Yr 11 ATAR Physical Education Studies

Semester 1 Exam 2022 - Marking Key

**SECTION ONE: MULTIPLE CHOICE** **(20 marks)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Q** | **A** |  | **Q** | **A** |  | **Q** | **A** |  | **Q** | **A** |
| 1. | b |  | 6. | d |  | 11. | c |  | 16. | d |
| 2. | c |  | 7. | d |  | 12. | b |  | 17. | b |
| 3. | d |  | 8. | b |  | 13. | a |  | 18. | a |
| 4. | a |  | 9. | d |  | 14. | a |  | 19. | b |
| 5. | b |  | 10. | b |  | 15. | c |  | 20. | d |

**SECTION TWO: SHORT ANSWER (50 MARKS)**

**Question 1 (12 marks)**

The human body uses 3 Energy Systems to provide the energy needed to re-form ATP. Complete the following table to show the duration, fuel used and by-products of each system plus an example of an athletic event that primarily uses each system.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Energy System | Duration  1 mark | Fuel  1 mark | By-products  1 mark | Example  1 mark |
| ATP-CP | *Up to 10 sec* | *Creatine phosphate* | *None* | *Acceptable answer i.e. 100m sprint* |
| Lactic Acid | *Up to 2 min* | *Glucose/*  *carbohydrates* | *Lactic acid* | *Acceptable answer i.e. 400m sprint* |
| Aerobic | *2-3 hours* | *Carbohydrates, fats and protein* | *Carbon dioxide and water* | *Acceptable answer i.e. marathon* |

**Question 2 (6 marks)**

Using the quadriceps and hamstrings muscles as examples, explain how muscles work in pairs to produce coordinated movement.

|  |  |  |
| --- | --- | --- |
|  | 1 mark | 2 marks |
| Agonist/ antagonist relationship | One muscle moves a joint one way, the other muscle moves the joint in the opposite direction | As for 1 mark but uses correct terminology i.e. agonist/antagonist or prime mover/reciprocal muscle |
| Contract/relax | One muscle contracts whilst other muscle relaxes | As one muscle contracts the opposite muscle progressively relaxes or relaxes in a controlled manner |
| Quadriceps/ hamstrings | States that quadriceps and hamstrings work as a pair to produce movement at the hip or knee joint | Accurately explains quadriceps/hamstring movements at hip or knee joint i.e. quadriceps contract to extend knee whilst hamstrings relax, hamstrings contract to flex knee whilst quadriceps relax |

**Question 3 (8 marks)**

|  |  |
| --- | --- |
|  | ½ mark each for;  Aorta  Pulmonary artery  Pulmonary veins (extra ½ if 2 drawn each side)  Left atrium  Left ventricle  Right atrium  Right ventricle  Superior vena cava  Inferior vena cava  3 marks bonus if drawn in **posterior** view (shown) |

**Question 4 (4 marks)**

Identify and briefly explain the different factors that make gas exchange in the lungs possible.

|  |  |  |
| --- | --- | --- |
|  | 1 mark | 2 marks |
| Capillaries | States that gases can pass through capillaries | States that capillaries have walls of only one cell thickness |
| Diffusion process | States that gaseous exchange is possible due to pressure differences or similar | Uses the word diffusion and accurately explains the process i.e. gases move from areas of higher pressure to areas of lower pressure |

**Question 5 (8 marks)**

(a) Which diagram represents inhalation?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(b) Describe how the process of inhalation occurs and add appropriate information to the relevant diagram to support your answer.

|  |  |
| --- | --- |
| Air flow  Low pressure created in chest cavity  High pressure  outside body  Diaphragm | Inhalation – diagram 2 (right) (1 mark)  Inhalation described; (1 mark each dot point below)   * Contract diaphragm (muscle flattens) * Intercostals contract (ribs moved upwards and outwards) * This creates greater volume of chest cavity * Pressure in chest cavity decreases as result * Air flows from area of high pressure (outside body) to area of lower pressure (inside body)   ½ mark each for – High pressure outside, low pressure inside, air flow into lungs and diaphragm labelled |

**Question 6 (11 marks)**

1. Label the 3 types of blood vessels on the diagram below. (3 marks)

|  |  |  |
| --- | --- | --- |
| 1. Artery | 1. Capillary | 1. Veins |

1. Compare and contrast the structure of these vessels (8 marks)

|  |  |  |
| --- | --- | --- |
| 1 mark per dot point addressed | | |
|  | Compare (similar) | Contrast (different) |
| Arteries | * All vessels that carry blood throughout the body as part of circulatory system * All surrounded by smooth muscle * All tubular shaped with hollow centre | * Thick muscular walls to withstand pressure of blood being forced through * Generally carries oxygenated blood away from the heart (except pulmonary artery) |
| Capillaries | * Thin walls (singular cell layer) to allow diffusion of gases/ nutrients through walls |
| Veins | * Has valves to assist with venous return against gravity * Generally carries deoxygenated blood back to the heart (except pulmonary vein) |

**Question 7 (6 Marks)**

Identify **three appropriate** adaptations of the circulatory system and describe how an athlete’s body will have changed to cope with the demands of training.

|  |  |
| --- | --- |
| Adaptation | Description |
| Decreased resting heart rate | Heart muscle stronger and more efficient |
| Increased stroke volume | Size and strength of heart increases so more blood can be ejected with each beat |
| Increased cardiac output | More blood ejected with each beat (HRxSV) |

**SECTION THREE: EXTENDED ANSWER (45 MARKS)**

**Question 1**

The fitness required to be an elite endurance athlete such as a marathon runner is developed over many years of training.

1. Identify and describe 5 important long term adaptations to training for marathon runners and explain how these adaptations will enhance performance.

(7 marks)

|  |  |  |
| --- | --- | --- |
|  | 1 mark | 2 marks |
| Long term adaptations | Relevant long term adaptation identified and accurately described e.g. increased cardiac output – the amount of blood pumped by the heart per minute.  *1 mark per adaptation up to a maximum of 5 marks* |  |
| Enhance performance | Accurate explanation of how 2 acceptable reasons e.g. increased oxygen carrying capacity, will enhance performance | Accurate explanation of how 3 or more acceptable reasons e.g. increased oxygen carrying capacity, will enhance performance |

1. Describe the types of training that would be used and the principles of training that would be applied in a training program for a marathon runner. Provide a reason for each of your answers.

(8 marks)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 mark | 2 marks | 3 marks | 4 marks |
| Types of training | 2 types of training described satisfactorily e.g. interval, fartlek, continuous training | 2 or more relevant types of training described and justified satisfactorily | 3 relevant types of training accurately described and justified | 4 relevant types of training accurately described and justified |
| Principles of training | 2 principles of training described satisfactorily e.g. specificity, progressive overload, intensity | 2 or more relevant principles of training described and justified satisfactorily | 3 relevant principles of training accurately described and justified | 4 relevant principles of training accurately described and justified |

**Question 2 (15 marks)**

The energy system and components of fitness requirements within a particular sport can alter depending on the different demands of different playing positions.

Select a sport that you are familiar with and, using examples, discuss how and why the energy system and components of fitness requirements are different for two different playing positions within that sport. Include in your answer a description of the two different playing positions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 mark | 2 marks | 3 marks | 4 marks |
| Selected sport | Valid sport chosen | As for one mark and selects 2 positions with contrasting requirements | As for 2 marks and accurately describes the two playing positions e.g. basketball centre positions themselves close to the basket for rebounds and close range scoring |  |
| Energy systems – why different | Satisfactorily discusses the reasons why the two positions have different energy system requirements | Accurately discusses the reasons why the two positions have different energy system requirements. Uses valid examples. |  |  |
| Energy systems – how different | Discusses at least two of the three energy systems i.e. ATP-CP, lactic acid and aerobic energy systems | Satisfactorily discusses different requirements of at least two energy systems for both positions | Accurately discusses requirements of all three energy systems for **at least one** of the positions | Accurately discusses requirements of all three energy systems for **both** positions |
| Components of fitness – why different | Satisfactorily discusses the reasons why the two positions have different components of fitness requirements | Accurately discusses the reasons why the two positions have different components of fitness requirements. Uses valid examples. |  |  |
| Components of fitness – how different | Discusses different requirements of at least one valid component of fitness for both positions | Satisfactorily discusses different requirements of at least two valid components of fitness for both positions | Accurately discusses different requirements of at least three components of fitness for both positions | Accurately discusses different requirements of four or more components of fitness for both positions |

**Question 3 (15 marks)**

The pre-season training program outlined below has been designed to prepare a team sport (e.g. soccer, netball, football) player for the start of a new season. No other training sessions have been prescribed for the player in addition to those outlined in the program below. Use the data in the training program below to answer the questions that follow.

1. Explain why the pre-season training program is inadequate in terms of the principles of training that have not been correctly applied in the program. (6 marks)

|  |  |  |
| --- | --- | --- |
|  | 1 mark | 2 marks |
| Specificity | The training program does not adequately target the energy systems **or** components of fitness needed for a team sport player | The training program does not adequately target the energy systems **and** components of fitness needed for a team sport player |
| Progressive Overload | The progressive overload in week 3 increased by more than 10% or was too great | As for 1 mark and provides a reason why overload should not exceed 10% or be too great |
| Duration | Duration of training sessions is insufficient for producing long term adaptations needed for a team sport **or** duration of training sessions should be of a minimum of 30 minutes | Duration of training sessions is insufficient for producing long term adaptations needed for a team sport **and** duration of training sessions should be of a minimum of 30 minutes |

1. Identify 3 training types that have not been used in the program that a pre-season team sport program should include. Explain why these training types should be incorporated into the program. (9 marks)

|  |  |  |  |
| --- | --- | --- | --- |
| Training types | 1 mark | 2 marks | 3 marks |
| Interval training | Training type identified | Explains that intervals more closely replicate requirements of the sport **or** that intervals allow for higher intensity exercise followed by recovery | Explains that intervals more closely replicate requirements of the sport **and** that intervals allow for higher intensity exercise followed by recovery |
| Resistance training | Training type identified | Explains that resistance training will assist in developing a component of fitness e.g. muscular strength, muscular endurance, power | Explains that resistance training will assist in developing 2 or more components of fitness e.g. muscular strength, muscular endurance, power, body composition |
| Flexibility training | Training type identified | Explains that flexibility training will increase range of motion/flexibility **or** assist in preventing injury | Explains that flexibility training will increase range of motion/flexibility **and** assist in preventing injury |
| Other training types e.g. circuit, fartlek, plyometrics | Training type identified | Satisfactory explanation of why training type could be included in program. **Only two marks are available for these training types as they are not essential. Marks for these training types should only be used to allow up to 3 training types for the answer.** |  |