

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

SSC2206

FACULTY OF APPLIED SCIENCES

BACHELOR OF SCIENCE HONOURS DEGREE EXAMINATIONS

DEPARTMENT OF SPORTS SCIENCE AND COACHING

THEORY: SSC2206: EXERCISE PHYSIOLOGY AND BIOCHEMISTRY

3 HOURS (100 MARKS)

INSTRUCTIONS

Answer 4 questions only. Each question carries 25 marks. Where a question contains subdivisions, the mark value for each subdivision is given in brackets. Illustrate your answer where appropriate with large clearly labeled diagrams.

1. Two trained swimmers decide to have a swimming marathon against each other by swimming across a lake that is 10 km in diameter. The water is at a temperature of 10°C. They meet at 9am and dive into the water soon after meeting. Swimmer A swims faster than swimmer B and soon is 100 meters ahead of his opponent. Fifteen minutes later swimmer A begins shouting and is seen holding his legs because of severe leg cramps. He forfeits the race and is rescued by a nearby boat because he is not able to swim back to shore. Explain what might have happened in terms of time of day vs. mealtimes, speed of swimming and water temperature. [25 marks]
2. A group of girl wrestlers in high school decided to go together to a park for a braai. They decided to run there since it was only 10 km away. Some of the girls outran the others by 1-2 km. While they were eating they discussed why some had outran the others. What might have been the causes and why? [25 marks]
3. Before a major soccer match the players on a team had their ECG's taken. The team physician noticed that player A's ECG showed reduced myocardial mass in the right ventricle and player B's ECG showed reduced myocardial mass in his left ventricle. What might happen to the performances of these two players and why? Explain in terms of their physiology. [25 marks]
4. Patience Dube decided to try using a nitrogen mask at night to possibly improve her performance in the Olympics. She was a very muscular weight lifter and wanted to "go for the gold". Why would or why wouldn't this mask improve her performance. [25 marks]
5. One member of the men's volleyball team had a sore throat and a body temperature of 38°C. His coach expressed concern but the player said that he would perform normally. Since the team didn't have a Sports Scientist what mistake might the coach make with regards to letting this man play? How would the player's performance and health be affected and why? [25 marks]

6. A 26 year old Norwegian was on the Olympic ski-shoot team. Because of his high blood pressure he took beta blocker medicine daily. It did keep his blood pressure at normal levels. On the contrary, what would it probably do to his performances and why?

[25 marks]

END OF EXAMINATION