**Year 11 ATAR End of Year Exam 2022 – Sourced from ACHPER**

**Section One: Multiple-choice 20% (20 marks)**

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

**Section Two: Short answer 50% (78 marks)**

**Question 21 11 marks**

The photographs below show two different techniques of headstand. The biomechanical principle of balance is crucial when performing these postures.

1. Compare the two headstand techniques with reference to two factors that enable stability to be maintained. Identify which headstand would be easier to perform and provide a reason. (4 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| For each of **two** factors:   * Both headstand A and B are stable due to the line of gravity remaining within the base of support * Headstand B has a smaller base of support than headstand A, therefore increasing stability | 1  1 |
| Choice of headstand:   * Headstand A would be easier to perform * The wider base of support will increase stability | 1  1 |
| **Total** | **4** |

1. Executing a headstand requires focus and concentration. One model that explains attentional focus is Nideffer’s Model of Attention. Complete the diagram below to include
2. labels for axis A and B
3. labels for the four attentional styles (C, D, E and F)
4. label the position of the attentional style most suitable for the headstand (7 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Labels   * A – direction, B – width, C – Broad, D – External, E – Narrow, F - internal | 1 ea |
| Application   * Narrow - internal | 1 |
| **Total** | **7** |

**Question 22 13 marks**

Below is an image of a soccer player preparing to kick a ball.

1. Label the two muscles labelled A and B in the box provided. (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Accurately labels   * Muscle A – Hamstring * Muscle B – Quadricep | 1  1 |
| **Total** | **2** |

1. Label the insertion point and origin point of muscle A on the diagram (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Accurately labels   * Origin at the top of the femur * Insertion across the knee joint on the head of the fibula | 1  1 |
| **Total** | **2** |

1. Muscles work in pairs to create movement. Define the role of the origin and the insertion and explain how the muscles on the front and back of the thigh work together to create movement to flex the knee in preparation to strike the ball. (6 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Definition   * Origin – the points at which the muscle joins the stationary bone * Insertion – the points at which the muscles tendons attach to the moving bone | 1  1 |
| Subtotal | 2 |
| Explanation (explanation includes any **four** of the following)   * Muscles work as pairs by pulling on the bone (antagonist pairs) * As one muscle contracts, the opposite muscle must relax to create movement at the joint * When preparing to kick the ball the hamstring acts at the prime mover (agonist), contracting to decrease the distance between the joint (and flexing the leg at the knee) * The insertion attachment point of the hamstring crosses at the knee, allowing the muscle to pull on the lower leg bone to decrease the angle of the joint and flex at the knee * The quadricep works as antagonist, lengthening (or producing the opposite action to prime mover) | 1-4 |
| **Total** | **6** |

1. The soccer coach leads the players through an intense session of rapid muscle lengthening/shortening activities over a short duration. Name the training type being demonstrated by the players in the photograph below and identify which muscle fibre type this kind of training would benefit. Provide **one** characteristic of this fibre type to support your answer. (3 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Training type   * Plyometrics | 1 |
| Identifies muscle fibre type   * Fast twitch (Type IIB) | 1 |
| Characteristic of fast twitch muscle fibres (any **one** of the following)   * Anaerobic ATP production * Rapid contraction speed * Fatigue quickly * High force production * Use CP and glycogen as fuel sources (quickly accessible) | 1 |
| **Total** | **3** |

**Question 23 11 marks**

A gymnastic coach encourages their gymnast to increase their height of release by using a mini trampoline when learning a somersault.

1. With reference to optimal projection, explain the rationale behind this recommendation by the coach and why it may be of benefit to the gymnast. (3 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Explanation   * The height of release is the difference between the height of release and the height of landing * This will increase the time from the peak of height jumped to landing | 1  1 |
| Benefit   * The additional height will give the gymnast a greater amount of time in the air to complete the somersault whilst learning and help to potentially prevent injury | 1 |
| **Total** | **3** |

1. Apart from height of release. Name and define the two other factors that contribute to the flight path (parabolic trajectory) of a projectile, which would also be considered by the coach. (4 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Name two factors   * Angle of release * Velocity of release | 1  1 |
| Define **two** factors   * Angle of release – the angle the projectile is released, relative to the ground * Velocity of release – the speed at which the projectile is released | 1  1 |
| **Total** | **4** |

1. The gymnast struggles with pre-competition nerves each time they get ready to perform their floor routine. The impact of stress and nerves negatively affects their physical performance and self-confidence.

Name **two** of the **most** relevant mental skills strategies this gymnast could use pre-performance to

1. decrease the physical symptoms of nerves e.g. shaking
2. increase self-confidence prior to performance.

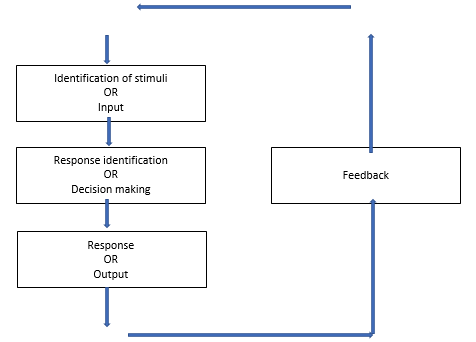
For **each** strategy provide a relevant example of how the gymnast could apply this technique. (4 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Name two mental skill strategies for each   * Relaxation for physical symptoms of nerves * Self-talk OR self-imagery to increase confidence | 1  1 |
| Relevant example: relaxation   * Use of Progressive Muscle Relaxation (PMR) – tensing and releasing each muscle at a time to achieve full body relaxation * Breathing exercises – taking slow, low breaths to reduce respiratory rate and calm the body and mind * Meditation – calming the mind through focused concentration techniques * Biofeedback – using electronic instruments that provide the gymnast with auditory or visual feedback to monitor arousal levels.   Relevant example: self-confidence   * Use of positive self-talk – repeating statement such as “I can do this” “I am calm and relaxed” * Use of self-imagery – using mental visualisation using all the senses to create the gymnastics routine in the minds eye. Seeing themselves completing the perfect routine. | 1  1 |
| Accept other relevant answers |  |
| **Total** | **4** |

**Question 24 15 marks**

When getting ready to receive a serve in tennis, a player is processing a considerable amount of information in preparing to perform the skill.

1. Draw and label a diagram in the space below which represents the four phases of information processing that could be used to explain the process that the tennis player is experiencing when receiving a serve. (4 marks)



|  |  |
| --- | --- |
| **Description** | **Marks** |
| Labels each phase   * Phase 1 - Identification of stimuli / input * Phase 2 - Response identification / decision making * Phase 3 - Response / output * Phase 4 - feedback | 1  1  1  1 |
| **Total** | **4** |

1. For each phase, describe **one** example that could be applied to the tennis player receiving serve. (8 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| For each of **four** relevant examples:  Clear description with relevant information included  Simple description with some detail   * Identification of stimuli – player receives information about the environment via their senses, e.g.: flight of the ball coming towards them * Response identification – the brain processes the stimuli and interprets the cues to formulate an appropriate response e.g.: positioning for return of serve * Response – The brain sends information to the body to respond and perform the action e.g.: hitting the ball * Feedback – once the movement is complete the player receives information from their performance e.g.: the success of the returning shot / winning the point / feedback from coach | 2  1 |
| **Total** | **8** |

1. Tennis matches involve high intensity physical activity often over a prolonged period. During a rest break between sets a player decides to eat a banana and consumes a sports drink. With reference to energy sources, explain why a player may choose this nutritional strategy. (3 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Explanation includes the following   * High intensity exercise reduces energy stores (glycogen) in the muscles * Consuming high GI carbohydrate foods and drinks helps the player to top up their glycogen stores and remain hydrated * Topping up glycogen means that performance levels can be maintained avoiding earlier onset of fatigue | 1-3 |
| **Total** | **3** |

**Question 25 17 marks**

Athletes rely on the efficiency of their circulatory system to carry oxygen and nutrients around the body to all the cells, whilst removing waste products and carbon dioxide.

1. Blood is the main fluid in the circulatory system. The blood is made up of four main components. Identify the four components found in the blood and outline their main function. (8 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| For each of **four** components:  Identifies the component  Outlines the component   * Plasma – the watery part of the blood that suspends all the other cells and substances within it. * Platelets - produced in the bone marrow, cells that are responsible for blood clotting * Red blood cells – transport oxygen and nutrients to cells and remove carbon dioxide and waste from the cells. * White blood cells – circulate to sites of infection to destroy bacteria and disease-causing organisms. | 1  1 |
| **Total** | **8** |

1. Complete the following by identifying the correct reference or by providing a definition. (6 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Reference or definition   1. Veins 2. Aorta 3. Pulmonary arteries 4. Two lower chambers of the heart which pump blood out to the body 5. Two upper chambers of the heart that receive blood 6. The amount of blood the heart pumps out with each beat | 1  1  1  1  1  1 |
| **Total** | **6** |

1. As an athlete begins their session, several immediate, physiological responses occur in the body and the athlete will begin to experience an increase in body temperature. Account for the increase in temperature experienced by the athlete and describe how the body prevents overheating. (3 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Accounts for the increase in temperature   * The working muscles are creating metabolic waste including carbon dioxide and heat as they utilise fuel and oxygen to maintain energy production   Description includes any **two** of the following   * The blood regulates temperature, by directing the blood to the skins surface, where it can be released via sweating (evaporation). * Vaporisation of sweat from the skin acts as a cooling mechanism, allowing the body to dissipate heat and prevent the athlete overheating. * The body will increase the onset of sweating to regulate heat | 1  1-2 |
| **Total** | **3** |

**Question 26 11 marks**

A long-distance runner will require very different components of fitness than a 50m freestyle swimmer.

1. Identify and define the **two** components of fitness that would be the mostimportant for the long-distance runner and **two** components of fitness that would be the most important for the 50m swimmer (use different components for each athlete). (8 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| For each of **four** components:  Identifies the component  Defines the component  Long-distance runner   * Cardiorespiratory endurance – the ability of the body to be involved in continuous physical activity for an extended period. * Muscular endurance – the ability of the muscles to repeatedly exert force over an extended period. * Body composition – the percentage of fat, muscle and bone that make up the individuals body weight.   50m Freestyle Swimmer   * Muscular strength – the ability of the muscles to exert force against a resistance in a single contraction * Speed – to complete a movement or cover a distance in a short amount of time * Power- the ability to create maximum force very quickly | 1  1 |
| Accept any other relevant answers |  |
| **Total** | **8** |

1. For either the long-distance runner or 50m swimmer, choose **one** of their main components of fitness and justify which training type would be most beneficial for them to include in their program. (3 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| For the training type selected:  Correctly identifies  Thorough justification with supporting information  Simple justification with minimal detail  Marathon runner   * Cardiorespiratory endurance   Continuous training fartlek – exercising for a sustained period of time replicates the energy system/ fitness requirements of the marathon.   * Muscular endurance   resistance / interval / circuit training to repeatedly contract the muscles to develop aerobic capacity required to run a marathon  50m swimmer   * Muscular strength   Resistance training (isokinetic, isometric, isotonic) – performing a series of exercises with resistance using weights/machines to stress the muscles and progressively build strength/power required in sprint swimming   * Speed / power   Short interval training – short bouts of high intensity exercise followed by rest to train the anerobic pathway, to replicate the requirements of the 50m swim  Circuit training - performing a specific number of exercises to be complete in the quickest time possible, to train similar the anerobic pathway and specific muscles associated with the 50 m swim   * Plyometric – rapid eccentric and concentric contraction of the muscles (of the upper body) to develop power and strength in the arms and chest – which relates to the muscles required in the 50m swim | 1  2  1 |
| Accept other relevant answers |  |
| **Total** | **3** |

**Section Three: Extended answer 30% (30 marks)**

**Question 27 15 marks**

With reference to the energy system continuum identify which energy system will predominantly fuel the netball player during these high intensity movements on the ball, provide justification for your choice. Compare the contribution of each energy system during a game of netball, outlining fuel source, speed of energy supply, oxygen requirements, duration of the energy system and give a relevant example of when a player may use this energy system in a game.

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Identifies correct energy system   * ATP-PC system   Thorough justification with supporting information  Simple justification with minimal detail   * The ATP-PC system provides an immediate source of energy from CP stored in the muscles, which is limited to short burst of high intensity activity lasting less than 10 seconds. | 1  2  1 |
| |  |  |  |  | | --- | --- | --- | --- | |  | **ATP-PC** | **Lactic Acid** | **Aerobic** | | Fuel source | Creatine Phosphate (CP) | Carbohydrate | Carbohydrate and fat (protein) | | Speed of energy supply | Very fast | Fast | Slow | | Duration of energy system | 8-10 seconds | 30 seconds – 1 minute | 2 minutes + | | Example | Sprinting into space to receive the ball | Centre court player repeatedly running from offense to defence | Jogging / walking back onside or repositioning whilst waiting for the ball to come back down court |   Compares the energy systems | 1-12 |
| **Total** | **15** |

**Question 28 15 marks**

Name and outline the three phases of the Fitts and Posner Model of motor learning that this player would have progressed through to reach his current level of proficiency. State **two** performance characteristics which would be evident at each stage of learning and outline the type of feedback which would optimise learning at each stage.

|  |  |
| --- | --- |
| **Description** | **Marks** |
| For each of **three** phases:  Names the phase  Outlines the phase   * Cognitive phase - This is the ‘thinking’ stage of learning, where the learner gains an understanding of the aim or purpose of the skill * Associative phase - This is the practice phase of learning, where a fundamental understanding has been acquired * Autonomous phase - This phase occurs without conscious thought and can be performed with ease | 1  1 |
| For each of the **three** phases:  One mark for each of **two** performance characteristics   * Cognitive   Lots of errors, lack of consistency, difficulty in self-correcting   * Associative phase   Correct timing/sequencing, more consistency/refined, skill level improves   * Autonomous phase   High accuracy/consistency, automatic timing and sequencing, more focused/less likely to be distracted by irrelevant cues, speed and efficiency increases, ability to focus of game play/strategy | 1-2 |
| Accept all other relevant answers |  |
| For each of three phases:  Outlines the type of feedback   * Cognitive – relies heavily on visual/verbal feedback from the coach * Associative – kinaesthetic feedback increases with some external feedback from coach * Autonomous – internal, kinaesthetic feedback, able to rely fully on self-correcting performance | 1 |
| **Total** | **15** |

**Question 29 15 marks**

Athletes competing in the steeple chase undergo vigorous training to meet the demands of this gruelling race. Improvements in performance are the product of long-term physiological adaptations over time.

1. One adaptation the athletes would experience is more efficient respiration. This would occur in response to an increase in breathing volume and optimisation of the breathing muscles responsible for inspiration and expiration. Explain the mechanics of breathing during inspiration and expiration, referring to the role of diaphragm and the process that allows airflow in and out of the lungs. (7 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Explanation   * The diaphragm is the involuntary smooth muscle which is located at the base of the chest cavity, which contracts and relaxes to control breathing * During inspiration * the diaphragm contracts and becomes flatter * the pressure inside the lungs decreases drawing air into the trachea and down into the lungs * the external intercoastal muscles contract to lift the rib cage * During expiration * the diaphragm relaxes to become dome shaped * the pressure inside the lungs increases forcing air out the lungs * the internal intercostal muscles contract to lower the rib cage | 1  1-3  1-3 |
| **Total** | **7** |

1. Apart from the long-term adaptation of more efficient respiration, identify **four** other long-term adaptations of training on the cardiorespiratory system that these athletes may experience over time and outline how each adaptation is of physiological benefit to the athlete. (8 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| For each of **four** long-term adaptations:  Identify the adaptation  Outline the benefit  May relate to any four of the following:   * Increase in cardiac output   The heart can pump out more blood with each beat providing a greater percentage of oxygenated blood to the working muscles   * Decreased heart rate   The heart becomes stronger and able to pump more blood out per beat. Heart rate at rest and during submaximal exercise is lower making the circulation of blood more efficient   * Decrease in blood pressure   The heart does not have to work so hard to pump blood around the body   * Increased blood volume and haemoglobin   More oxygen can be transported to the working muscles and more carbon dioxide can be removed   * Increase in stroke volume   The heart can pump more blood out to the body per beat, increasing the efficiency of oxygen delivery around the body   * Increase in oxygen exchange/capillarisation   Training assists the ability of the muscles to extract oxygen from the circulating blood   * Maximal oxygen uptake improves (VO2 max)   The amount of oxygen consumed improves due to the increased transportation of oxygen to the working muscles. | 1  1 |
| **Total** | **8** |

**Question 30 15 marks**

A high jumper changes their movement during the approach phase from a horizontal motion to a vertical motion by applying a greater downward force on the last step before take-off. The rationale behind force application can be linked to Newton’s First, Second and Third Law of motion.

1. Define Newton’s First, Second and Third Law. With reference to the Newton’s First and Third law, explain how each law can be applied to the high jumper during run-up and take off. (7 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Definitions of Newton’s Laws   * Newton’s First Law of Motion   An object at rest tends to stay at rest, and an object in motion tends to stay in motion, unless acted on by an external force   * Newton’s Second Law of Motion   When a body is acted upon by a constant force, it resulting acceleration is proportional to the force and inversely proportional to the mass (f=ma)   * Newton’s Third Law of Motion   To every action there is always an equal or opposite reaction | 1  1  1 |
| For each of the **two** laws:  Thorough explanation with supporting information  Simple explanation with minimal detail   * Newton’s First Law of Motion   The high jumper exerts an initial force to begin her approach and then applies a strong downward force to change the momentum from a horizontal plane to a vertical force to lift her up and over the bar   * Newton’s Third Law of Motion   As the high jumper approaches, she is applying a force down on the track and the track is applying an equal force back to the athlete to allow her to create greater motion on approach. During take off the greater the force applied in a downwards motion will create an equal and opposite motion back to the athlete to help increase the height of her jump | 2  1 |
| **Total** | **7** |

1. Arousal levels during performance are an important component in sporting competitions. High jump competitors often have to wait for long periods of time between jumps, which can affect arousal regulation and performance levels.

Name and explain the relationship between arousal and performance, draw and label a diagram to support your discussion, indicating the point of optimal arousal for the high jumper. (8 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Names the relationship   * The Inverted U hypothesis | 1 |
| Explanation that includes the following:   * Arousal is the amount of physical and psychological ‘readiness’ a person experiences in relation to a task. * Under-arousal or low arousal levels will negatively affect performance, as the athlete will not be adequately psyched up * Over-arousal or high arousal will negatively affect performance, as the athlete will be overly stimulated physically and mentally (high muscle tension / lack of concentration) * Optimal arousal occurs as arousal levels reach an optimal point, allowing for the most positive effects on performance | 1-4 |
| Diagram   * X axis: Arousal / Y axis: performance * Inverted U * Optimal arousal / performance indicated | 1  1  1 |
| **Total** | **8** |