Summer Examinations 2016

SPO200316N

Module Title The Physiological Basis of Sport and Exercise
Level Five
Time Allowed Two hours

Instructions to students:

- Enter your student number not your name on all answer books.
- Answer two of the five questions.
- All questions are equally weighted.
- Begin each question in a separate answer book; label each answer book clearly with the number of the question you are answering.
- The same material should not constitute a substantial part of more than one question.
- Neither books nor notes may be taken into the examination.
- Students are not permitted to remove this examination paper from the examination room. For all purposes the examination paper remains the property of the University of Northampton.

<table>
<thead>
<tr>
<th>No. of Pages</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Questions</td>
<td>5</td>
</tr>
</tbody>
</table>
Answer **two** out of **five** questions

1. Nutritional fatigue may cause endurance athletes to underperform. Define the term nutritional fatigue and explain in detail why increasing the athlete’s intake of carbohydrates may offset this type of fatigue. Then describe how carbohydrates may be used prior to an event to aid performance.

2. The partial pressure of oxygen and carbon dioxide in the circulatory system determines the concentration of these gasses within the blood system. Describe in detail how gas partial pressures affect diffusion gradients and oxygen’s saturation of haemoglobin. Then give a detailed explanation of the phenomenon known as the ‘Boar Shift’.

3. The two primary hormones which affect blood glucose levels are insulin and glucagon. Explain in detail how these hormones work together to maintain glucose levels within the blood and active muscles. Also discuss how the cells sensitivity to these hormones are regulated during exercise.

4. The majority of ATP produced during aerobic metabolism is synthesised via the transportation of Hydrogen donated electrons through the Electron Transport Chain (ETC). Describe how Hydrogen is transported to the ETC and then give a detailed explanation of how ATP is produced during the ETC stage of aerobic metabolism.

5. Neuromuscular fatigue is considered to be associated with a failure to maintain an action potential across the neuromuscular junction. Explain how the physiological process of neuromuscular fatigue occurs at the neuromuscular junction and describe in detail how these physiological changes specifically affect the transmission of a nerve impulse across the neuromuscular junction.

---

End of Paper