



ZIMBABWE

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

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL DIPLOMA

IN

**CHEMICAL ENGINEERING /APPLIED CHEMICAL TECHNOLOGY/INDUSTRIAL
METALLURGY/METALLURGICAL ASSAYING**

**MODULE: Quality Assurance and
And Quality Control**

PAPER NO: 501/23/M07

DURATION: 3 Hours

NOVEMBER/ DECEMBER 2025 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

1. Answer any five (5) questions.
2. Do not write anything on the question paper.
3. Do not write your name on the answer booklet.
4. Each question carries 20 marks.

This paper consists of 3 printed pages.

QUESTION 1

- a) Explain the importance of having standardised procedures for process operations. (14 marks)
- b) Compare and contrast simple random sampling and stratified sampling. (6 marks)

QUESTION 2

Describe the following stages in a quality audit process.

- a) Planning and preparation (5 marks)
- b) Conducting the audit (5 marks)
- c) Analysis and evaluation (5 marks)
- d) Reporting (5 marks)

QUESTION 3

- a) Discuss the role of a quality inspector in ensuring product quality. (7 marks)
- b) Describe the challenges faced during quality inspections and how they can be addressed. (10 marks)
- c) Define quality inspection and explain its importance in the manufacturing process. (3 marks)

QUESTION 4

- a) Explain the importance of proper storage conditions for certified reference materials (CRMs) and describe the key factors that must be controlled to ensure their stability. (10 marks)
- b) Discuss the handling procedures for certified reference materials (CRMs) to ensure their integrity and reliability during use. (10 marks)

QUESTION 5

- a) Describe the following acceptance sampling plans
- i) Single (2 marks)
 - ii) Double (2 marks)
 - iii) Multiple (2 marks)
 - iv) Sequential (2 marks)
 - v) Skip- lot (2 marks)
- b) Explain the following terms;
- i) Error (2 marks)
 - ii) Homogeneity (2 marks)
 - iii) Uncertainty (2 marks)
 - iv) Quality (2 marks)
 - v) Quality manual (2 marks)

QUESTION 6

- a) State any five (5) quality control tools. (5 marks)
- b) Differentiate between the following;
- i) Rectifying versus non- rectifying inspection. (5 marks)
 - ii) Incoming versus outgoing inspection. (5 marks)
 - iii) Sampling by attributes versus sampling by variables. (5 marks)



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NATIONAL DIPLOMA

IN

APPLIED CHEMICAL TECHNOLOGY

MODULE: Process Instrumentation and Control II PAPER NO: 501/23/M04

DURATION: 3 Hours

JUNE 2026 EXAMINATION

REQUIREMENTS

Answer booklet

INSTRUCTIONS TO CANDIDATE

- 1. Answer any five (5) questions.**
- 2. Each question carries 20 marks.**

This paper consists of 3 printed pages.

QUESTION 1

- a) Define management. (2 marks)
- b) Discuss the roles of a manager. (12 marks)
- c) List the steps involved in the decision-making process. (6 marks)

QUESTION 2

Describe how you would motivate employees using Maslow's hierarchy of needs.
(20 marks)

QUESTION 3

Discuss the following leadership styles:

- a) Autocracy (5 marks)
- b) Persuasive (5 marks)
- c) Consultative (5 marks)
- d) Democracy (5 marks)

QUESTION 4

Outline the following management function in an organisation:

- a) Planning (5 marks)
- b) Organisation (5 marks)
- c) Leading (5 marks)
- d) Controlling (5 marks)

QUESTION 5

Discuss the importance of effective decision making in personal and professional settings. Explain the stages involved in the decision making process and highlight the factors that can influence decision making. (20 marks)

QUESTION 6

- a) Explain the importance of improving the following areas in an organisation:
- i) Staff development (4 marks)
 - ii) Adherence to set standards (4 marks)
- b) Discuss the following in relationship to planning:
- i) Importance (4 marks)
 - ii) Problems (4 marks)
 - iii) Reasons (4 marks)

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**MODULE: Process Instrumentation and
Control II**

PAPER NO: 501/23/M04

DURATION: 3 Hours

NOVEMBER/DECEMBER 2025 EXAMINATION

REQUIREMENTS

Answer booklet.

INSTRUCTIONS TO CANDIDATE

- 1. Answer any five questions.**
- 2. Each question carries 20 marks.**
- 3. Do not write your name on the answer booklet.**

This paper consists of 2 printed pages.

QUESTION 1

Discuss the role of a manager in an organisation. (20 marks)

QUESTION 2

Outline the advantages and disadvantages of delegation of duties as a leader. (20 marks)

QUESTION 3

Discuss the following planning tools

(a) Gantt chart (10 marks)

(b) network analysis (10 marks)

QUESTION 4

Planning is an important tool in an organisation. Discuss. (20 marks)

QUESTION 5

Explain the following types of motivation:

(a) intrinsic motivation (10 marks)

(b) extrinsic motivation (10 marks)

QUESTION 6

Describe the factors affecting location, design and layout of a science laboratory. (20 marks)

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