

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY



SSC3103

FACULTY OF APPLIED SCIENCE

DEPARTMENT OF SPORTS SCIENCE AND COACHING

BACHELOR OF SCIENCE HONOURS DEGREE IN SPORTS SCIENCE AND COACHING

**CONVENTIONAL/BLOCK RELEASE PROGRAMME**

SSC3103: LABORATORY TECHNIQUES IN SPORT SCIENCE

**SPECIAL EXAMINATION QUESTION PAPER**

**MARCH 2025**

This examination question paper consists of 2 pages

TIME ALLOWED: 3 HOURS  
TOTAL MARKS: 100  
SPECIAL REQUIREMENTS: NIL  
EXAMINER'S NAME: Mrs P Masaga

INSTRUCTIONS

- 1) Answer any 4 questions.
- 2) Each question carries 25 marks.
- 3) Where a question contains subdivisions, the mark value for each subdivision is given in brackets.
- 4) Illustrate your answer where applicable with clearly labeled diagram.

MARK ALLOCATION

QUESTION	MARKS
1.	25
2.	25
3.	25
4.	25
5.	25
6.	25
TOTAL	100

1. What are the primary methods used to measure  $VO_2$  max in a laboratory setting, and why is it an important metric for athletes? **(25 Marks)**
2. Body Mass Index (BMI) IS a technique for assessing body composition in athletes.
  - i. What is the methodology behind calculating BMI, and how is it commonly interpreted in the context of body composition? **(8 Marks)**
  - ii. What are the advantages of using BMI to assess body composition, particularly in large-scale studies or general health screenings? **(10 Marks)**
  - iii. What limitations or challenges arise when applying BMI to athletes, and how might these affect its accuracy as a measure of body composition? **(7 Marks)**
3. How do blood lactate testing procedures help in determining an athlete's anaerobic threshold, and how can this data be applied in training programs? **(25 Marks)**
4. It is important to adhering to safety protocols in a sports science laboratory.
  - i. What are the key personal protective equipment (PPE) items required in a laboratory, and how do they minimize risks to researchers and participants? **(9 Marks)**
  - ii. Explain the steps involved in safely handling and disposing of hazardous materials commonly used in sports science experiments. **(8 Marks)**
  - iii. Discuss the emergency procedures that should be in place to address accidents such as chemical spills, fire, or equipment malfunctions in a laboratory. **(8 Marks)**
5. How is electromyography (EMG) used to analyze muscle activation patterns, and what are its applications in sports performance research? **(25 Marks)**
6. Describe the impact of sports technology on athlete monitoring and performance analysis in sports science, including benefits, limitations, and future directions. **(25 Marks)**

**END OF EXAMINATION**