



ZIMBABWE

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

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

FABRICATION ENGINEERING

MODULE: Steel Components Installation PAPER NO: 324/22/M03

DURATION: 3 Hours

JUNE 2026 EXAMINATION

REQUIREMENTS

1. Answer booklet.
2. Non- programmable calculator.

INSTRUCTIONS TO CANDIDATE

1. Section A consists of five (5) questions. Each question carries six (6) marks. Answer all questions. Total marks 30 marks.
2. Section B consists of four (4) questions. Each question carries 15 marks. Answer any three (3) questions only. Total marks forty-five (45) marks.
3. Section C is a compulsory question. The question carries twenty-five (25) marks.
4. Start each question on a fresh page.
5. Do not write your name inside or outside the answer booklet.
6. Do not write anything in the question paper.

This paper consists of 4 printed pages.

SECTION A

QUESTION 1

- 1.1. a) With reference to hand tools, name three (3) classifications of hand files. (3 marks)
- b) Name one (1) function of the following chisels:
- i) Half round. (1 mark)
- ii) Cross cut (1 mark)
- iii) Diamond point chisel (1 mark)
- 1.2. a) With reference to measuring and marking out, give any two (2) functions of an odd-leg caliper. (2 marks)
- b) State accuracy of the following
- i) Steel rule (1 mark)
- ii) Vernier caliper (1 mark)
- c) Briefly explain the term “parallax error” with reference to measuring and marking. (2 marks)
- 1.3. a) Briefly explain the difference between a jig and a fixture. (2 marks)
- b) Give any four (4) advantages of using jigs and fixtures in the workshop. (4 marks)
- 1.4. With reference to materials, write down any three examples of the following:
- a) Ferrous metal (3 marks)
- b) Non ferrous (3 marks)
- 1.5. a) With reference to arc welding, define the term arc length. (2 marks)
- b) With reference to manual metal arc welding, give the meaning of the electrode code E7013. (4 marks)

SECTION B

QUESTION 2

- a) With reference to joining and fastening, show the application of a taper washer, with the aid of a labelled diagram. (3 marks)
- b) List any five (5) functions of washers on a bolted connections. (5 marks)
- c) State five (5) methods of preventing bolted connections from getting loose. (5 marks)
- d) Name any two (2) types of bolts used in the workshop. (2 marks)

QUESTION 3

- a) With reference to corrosion state any three (3) ways of minimising corrosion in steel components. (3 marks)
- b) Briefly explain the following surface preparation methods, with reference to corrosion:
 - i) Flame descaling (4 marks)
 - ii) Pickling (4 marks)
- c) Explain briefly sacrificial protection method, as used to prevent corrosion. (4 marks)

QUESTION 4

- a) With reference to pipework, state the three (3) types of steel pipes, and give any one (1) example of the applications of each type of steel pipe. (6 marks)
- b) Briefly explain the following pipe bending methods:
 - i) Hydraulic bending (4 marks)
 - ii) Hot bending (5 marks)

QUESTION 5

- a) With reference to lifting equipment, briefly describe the following:
 - i) Sling wire rope (2 marks)

- ii) Spreaders (2 marks)
- iii) Hook (2 marks)
- iv) D- shackle (2 marks)
- v) Eyebolt (2 marks)
- b) List any five (5) advantages of using nylon sling when lifting components in the workshop. (5 marks)

SECTION C

QUESTION 6

- a) Define the following terms as used in structural work:
 - i) Joist (2 marks)
 - ii) Purlin (2 marks)
 - iii) Bracings (2 marks)
- b)
 - i) List any two (2) functions of a stanchion base in structural work. (2 marks)
 - ii) State and explain the two (2) types of stanchion bases in structural work. (6 marks)
- c)
 - i) Give any four (4) applications of cambers in engineering. (4 marks)
 - ii) Construct a camber profile using rectangle method given that the length is 120mm and the height is 40mm. (7 marks)

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