**ST MARY’S UNIVERSITY**

**TWICKENHAM, LONDON**

BA/BA(ITT)/BSc Degree Examination students registered for

Level **FIVE**

Title**: Physiology of Training**

Code: **SPS5011**

Semester: **Resit**

Date: **04 July 2019**

Time: **13:30-15:30pm**

TIME ALLOWED: **TWO** HOURS

**(SECTION A:** Answer **ALL** questions from this section (70% total marks))

**(SECTION B:** Answer **ALL** questions from this section (30% total marks))

**Section A:**

1. What are the key regulatory enzymes of glycolysis? (3 marks)
2. Rank the following in the order of fastest rates of ATP resynthesis: Beta-oxidation, anaerobic glycolysis, PCr system, aerobic glycolysis. (4 Marks)
3. What are the four by-products (metabolites) generated by the Krebs cycle? (4 marks)
4. Name the missing enzyme in the chemical reaction below: (1 mark)

ADP + PCr + H+ ← ? → ATP + Cr

1. What is Henneman’s size principle? (2 marks)
2. Which neurological adaptations contribute to an increase in strength and RFD? (3 marks)
3. The recommended training intensity for endurance training is said to be 50% of 1RM. TRUE or FALSE? (1 mark )
4. Explain what is meant by the term ‘maximal rate of force development’ in muscular contraction? (3 marks)
5. What is an Enzyme? (2 marks)
6. What chemical triggers the sliding of muscle filaments? (1 mark)
7. What are the three components that make up the thin filaments in a sarcomere? (3 marks)
8. Describe four adaptations that occur in the cardiovascular system following a prolonged period of endurance training. (4 marks)
9. The highest reported value for cardiac output in a highly trained athlete is approximately 20 L.min-1. TRUE or FALSE? (1 mark )
10. Baroreceptors, chemoreceptors, mechanoreceptors are feedback mechanisms that help regulate which whole body system? (2 marks)
11. How does the function of systemic circulation differ from that of pulmonary circulation? (4 marks)
12. Define cardiac output (2 marks)
13. What is the VO2 slow component? (3 marks)
14. What is the difference between absolute and relative VO2max (2 marks)
15. If ventilation is the movement of gases in and out of the lung, what is respiration? (3 marks)
16. Inorganic phosphate (Pi) has been proposed to cause fatigue during exercise: by which mechanism does this work? (4 marks)
17. Why is aerobic fitness an important component of sports that also have large anaerobic components? (4 marks)
18. What units are used to measure blood lactate? (1 mark)
19. The pH scale is used to measure acid-base balance, pH stands for the ‘potential of \_\_\_\_\_\_\_\_\_’ (1 mark)
20. What is a buffer? (1 mark)
21. If calcium release from the sarcoplasmic reticulum decreases, what effect does this have on muscular contraction? (3 marks)
22. What do we mean by the term peaking when referring to a training programme? (2 marks)
23. Name two principle intracellular buffer systems of hydrogen ions (H+) in the body used during high intensity exercise. (2 marks)
24. The respiratory exchange ratio is calculated from which two measures? (2 marks)

**Section B:**

Discuss the determinants of VO2max and how the responses to exercise training influence the contribution to VO2max. (30 marks)

**END OF EXAMINATION**