

BINDURA UNIVERSITY OF SCIENCE EDUCATION
FACULTY OF SCIENCE AND ENGINEERING
DEPARTMENT: SPORTS SCIENCE
MASTER OF SCIENCE DEGREE IN SPORTS SCIENCE
SS503 BIOMECHANICS FOR HUMAN MOVEMENT

DURATION: 3 HOURS

TOTAL MARKS: 100

(PLUS 15 MINUTES FOR PRACTICAL PREPARATION/CASE READING)

INSTRUCTIONS TO CANDIDATES

Section A is **compulsory**.

Answer **three** questions from Section B.

NOV 2021

Section A

Question 1:

Thabani, a volleyball player, has been struggling with increasing jump height for spiking. Despite putting in extra effort, he's not achieving the desired height. You observe that he bends his knees deeply before jumping and lands with his knees collapsing inward. How can Thabani improve his jumping mechanics to maximize his jump height and prevent potential injuries? **[40 Marks]**

Section B.

2. Describe the role of joint torque in producing human movement. Provide an example of how torque is influenced by muscle force and lever arm. **[20 Marks]**
3. Explain the difference between open and closed kinetic chain movements. Provide an example of
4. Analyse the biomechanics of running gait. What factors contribute to efficient running mechanics and injury prevention? **[20 Marks]**
5. Describe the biomechanical factors influencing stability and balance in elderly individuals. What interventions mitigate the risk of falls? **[20 Marks]**
6. How does joint congruency affect joint stability and load distribution? Provide an example of a congruent joint and discuss its benefits. **[20 Marks]**

END OF PAPER