



ZIMBABWE

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

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

AUTOMOBILE ELECTRICS AND ELECTRONICS

**MODULE: Motor Vehicle System
Minor Service**

PAPER NO: 306/22/M02

DURATION: 3 Hours

MAY/JUNE 2024 EXAMINATION

REQUIREMENTS

Pen, pencil, ruler

INSTRUCTIONS TO CANDIDATE

- 1. Answer all questions**
- 2. Section A: (40 marks)**
- 3. Section B: (60 marks)**

This paper consists of 3 printed pages.

SECTION A: ANSWER ALL QUESTIONS (40 MARKS)

QUESTION 1

Define the following engine terms:

- a) i) Valve overlap. (2 marks)
- ii) Valve lag. (2 marks)
- iii) Valve lead. (2 marks)
- iv) Inertia (2 marks)
- b) List and explain four (4) functions of the lubrication oil. (8 marks)
- c) State two purposes of alkaline compounds that are additives in the lubrication oil. (2 marks)
- d) Define engine oil additives. (2 marks)

QUESTION 2

- a) Write the following abbreviations in full:
- i) TDC (1 mark)
- ii) BDC (1 mark)
- iii) SV/Vs (1 mark)
- iv) Cv/Vc (1 mark)
- v) CO_2 (1 mark)
- vi) FWD (1 mark)
- b) List two (2) functions of the engine mounting. (2 marks)
- c) List three (3) types of injector nozzles. (3 marks)
- d) Define the term engine knock. (2 marks)

e)

P
R
D
N
L
S

Give the meaning of the letters represented on the gearlever above. (6 marks)

- f) Explain the purpose of the camshaft. (1 mark)

SECTION B: 60 MARKS

QUESTION 3

- a) Outline any five (5) components and the checks you can carry out on the drive-line (propeller shaft) of a vehicle transmission system. (10 marks)
- b) Identify any five (5) parts of a clutch system. (5 marks)

QUESTION 4

- a) State one cause and solution for the following problems.
- Inefficient brakes. (2 marks)
 - Binding brakes. (2 marks)
 - Excessive pedal travel. (2 marks)
 - Brake bounce. (2 marks)
 - Spongy pedal. (2 marks)
- b) i) State three (3) functions of a gearbox. (3 marks)
- ii) Outline three (3) possible effects of poor lubrication in the gearbox. (3 marks)
- c) State four (4) checks you can carryout on a manual gearbox during service. (4 marks)

QUESTION 5

- a) i) Identify any six (6) angles that are associated with steering geometry. (6 marks)
- ii) State any two (2) effects of an out of balance front wheel. (2 marks)
- iii) State the effects of excessive tyre pressure. (2 marks)

QUESTION 6

- a) State three (3) checks you can carryout on the differential unit during service. (3 marks)
- b) State any two (2) effects of excessive toe-in. (2 marks)
- c) State any five (5) checks and suggest remedies that can be made on the suspension system before carrying out wheel alignment. (10 marks)

.../kj