

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

An athlete's level of arousal can be shown in the inverted U hypothesis. Optimal arousal ~~is~~ is indicated not by a particular point but by a band of performance. An athlete who is over-aroused can be too aggressive in their approach, which could lead to mistakes, and a reduced level of performance. eg. an over-aroused dart player will find it hard to focus and concentrate. An under-aroused athlete can find it hard to maintain motivation, and can find an activity which requires a level of concentration or aggression difficult to their lack of focus or disinterest. eg. An under-aroused boxer. Each athlete has their own personal level of arousal, shown by the individual zone of optimal functioning. (IZOF). The athlete performs best when the arousal levels are suited to their personal preference.

inv. U.  
IZOF  
over/under  
aroused.

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## Question 22 (continued)

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

6

objectivity.

Prescribed judging criteria, when used to describe the quality of a performance, can be an ~~subjective~~ accurate measure of that performance by providing a set of criteria that can easily be identified. Eg. quantitative ~~and~~ results such as (% of 1st serves in, Forehand winners, Errors at net etc.) in tennis can be translated into a measure of overall performance.

Criteria that is judged by individuals can include gymnastic routines or diving results, and can be highly subjective. To reduce any element of subjectivity or bias, a wide range of judges should be used, and the criteria should be easily defined for interpretation. The focus with judging criteria should be to always reduce the level of subjectivity, and to make the result as objective as possible.

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## Question 22 (continued)

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

10

When an untrained individual undergoes a 20-week aerobic program, some immediate responses can be seen. When exercise is first commenced, the heart rate will increase dramatically compared to the resting heart rate. Over time, this resting heart rate will lower slightly, as will the working heart rate. This is a sign of a positive physiological adaptation and an increased level of fitness.

responses.  
eg:  
heart rate / resting  
stroke volume  
cardiac output  
haemoglobin  
Lactate levels.

The untrained person's stroke volume (amount of blood pumped by the heart in one beat) and cardiac output (amount of blood pumped in one minute) will initially be quite low. As the body adapts to the rate of exercise, the stroke volume and cardiac output will increase, as the heart becomes strengthened and is able to efficiently deliver the blood throughout the body.

An untrained athlete would find the first 6-8 weeks of the program quite difficult, as the body is not

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Question 22 (continued)

used to the rate of exercise. This would mean that the lactic acid level in the glycogen stores in the muscles would be quite high. As the athlete increases their fitness levels, the body begins to develop a lactic tolerance within the muscles. This would mean that the body is more able to combat lactic acid buildup in the muscles, and therefore lactate levels will be lower.

The Haemoglobin present in the blood system in an untrained athlete would be of a low to moderate level. As oxygen consumption and delivery to the blood supply is enhanced and more efficient, the Haemoglobin levels present in the blood stream would be higher.

These adaptations will improve the athlete's overall cardiovascular fitness, as well as their ~~the~~  $\dot{V}O_{2\max}$ . Their ability to circulate blood and oxygen will increase, as will their availability of glycogen in their muscles.

End of Question 22