



ZIMBABWE

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

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

DIESEL PLANT FITTING

**MODULE: Undercarriage and Ground
Engaging Equipment Maintenance**

PAPER NO: 319/22/M04

DURATION: 3 Hours

NOVEMBER/ DECEMBER 2025 EXAMINATION

REQUIREMENTS

1. Pen
2. Drawing instruments
3. Answer booklet.

INSTRUCTIONS TO CANDIDATE

1. Section A: answer all questions twenty (20) marks
2. Section B: answer all questions twenty (20) marks
3. Section C: answer all questions sixty (60) marks

PAPER NO: 319/22/M04 – EQUIPMENT AND GROUND ENGAGING
EQUIPMENT MAINTENANCE

SECTION A

QUESTION 1

- a) List two materials which are used in lubricating carrier rollers. (2 marks)
- b) State the function of the equalising bar on an bulldozer. (2 marks)
- c) Give the number of idlers used on a bulldozer with elevated sprocket. (1 mark)
- d) Give functions of the following under- carriage components:
 - i) Hydraulic cylinder (2 marks)
 - ii) Recoil spring (2 marks)
 - iii) Sprocket (2 marks)
 - iv) Idler (2 marks)
 - v) Master link (2 marks)
 - vi) Track shoes (2 marks)
 - vii) Carrier rollers (2 marks)
- e) State the number of idlers used on a convectional undercarriage bulldozer. (1 mark)

SECTION B

QUESTION 2

- a) State any four (4) checks that can be carried on a grader mould board. (4 marks)
- b) Give three (3) benefits of maintenance of mould board of a grader. (3 marks)
- c) List two (2) types of track rollers. (2 marks)
- d) Explain the term track lubricated system. (2 marks)
- e) Explain the term sealed tracks. (3 marks)

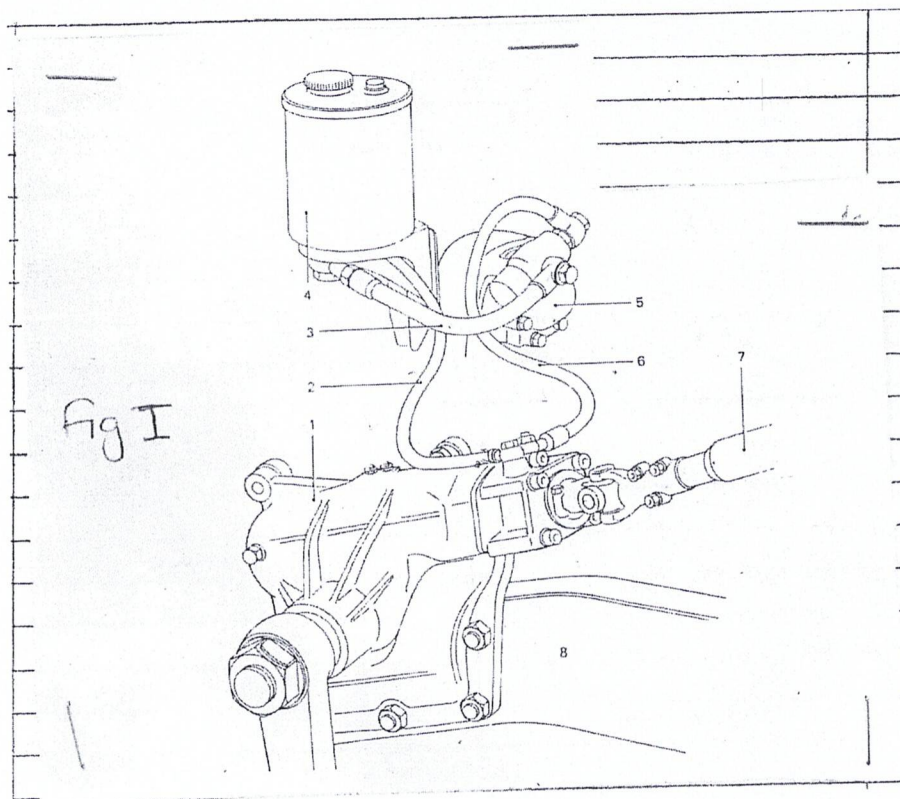
PAPER NO: 319/22/M04 – EQUIPMENT AND GROUND ENGAGING
EQUIPMENT MAINTENANCE

- f) State two (2) advantages and two (2) disadvantages of lubricated track system. (4 marks)
- g) Give the meaning of the hunting tooth on the sprocket. (2 marks)

QUESTION 3

- a) Explain the power flow of an excavator which uses hydraulic motors. (5 marks)
- b) Discuss in detail about how an excavator which uses hydraulic motors achieve turning. (5 marks)

QUESTION 4



- a) Give the name of the steering shown above in fig 1. (2 marks)
- b) Label the following components in fig 1:
1; 2; 3; 4; 5; 6; 7 and 8 (8 marks)

PAPER NO: 319/22/M04 – EQUIPMENT AND GROUND ENGAGING
EQUIPMENT MAINTENANCE

QUESTION 5

- a) State the meaning of the following terms in connection with undercarriage:
- i) Track pitch. (2 marks)
 - ii) Sprocket pitch. (2 marks)
 - iii) Link pitch. (2 marks)
- b) State four (4) effects of loose track chains. (4 marks)

QUESTION 6

- a) State the functions of ribs and cross bars on a multi- purpose tyre. (2 marks)
- b) Give the reason why cross bars are slightly inclined on an off road type. (2 marks)
- c) Define aspect ratio of a tyre. (2 marks)
- d) State the functions of a well on single piece rim. (2 marks)
- e) Give two (2) precautions to be observed when inflating a two (2) piece rim tyre of a front end loader. (2 marks)

QUESTION 7

Explain the procedure ^{of adjusting tracks} elevated sprocket undercarriage. (10 marks)

QUESTION 8

- a) State four (4) effects of using improper ground engaging tools for a particular job. (4 marks)
- b) Give three (3) checks which are carried on a front end loader bucket. (3 marks)
- c) List three areas which you can check for wear on the ripper. (3 marks)