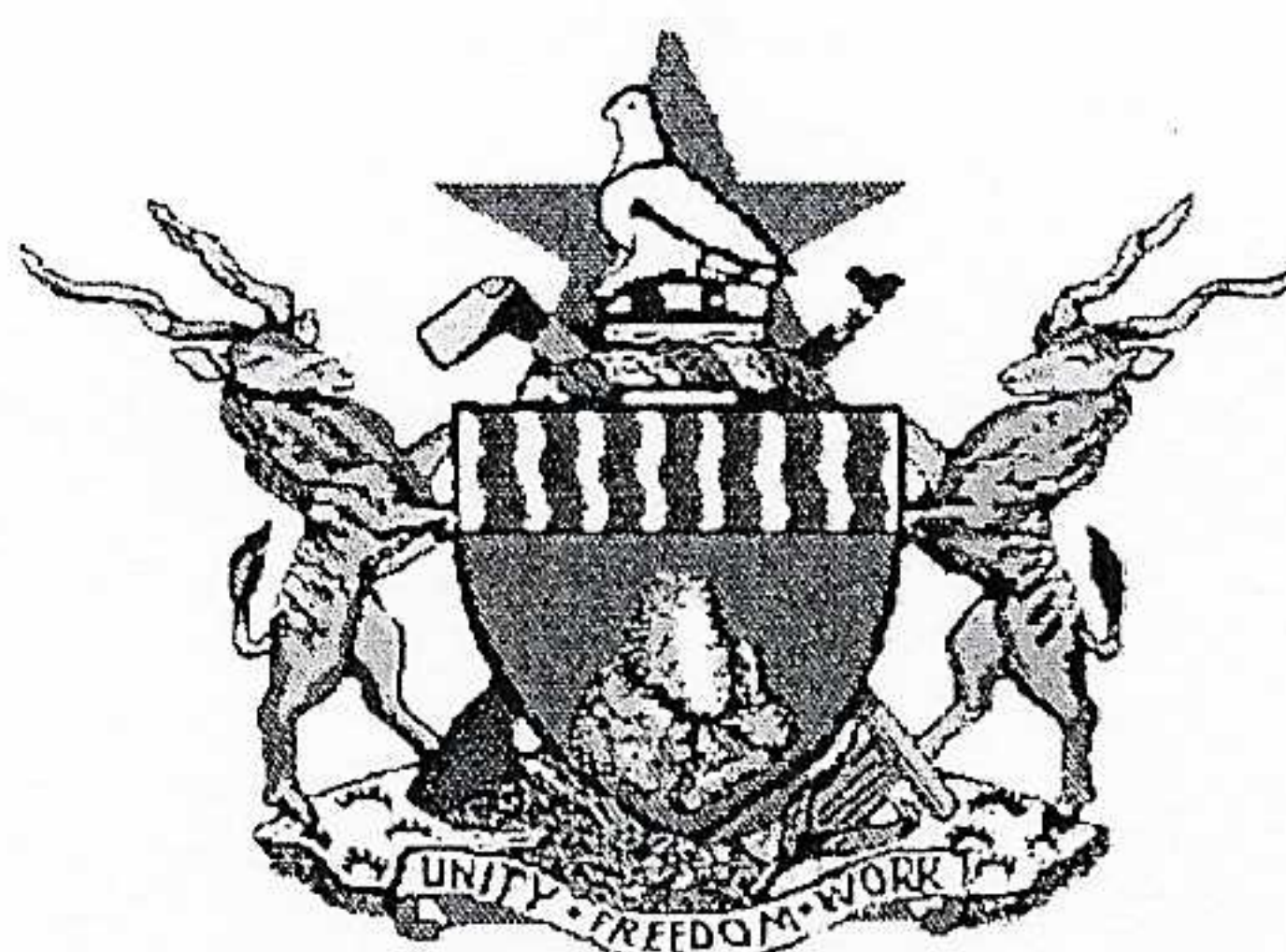




ZIMBABWE

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

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL DIPLOMA

IN

INFORMATION TECHNOLOGY

MODULE: Research and Project Management PAPER NO: 553/23/M10

DURATION: 3 Hours

JUNE 2026 EXAMINATION

REQUIREMENTS

- 1) Answer booklet
- 2) Non programmable calculator
- 3) Graph paper
- 4) Formula booklet and statistical tables

INSTRUCTIONS TO CANDIDATE

- 1) Answer all questions.
- 2) Show all essential working.
- 3) If degree of accuracy is not specified in the question, give answer correct to 3 significant figures.

This paper consists of 3 printed pages.

QUESTION 1

- a) A cyber security team has implemented a new intrusion detection system. Explain how they could evaluate its effectiveness from both a qualitative and quantitative perspective. (8 marks)
- b) Differentiate between descriptive and analytical research, providing one scenario where each type would be appropriate. (8 marks)
- c) Explain any two (2) objectives of research. (4 marks)

QUESTION 2

- a) The weight (in kgs) of 20 athletes are grouped into the following classes

Weight (kg)	50-55	56-60	61-65	66-70	71-75
frequency	3	7	5	3	2

- i) Draw a frequency polygon using the above data. (5 marks)
- ii) Describe the distribution of weights. (2 marks)
- b) Imagine you are the project manager at the Ministry of ICT and you want to conduct a study to identify the IT skills gap among recent graduates. You want to survey graduates from both universities and polytechnics. Which sampling technique would be most appropriate? Provide an explanation for your choice. (5 marks)
- c) i) Compare and contrast questionnaires and interviews as data collection methods. (6 marks)
- ii) Explain how document analysis can be a valuable tool in research. (2 marks)

QUESTION 3

- a) In a large software development project, on average 3 out of every 5 code modules contain a minor bug. A random sample of 10 code modules is selected. Find the probability that:
- i) Exactly 6 modules contain a minor bug. (2 marks)
- ii) Less than 9 modules contain a minor bug. (4 marks)
- b) The size of data packets transmitted on a network can be modelled by a normal distribution with a mean of 25,8KB (kilobytes) and a standard deviation of 0.5kb. Determine the probability that a randomly selected data packet will have a size:

- i) Less than 25KB (3 marks)
- ii) Between 25.5KB and 26.5KB (4 marks)
- c) A network administrator suspects that a recent software update has increased the average latency on the company's network. They want to conduct a hypothesis test to investigate this:
 - i) Formulate the appropriate null and alternative hypothesis for this situation. (3 marks)
 - ii) Explain what rejecting the null hypothesis would mean in this context. (4 marks)

QUESTION 4

- a) Draw a network diagram and find the critical path for the project

Activity	Preceding activity	Duration (days)
A		3
B	A	5
C	A	4
D	B	6
E	B,C	7
F	D,E	4

(10 marks)

- b) Explain how a project manager can effectively communicate project status to stakeholders. (6 marks)
- c) Outline the concept of Net Present Value (NPV) in project evaluation. (4 marks)

QUESTION 5

- a) A local bank in Harare is developing a new mobile banking app targeting young adults. Explain the key factors that could affect the successful adoption and usage of this app, focusing on elements that drive innovation in mobile financial technology. (10 marks)
- b) Describe how to track project effort and cost. (4 marks)
- c) Explain any two (2) strategies for ensuring adherence to the project plan and maintaining project scope. (6 marks)

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