Module Title: Applied Physiology for Sport
Level: Five
Time Allowed: Two hours

Instructions to students:

- Enter your student number **not** your name on all answer books.
- Answer **three** questions out of **five**.
- All questions are equally weighted.

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Answer three questions out of five

1. The delivery of oxygen to the exercising muscles is a vital process in the production of energy for athletic performance. **Describe** in detail the two main ways in which oxygen is transported in the blood system. Then through the use of the oxyhaemoglobin disassociation curve explain how changes to the partial pressure of oxygen facilitate the diffusion of the gas into and out of the blood system.

2. Over a period of time the body undergoes specific adaptations relating to the type, duration and intensity of a training programme. **Explain** in detail the chronic peripheral adaptations that take place due to anaerobic training and discuss how they may facilitate an improvement in performance.

3. During the London Marathon athletes utilise all of the energy systems at some time in the race. **Describe** in detail ATP production in the predominant energy system utilised throughout the race. Then determine which energy system is dominant at which particular stage of the race.

4. The human immune system is a highly complex array of cells which regulates susceptibility to, severity of, and recovery from infection (Nash, 1994). **Briefly describe** the immune system and its function. Then give a detailed description of the system’s B cell response to an individual pathogen, and discuss the immune system's response to a single bout of exercise.

5. The formation of lactic acid is associated with the onset of muscular fatigue during high intensity exercise. **Discuss** why and at what point during exercise lactic acid starts to accumulate. Then explain in detail how elevated levels of lactic acid indirectly result in an inability to maintain a muscle action.