

Personal Development, Health and Physical Education

Section I – Part B (continued)

In your answers you will be assessed on how well you:

- demonstrate an understanding of health and physical activity concepts
- apply the skills of critical thinking and analysis
- illustrate your answer with relevant examples
- present ideas in a clear and logical way

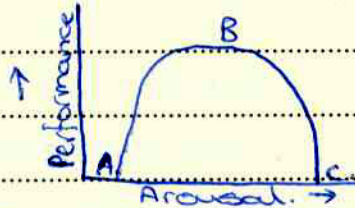
Marks

Question 22 — Factors Affecting Performance (20 marks)

(a) Describe how an athlete's level of arousal affects performance.

4

Arousal can both negatively and positively affect athletic performance. The "optimum" level of arousal is determined by the "Inverted U hypothesis" and differs for various sports.



Optimum arousal is attained at point "B" on the curve. Underarousal and overarousal will impact negatively on performance. Overarousal can be managed by a number of relaxation techniques i.e. deep breathing, centred breathing, visualisation. Sports such as archery require a low level of arousal to be optimum, but sports such as football, or soccer

Question 22 continues on page 14

need high levels to maximize performance.

Question 22 (continued)

- (b) Discuss how prescribed judging criteria are used to measure the quality of a performance.

6

Prescribed judging criteria are those that have been issued to the judge with sufficient time to consider them before the event. Prescribed judging criteria aim to make the measurement of performance as objective as possible. Naturally, the judge will bring some preconceived, subjective criteria, but ~~this~~ the impact this will have, accompanying prescribed criteria ~~to~~ will in most cases be minimal. Prescribed criteria can be used in most sports. Some sports, i.e. basketball, do not require prescribed criteria, i.e. statistics on rebounds, shots, layups etc, ~~but is useful~~ It is not used to determine the final score, but measures individual performance. However, prescribed criteria is essential in sports that are highly subjective, i.e. dance and gymnastics. Prescribed criteria in this case may be - use of floor space, use of music, presentation, personality, posture. While these prescribed criteria add to the validity of the score, their ^{degree of} reliability lies with the honesty of the judge.

Question 22 continues on page 15

Question 22 (continued)

- (c) Analyse the physiological adaptations that occur when an untrained individual undertakes a 20-week aerobic training program.

10

The immediate physiological adaptations that occur on commencement of exercise include increased heart rate, increased ventilation rate, increased stroke volume, increased cardiac output and increased lactate development. Upon initially beginning this program, these factors would have increased remarkably in response to physical activity, as the body ^{was} ~~is~~ not conditioned to withstand and cope with the physiological demands on the body. However, in this case, the untrained individual has undertaken a 20-week aerobic training program. During this time, the body will have adapted significantly to the stresses produced by physical activity, and physiological adaptations will have occurred accordingly. These include:

- Decreased resting heart rate - a slower resting heart rate indicates an increased ability of the heart to pump blood, as well as an increased ability of the body and muscles to use the oxygen carried in the blood effectively.

A decreased resting heart rate indicates a

Question 22 continues on page 16

Question 22 (continued)

- filter, better conditioned individual.
- Increased stroke volume - Stroke volume is the ~~stroke~~ amount of blood ejected from the left ventricle during contraction. On training this is increased as, in response to the aerobic nature of the program, the heart becomes stronger. Therefore, because of increased stroke volume, there is an increase in blood flow from the heart, therefore an increase in oxygen available to the working muscles.
 - ~~Increased~~ increased cardiac output - cardiac output is the amount of blood pumped from the heart. This is determined by heart rate \times multiplied by stroke volume. Due to the increase in stroke volume, cardiac output is increased.
 - Increased oxygen uptake - ~~At~~ ~~the~~ ~~as~~ ~~is~~ ~~directly~~ ~~due~~ ~~to~~ ~~improved~~ ~~functioning~~ ~~of~~ ~~the~~ ~~heart~~ ~~and~~ ~~lungs~~.
 - Increased ability to remove lactate - lactate is a salt formed by lactic acid build up. Training helps to develop lactate clearance mechanisms.
 - Increased haemoglobin levels - Due to increased oxygen uptake and lung + heart functioning.
 - Decreased blood pressure - most significant in those with high blood pressure.
 - Lung capacity - varies little, however improvements can be seen in residual volume - lower, and ~~total~~ vital capacity - slightly increased.

End of Question 22