

## BINDURA UNIVERSITY OF SCIENCE EDUCATION

## FACULTY OF SCIENCE AND ENGINEERING

## DEPARTMENT: SPORTS SCIENCE

## MASTER OF SCIENCE DEGREE IN SPORTS SCIENCE

## SS 502: PHYSIOLOGY AND BIOCHEMISTRY OF PHYSICAL ACTIVITY

DURATION: 3 HOURS

TOTAL MARKS: 100

## INSTRUCTIONS TO CANDIDATES

Section A is compulsory.

Answer **three** questions from Section B.

Exam 2

NOV 2023

**Section A**

1. Compute total work and power output per minute for 10 minutes of treadmill exercise, given the following: **40 Marks**

Treadmill grade = 15%

Horizontal speed = 90 m\*min

Subject's weight = 70 kg

**Section B.**

2. Calculate net efficiency, given the following: **20 Marks**

Resting VO<sub>2</sub> = 0.3 L\*minExercise VO<sub>2</sub> = 2.1 L\*min

Resistance against the cycle flywheel = 2kg

Cranking speed = 50 rpm

Distance travelled per revolution = 6 metres.

3. Define preload, afterload, and contractility, and discuss the role of each in the increase in the maximal stroke volume that occurs with endurance training. **20 Marks**

4. Explain how endurance training improves acid-base balance during exercise. **20 Marks**

5. Give examples and explain six sports that use each energy system as their primary source of energy (two sports for each energy system). **20 Marks**

(a) The high-energy phosphate system

(b) The anaerobic glycolytic system

(c) The aerobic oxidative system

6. A 1500-meter runner is experiencing a drop in performance at the last lap of the race. From a biochemical point of view explain, where you would direct the training. **20 Marks**

**END OF PAPER**