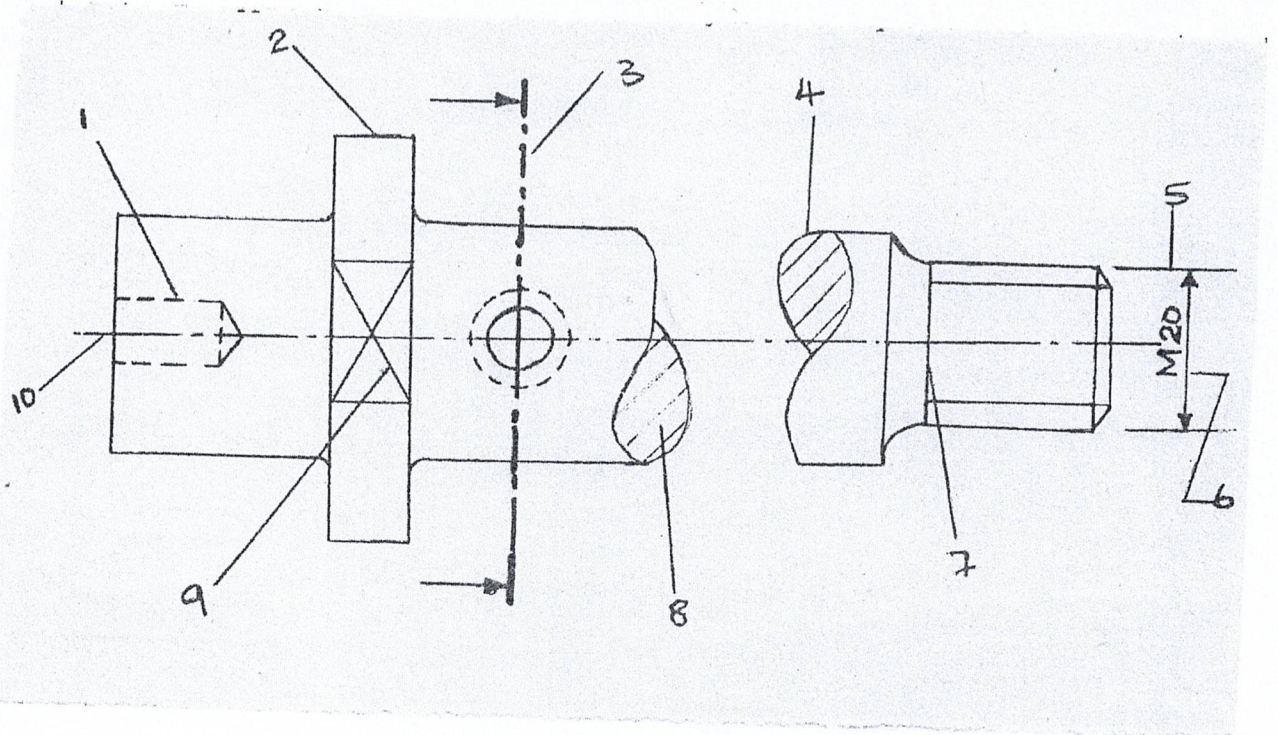
- Radius
- Chord
- Sector
- Diameter
- Tangent
- Normal
- Circumference
- Segment

(10 marks)

QUESTION 5

Draw a regular hexagon with a distance of 60mm across corners. (10 marks)

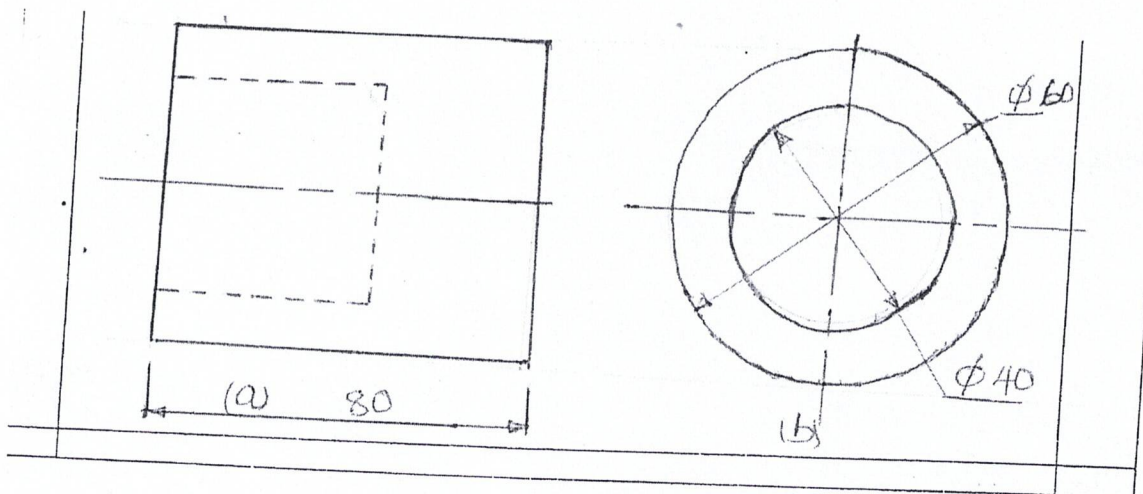
QUESTION 6



Name the type of line indicated 1-10 on the drawing above.

(10 marks)

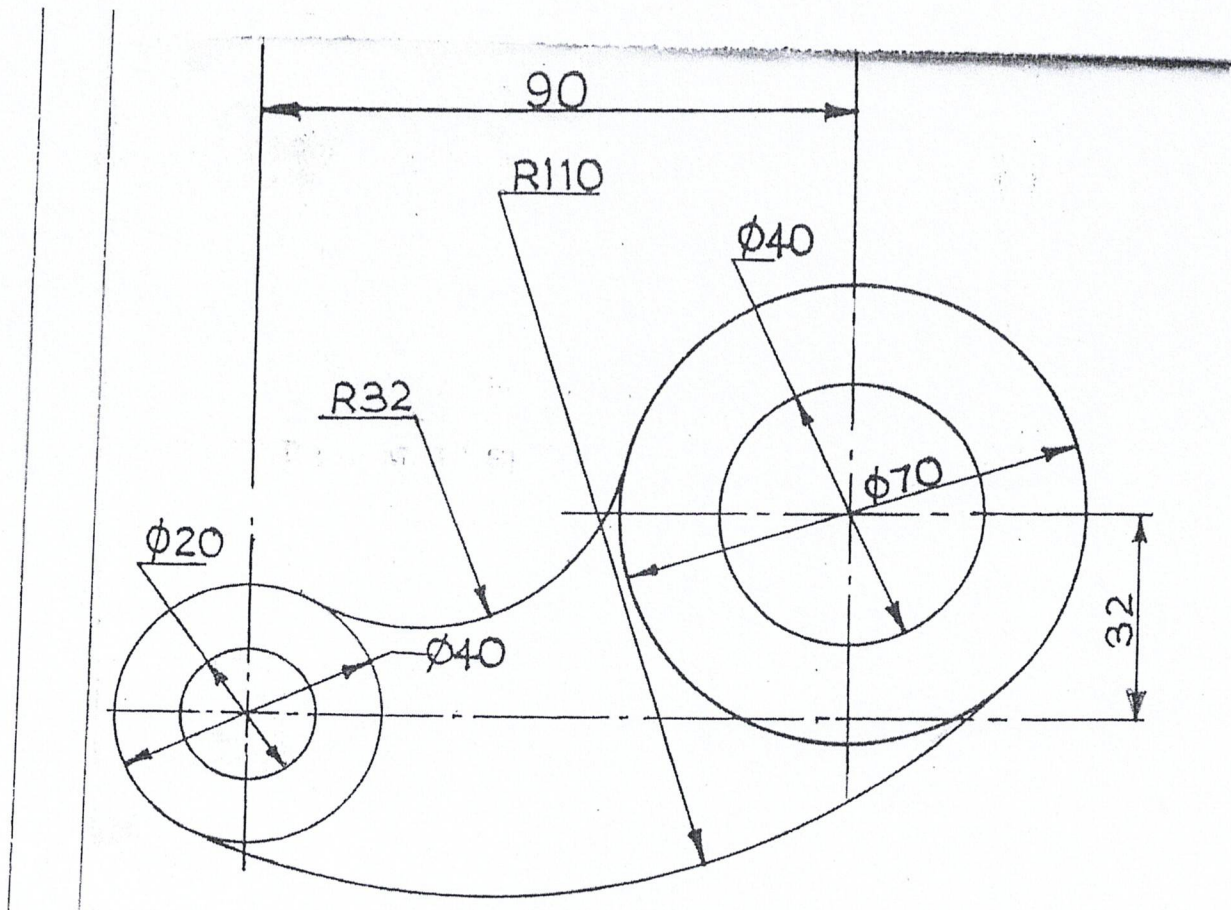
QUESTION 7



The views (a) front and (b) end are drawn in 1st angle projection. Reproduce the views and add the plan.

(10 marks)

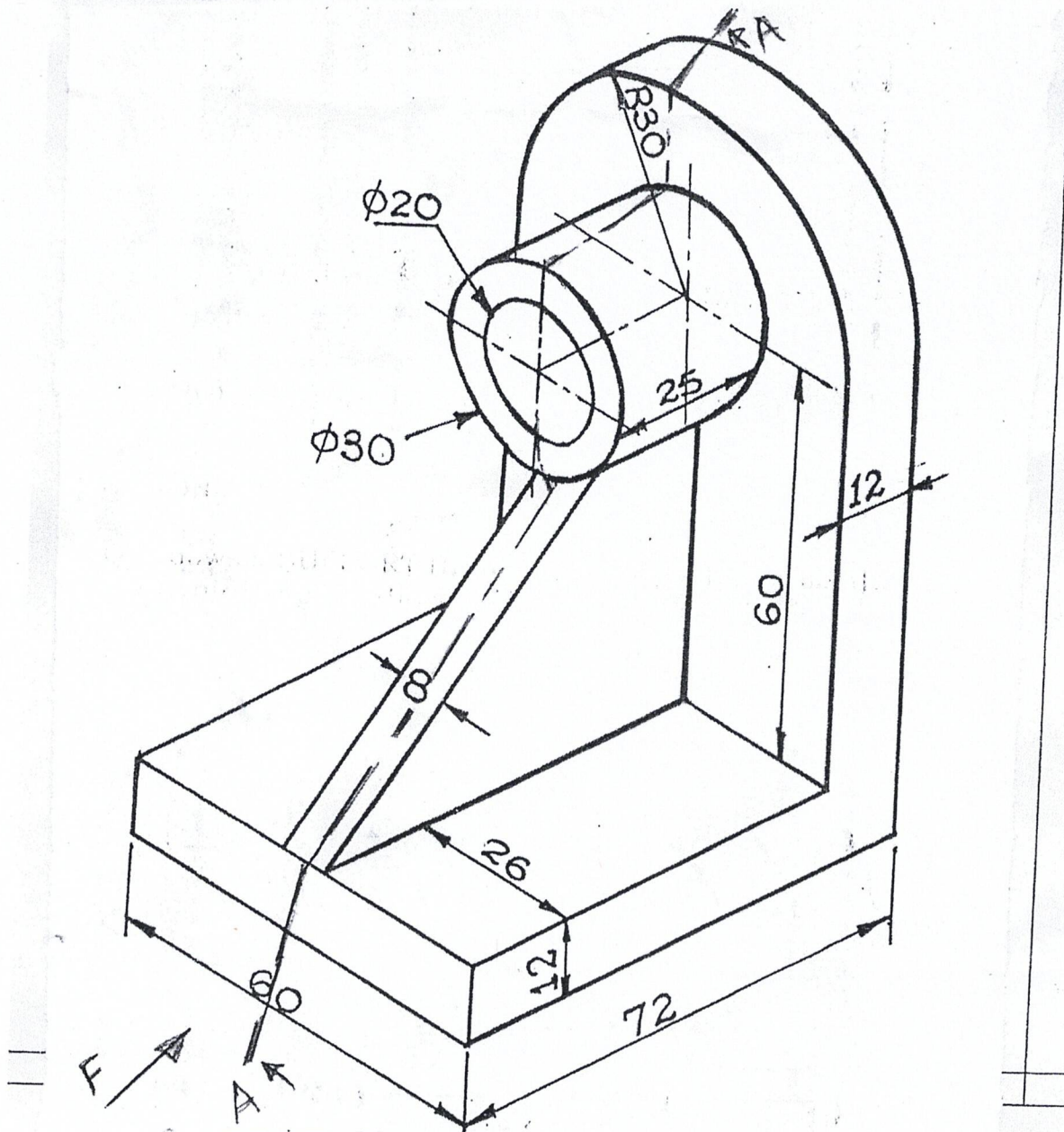
QUESTION 8



Above is a view of a gasket. Reproduce the gasket full size showing all constructions

QUESTION 9

dimensions



In first angle projection draw the following views of the diagram:

- A front angle elevation in the direction of Arrow F.
- A sectional end elevation along cutting plane A-A
- A plan

Include a suitable title block, projection symbol and any 6 dimensions

.../fem