**Year 11 ATAR Semester 2 ONLY Exam 2022 – Sourced from ACHPER – Anatomy and Ex Phys questions substituted out**

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

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Question** | **Answer** |  | **Question** | **Answer** |  | **Question** | **Answer** |  | **Question** | **Answer** |
| 1 | B |  | 6 | A |  | 11 | C |  | 16 | A |
| 2 | C |  | 7 | A |  | 12 | C |  | 17 | B |
| 3 | A |  | 8 | C |  | 13 | C |  | 18 | A |
| 4 | A |  | 9 | B |  | 14 | B |  | 19 | C |
| 5 | D |  | 10 | A |  | 15 | B |  | 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:   * Line of gravity within base of support – both A and B are stable positions due to this * Area of base of support – 3 points of contact in both A and B (slightly smaller area in headstand B) | 1  1 |
| Choice of easiest headstand:   * Headstand A would be easier to perform * The wider base of support will increase stability as it’s easier to keep line of gravity within centre | 1  1 |
| **Total** | **4** |

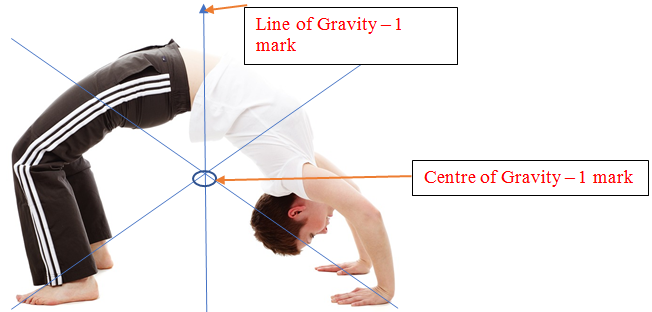
1. Executing a headstand requires focus and concentration. One model that explains attentional focus is Nideffer’s Model of Attention. Complete the diagram below to include
2. labels for axis A and B
3. labels for the four attentional styles (C, D, E and F)
4. label the position of the attentional style 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 6 marks**

The ‘bend back’ is a gymnastic movement which requires a significant amount of flexibility and strength to perform well.

1. Using the picture below, identify and draw the location of the gymnasts ‘Centre of Gravity’ as well as the ‘Line of Gravity’ (2 Marks)



1. Human beings do not remain fixed in the anatomical position and therefore the precise location of the Centre of Gravity changes constantly with every new position of the body and limbs, including ‘Bend backs’. Discuss this statement and make reference to the above picture. (4 Marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| The centre of gravity is defined as the point around which a body’s weight is equally balanced in all directions. | 1 |
| For each arm/leg movement the centre of gravity shifts slightly towards the direction of movement | 1 |
| The flexibility and complexity of the human body allows the body to assume various positions where the centre of gravity may lie outside the body | 1 |
| Link to bend back – Arc of body shifts Centre of Gravity outside the body | 1 |
| Total | **4** |

**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.

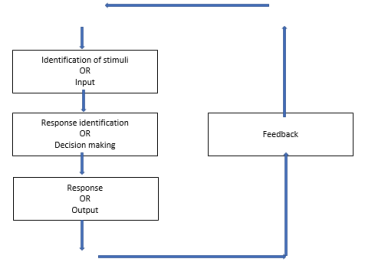
For **each** strategy provide a relevant example of how the gymnast could apply this technique. (4 marks)

|  |  |
| --- | --- |
| **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 12 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** |

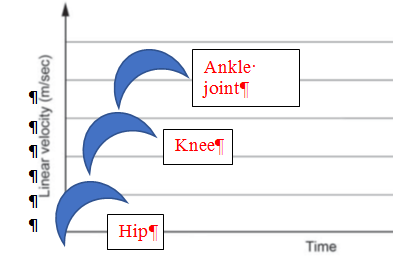
**Question 25 16 marks**

In building foot speed to kick the ball, the hip, knee and ankle are used.

1. Classify what type of movement this is from the coordination continuum. (1 mark)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Identifies sequential movement | 1 |

1. On the graph below, draw and label the optimal timing of the action of the hip, knee and ankle joints for maximum foot velocity, when kicking the ball. (3 marks)



1. Describe the two biomechanical factors that would maximise the velocity of impact with the ball. (4 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * **Sequential movement** (or force summation)– moving body segments one after the other to increase the velocity of each body segment before therefore imparting greater velocity to the final segment prior to release * **Momentum** (or 2nd law of motion) - More body mass the more power generated, Transfer body weight forward to generate velocity (objects state of motion, the combined measure of speed of an object and direction of movement) | 2  2 |
| **Total** | **4** |

1. Describe the different types of balance and explain which type of balance is required to kick the ball (5 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * **Static balance –** maintaining body’s equilibrium while stationary * **Dynamic balance –** moving but still maintaining balance   Kicking the ball is an example of dynamic balance – the body is moving and shifting the position of the centre of gravity but the athlete is able to remain upright | 2  2  1 |
| **Total** | **5** |

(e) The footballer tells you that he has been using imagery to improve goal kicking. But he says it has made him worse at set shots. Having asked what does he imagine, he says: “when I am running in to kick at goal, I mentally rehearse and see how I don’t want things to go, then I imagine a good kick while I am kicking it”. What advice do you have for Jack on his use of imagery? (3 marks)

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| --- | --- |
| **Description** | **Marks** |
| * Define imagery - Imagery is the recreation of the performance, in the mind, of a skill or group of skills, a previous positive experience to prepare an individual mentally for performance. * He is focusing on a negative performance and thinking while completing the skill is a distraction * Tell him to focus on a positive experience and try not think/imagery while executing the skill | 1  1  1 |
| **Total** | **3** |

An AFL player needs to be proficient in many skills to be considered a great player. They must able to pass the ball effectively to a team mate using both a handball and a kick.

1. The ball can take many different paths as it flies through the air during a game. For each trajectory describe one benefit and give an example of when this trajectory would likely occur in an AFL game.

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * **High trajectory**- Benefit – Long time in the air, clears obstacles   AFL Example – Handballing over a player. Kicking into the forward line   * **Flat trajectory** - Benefit – Minimises time in the air   AFL example – Stab pass, quick handball to a team mate   * **Parabolic trajectory** - Benefit – Maximum Distance   AFL example – Kicking out of full back, shot on goal | 1  1  1  1  1  1 |
| **Total** | **6** |

**Question 26 6 marks**

1. Professional Volleyball player Matey Kaziyski of Bulgaria, on average, will spike the ball at 130km/h. Explain Newtons 1st and 2nd laws of motion as applied on the above picture of a spike.

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * **Newton 1 -** A body continues in its state of rest or state of motion unless acted upon by a force   **Applied -** Volleyball will continue in its motion down to the ground until acted on by Matey’s spike   * **Newton 2 -** Newtons 2nd law - The rate of change of acceleration to a body is proportional to the force applied to it   **Applied -** Matey applies a large force onto the volleyball which results in a greater acceleration | 2  2 |
| **Total** | **4** |

(b) Explain what is meant when an athlete says they are ‘in the zone’. (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * Ideal performance state - performer attends only to relevant stimuli in the environment and can shift their attention quickly to meet the needs of the situation * Not under aroused or under aroused | 1  1 |
| **Total** | **2** |

**Question 27 10 marks**

A Tennis coach aims to develop his students skills and game play.

1. He uses feedback regularly as he is teaching his students. Describe the three purposes of feedback and give an example of each that the tennis coach may use with his students (6 marks)

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| --- | --- |
| **Description** | **Marks** |
| * **Feedback to motivate** eg - “Great effort” “Well done * **Feedback to change performance** eg - The racquet must be flat when you make contact with the ball * **Feedback to reinforce what has been learned** eg - “Great shot, you rolled the racquet over the ball, putting top spin on it which allowed you to hit the ball with more speed, with it still landing in the court.” | 2  2  2 |
| Total | **6** |

1. With the exception of linear motion. Describe two other types of motion occurring in a Tennis match and provide one example for each. (4 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * **Angular Motion**   When a body (object, ball or person) moves about an axis of rotation  The tennis players legs are travelling in angular motion as they are running | 1  1 |
| * **General motion**   A combination of angular motion and linear motion  The tennis player moves in general motion when they are moving to the ball with their legs undergoing angular motion and their torso undergoing general motion | 1  1 |
| **Total** | **4** |

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

**Question 28 15 marks**

The ‘Tour De France’ is one of the world’s most famous cycling events. It takes place annually in France and consists of 21 day-long segments, (stages) covering approximately 3500km.

1. Riders of the ‘Tour De France use bicycles made of carbon fibre as they are extremely lightweight compared to an aluminium frame. Identify and define the appropriate Newton’s Law then explain why cyclists would benefit from using a bicycle that has a very light frame. (4 marks)

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| --- | --- |
| **Description** | **Marks** |
| Correct identification of Newtons 2nd Law  Definition - An object’s acceleration is dependent on the mass of the object and the force applied to it. | 1  1 |
| **Benefits explained:**  If the bike is light, the force required to move it is less **OR** A heavy bike will require more force to move it.  **OR** A lightweight bike frame requires less force to move than heavy frame.  Being such a long race, the rider will produce less force as the race goes on, with a light frame the rider can produce greater force for longer with less fatigue. | 1  1 |
|  | 4 |

1. The ‘Tour De France’ is an extremely challenging event, both physically and mentally. Riders continually push their bodies to the limit over 21 days. Being able to cope with mental issues plays an important role in the rider’s success. Outline the five mental strategies the rider could use to manage mental issues ad identify which of these might be the most important for a first time rider of the race (11 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| **1 mark for each strategy and 1 mark for outlining how it works**  **Goal Setting –** set ideal times for each stage, maybe aim to beat previous best times for each stage, aim to finish in a certain position, or set team goals  **Relaxation techniques -** Riders can use relaxation techniques such as music, breathing techniques to ensure arousal levels remain at optimum levels.  **Imagery -** Riders can use positive imagery to picture themselves finishing the stage well. Improving concentration and ensuring focus on required stage of each race  **Performance Routines** – warming up the same way each day, preparing equipment (clothing, shoes, snacks, water, starting the race each day  **Self -Talk -** Riders can use positive self-talk to motivate themselves. Tell themselves they can do it. Remind themselves of past success.  Select and justify appropriate strategy for first time rider | 1-2  1-2  1-2  1-2  1-2  1 |
| **Total** | **11** |

**Question 29 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** |
| 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 | 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 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** |