YEAR 11 ATAR

PHYSICAL EDUCATION STUDIES

Course Examination 2024

Marking Key

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

Question	Answer
1	C
2	B
3	D
4	C
5	A
6	C
7	D
8	C
9	D
10	B
11	D
12	A
13	C
14	D
15	D
16	A
17	C
18	C
19	B
20	C

Section Two: Short answer **50% (80 Marks)**

Question 21 **(10 marks)**

a) Name **three** articulating bones found in the elbow joint. (3 marks)

Description	Marks
Radius	1
Ulna	1
Humerus	1
Total	**3**

b) Identify the antagonist muscle involved in extension at the knee. (1 mark)

Description	Marks
Hamstring	1
Total	**1**

c) Describe the concept of antagonistic pairs with reference to the up-phase of a chin-up. (3 marks)

Description	Marks
Comprehensive description with all relevant information	2
Simple description with some information	1
Subtotal	**2**
Appropriate reference to the up-phase of a chin-up	1
Subtotal	**1**
Total	**3**

d) Identify the **three** main joint movements involved in the kicking phase when Mary strikes the ball (3 marks)

Description	Marks
Flexion at the hip	1
Extension of the knee	1
Dorsiflexion at the ankle	1
Total	**3**

Question 22 **(10 marks)**

a) Outline the path a red blood cell takes from the right atrium to the left atrium. (4 marks)

Description	Marks
i. Enters the right ventricle	1
ii. Enters the pulmonary artery	1
iii. Enters the capillaries surrounding the alveoli	1
iv. Enters the Pulmonary Vein	1
Total	**4**

b) Other than red blood cells, identify the **two** other components of blood and outline their function. (4 marks)

Description	Marks
For each component (2 x 2 marks)	
Names the component	1
Outlines the function of the component	1
• White blood cells - Responsible for moving to sites of infection where they destroy disease causing organisms • Blood plasma – transports nutrients and waste products throughout the body • Platelets – responsible for repairing damage to blood vessels and the body	
Total	**4**

c) Outline **two** differences between arteries and veins. (2 marks)

Description	Marks
Any two of the following	
• Arteries carry blood away from the heart while veins carry blood towards the heart • Veins contain valves while arteries do not • Arteries have elastic muscular walls while veins do not	1-2
Total	**2**
Accept other relevant answers	

Question 23 **(10 marks)**

(a) George understands that nutrition is important, so he eats a large bowl of macaroni and cheese 30-minutes before his first game. Assess George's choice of nutrition and make **two** recommendations for a more suitable plan. (4 marks)

Description	Marks
Comprehensive assessment with relevant detail	2
Simple assessment with some detail	1
Subtotal	**2**
Makes two appropriate recommendations	1-2
Subtotal	**2**
Total	**4**
George's choice is <u>not</u> suitable for this scenario because his meal is too close to the game time and/or contains too much fat. Recommendations – any two of the following • Meal can be consumed 2-4 hours before the match • The cheese sauce can be replaced for something containing less fat e.g. tomato sauce • Low GI foods rich in carbohydrates can be consumed • 600ml of water can be consumed 2-4hrs before and 400mls immediately before • Appropriate low GI, high carbohydrate example	
Accept other relevant answers	

(b) The coach identifies some flaws in George's technique and decides to give him some 1-on-1 lessons before the final the next day. Identify three types of cues Dan could give George to help improve his touch football skills and provide an example of how each can be used in this situation. (6 marks)

Description	Marks
For each cue (3 x 2 marks)	
Identifies the cue	1
Provides a relevant example for the situation	1
Total	**6**
Visual cue The coach demonstrates to Geroge the best technique to complete a spiral pass **Verbal cue** The coach tells George to step towards his target when completing a spiral pass **Proprioceptive cue** The coach physically positions George's hips in the correct position required at the start of the spiral pass	
Accept other relevant answers	

Question 24 **(16 marks)**

(a) Discuss the four-step process that a badminton player receiving a serve would undergo as they process information to win the point by identifying and outlining each of the **four** steps, and providing a relevant example of how this happens in this situation. (12 marks)

Description	Marks
For each of the **four** steps (4 x 3 marks)	
Identifies the step	1
Outlines the step	1
Provides a relevant example	1
Total	**12**
Stimulus/Input: information is gathered from the environment using sensory receptors *Badminton player sees the opponent hit the shuttle over the net*	
Response identification/Decision making: sensory information is analysed and interpreted, then a decision is made and sent to the muscles from the brain *Badminton player understands that the shuttle is moving up high over their head, so they decide to move to the rear of the court and play an overhead clear*	
Response/Output: the selected response is produced by the muscles *Badminton player plays an overhead clear*	
Feedback: player receives feedback about their performance *Badminton player sees their shuttle land in the rear tramlines and receives feedback it was an effective shot*	
Accept other relevant answers	

(b) Describe a difference between gross and fine motor skills and for each provide an example that relates to Badminton. (4 marks)

Description	Marks
Clear description with reference to both gross and fine motor skills	2
Simple description with reference to either gross or fine motor skills	1
Subtotal	**2**
Provides a relevant example from Badminton (2 x 1 mark)	1
Subtotal	**2**
Total	**4**
• Gross motor skills use a large number of muscles while fine uses a small amount • Gross motor skills use muscle with a large size while fine motor skills use smaller muscles • Gross motor skills do not require precision while fine motor skills do	
• Fine motor skill example: a flick serve using predominantly the wrist and fingers • Gross motor skill example: a jumping smash using large muscle groups in the body such as the legs, hips, shoulders	
Accept other relevant answers	

Question 25 **(15 marks)**

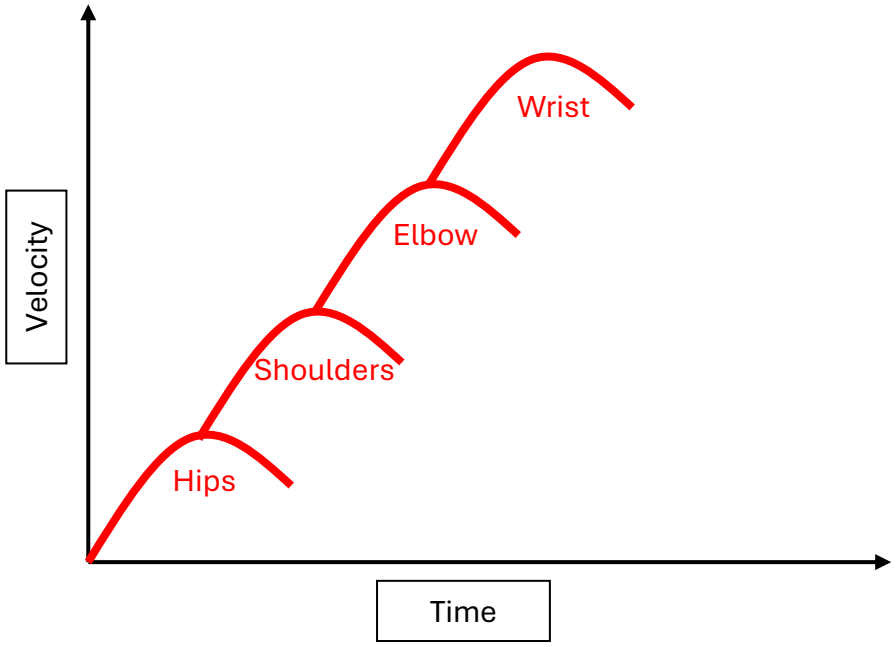
(a) Identify the type of motion that would best describe a baseballer in the following scenarios. (3 marks)

Description	Marks
i. General motion	1
ii. Linear motion	1
iii. Angular motion	1
Total	**3**

(b) Identify **three** variables affecting the projectile motion of the baseball and suggest a way in which batter could alter them. (6 marks)

Description	Marks
For each variable (3 x 2 marks)	
Identifies the variable	1
Suggest a way it can be altered	1
Total	**6**
Angle of release • Change where you contact the baseball. E.g. higher contact will lower the angle and low contact will increase it • Change the swing path of the bat. E.g. swinging downwards will lower the angle and swinging upwards will increase it Height of release • Bending at the knees could make the batter appear shorter and make the pitcher throw lower Velocity of release • Using a longer bat could increase velocity • Swinging harder at the ball could increase velocity	
Accept other relevant answers	

(c) The fastest ever baseball pitch was clocked in at 170km/h by Aroldis Chapman. On the graph below, draw the optimal timing of the shoulders, wrist, hips, and elbow in order to accelerate the baseball at maximum velocity. (2 marks)



Description	Marks
Correct order of segments	1
Correct drawing of lines	1
Total	**2**

(d) According to the coordination continuum, what type of movement is occurring in the baseball pitch described above? (1 mark)

Description	Marks
Sequential movement	1
Total	**1**

(e) Referring to the principles of segmental interaction, what are **three** pieces of advice you could give to someone learning to throw a baseball as fast as possible? (3 marks)

Description	Marks
Any three of the following	
• The stronger and larger muscles of the thighs and trunk are moved first followed by the smaller and faster muscles • Sequentially accelerate each body part so that optimum momentum passes from one body part to the next. • Each body part should be stable so that the next body part accelerates around a stable base to transfer momentum • Use as many body parts as possible, so force can be applied over the maximum possible time • Follow through is important to prevent deceleration of last segment and safe dissipation of force. • Ensure all forces are directed towards the target	1-3
Total	**3**
Accept other relevant answers	

Question 26 **(8 marks)**

(a) Starc can produce a powerful plantar flexion at the ankle. Identify which type of lever is used at the ankle and identify the 3 components that make up this lever. (2 marks)

Description	Marks
2nd class lever	1
Subtotal	**1**
Components – answer must demonstrate knowledge of the order of FLE	
• Fulcrum/pivot: in the front part of the foot/toes • Load/resistance: in the middle of effort and fulcrum/ankle • Effort/force: calf muscle	1 1 1
Subtotal	3
Total	**4**

(b) During the jump, Starc flicks his head backwards in order to better clear the bar. Identify which type of lever is used for the head flick and identify the 3 components that make up this lever during the high jump action. (4 marks)

Description	Marks
1st class lever	1
Subtotal	**1**
Components – answer must demonstrate knowledge of the order of FLE	
• Load/resistance – The centre of mass of the head is in front of the spine • Fulcrum/pivot – Where the spine connects to the cranium • Effort/force – the neck muscles on the back of the neck	1 1 1
Subtotal	**3**
Total	**4**

Question 27 **(11 marks)**

Rohan Browning is currently the fastest Australian over 100m and is representing Australia at the Paris Olympics.

(a) Define Newton's three laws and give an example of how they could relate to Rohan in the 100m sprint. (6 marks)

Description	Marks
For each (3 x 2 marks)	
Defines the law	1
Provides a relevant example	1
Total	**6**
Newton's 1st Law: an object will remain at rest or in its current state of motion unless acted upon by an unbalanced force. *Rohan will remain at the starting blocks unless acted upon by an unbalanced force*	
Newton's 2nd Law: the acceleration of a body is directly proportional to the force acting on it and indirectly proportional to its mass. *The more force Rohan exerts onto the ground the faster he will accelerate towards the finish line*	
Newton's 3rd Law: for every action there is an equal and opposite reaction *As Rohan exerts force against the starting blocks, the starting blocks exert an equal and opposite force upon Rohan*	
Accept other relevant answers	

(b) Which 10m segment of the race would Rohan experience the most and least acceleration? (2 marks)

Description	Marks
Rohan would experience the most acceleration in the first 10m	1
Rohan would experience the least acceleration in the last 10m when he is fatigued and showing either zero acceleration or negative acceleration	1
Total	**2**

(c) Identify where Rohan may position his line of gravity when he is waiting at the starting blocks for the gun and justify why this would be the best position. (3 marks)

Description	Marks
Identifies that Rohan would position his line of gravity at the very front of his base of support	1
Subtotal	**1**
Clear justification with all relevant information	2
Simple justification with some detail	1
Subtotal	**2**
Total	**3**
This is to provide Rohan with a low stability so that he can move as soon as the gun goes	
Accept other relevant answers	

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

This section contains **four** questions. You must answer **two** questions. Write your answers in the spaces provided. Supplementary pages for planning/continuing your answers to questions are provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.

Suggested working time: 60 minutes.

Question 28 **(15 marks)**

(a) Name each of the Fitts and Posner phases of motor learning and describe each with reference to how Brady would likely have progressed from first picking up a football, to playing juniors in Australind, to playing in the AFL. (9 marks)

Description	Marks
For each phase (3 x 3 marks)	
Identifies the phase	1
Subtotal	**3**
Describes the phase with clear reference to Brady's progression	2
Simple description of the phase with minimal reference to Brady	1
Subtotal	**6**
Total	**9**
Cognitive • performer learns the nature and demands of the task • performance level is inconsistent with frequent large errors – trial and error is common • athletes more concerned with what to do rather than how to do it • learner begins to develop the basic motor patterns for the task • movements consciously controlled • little, if any, cue recognition	
Associative • characterised by plenty of practice to develop and consolidate • parts of the skill become automatically controlled • consistency improves • size and frequency of errors decreases • external feedback is important, but learner begins to understand and use internal feedback to change performance • feedback contains more specific information • selective attention improves	
Autonomous • attends to relevant cues only – selective attention is high. • little variability in day to day performance • able to detect and self – correct errors • skills are automated • little attention given to technique allows more attention to be given to decision making and the application of tactics and strategies.	
Accept other relevant answers	

(b) Describe how Brady could take advantage of **three** characteristics of skeletal muscle in order to perform at a high level of competition. (6 marks)

Description	Marks
For each characteristic (3 x 2 marks)	
Clear description of how the characteristic could be used with reference to Brady's performance	2
Simple description of how the characteristic could be used with some reference to Brady's performance	1
Total	**6**
Any three of the following	
• **Extensibility** Brady could stretch one arm back behind his head to catch a ball • **Excitability** Brady can innervate his quadricep muscle to help him sidestep an opponent • **Elasticity** When about to jump to take a high mark, Brady puts weight onto his jumping leg so that it returns back to its resting length giving Brady more power • **Contractability** Brady's tricep muscles contract to push away an opposition player	
Accept other relevant answers	

Question 29 **(15 marks)**

(a) Using your knowledge of inspiration and expiration, describe how Tony can complete this process. (9 marks)

Description	Marks
Inspiration and Expiration	
At the surface Tony contracts his intercostal muscles and diaphragm	1
Tony's diaphragm flattens and his ribs rise	1
The volume of the lungs increases and the pressure in the lungs decrease	1
Air is inspired and moves from the environment into Tony's lungs	1
After resurfacing Tony relaxes his intercostal muscles and diaphragm	1
Tony's diaphragm returns to a dome shape and his ribs lower	1
The volume of the lungs decreases and the pressure in the lungs increase	1
Air is expired and moves from Tony's lungs into the environment	1
Gas moves from an area of high pressure to low pressure	1
Total	**9**
Accept other relevant answers	

(b) Identify **two** psychological considerations for achieving the ideal performance state applicable to Tony in this situation and explain how each can be applied. (6 marks)

Description	Marks
For each (2 x 3 marks)	
Identifies the consideration for achieving the ideal performance state	1
Subtotal	**2**
Clear explanation of how the consideration can be applied to the situation	2
Simple explanation of how the consideration can be applied to the situation with minimal reference to its effect	1
Subtotal	**4**
Total	**6**
Any two of the following	
• **motivation** Initial motivation to go spearfishing as a recreational activity OR Motivated to preserve his health/life when faced with the shark • **self-confidence** Personal belief that he has the ability and skills to deter the shark and get back to the boat • **stress management** Ability to manage stress levels and focus on skills/processes necessary to deter the shark • **concentration or attentional control – Nideffer's model** Focusing attention on the shark, surroundings and using what tools or methods are available to control the situation • **arousal regulation for optimal performance, including the inverted U hypothesis** Control of arousal levels in order to deter the shark and control his focus on the situation	
Accept other relevant answers	

Question 30 **(15 marks)**

Identify **three** components of fitness that would be beneficial for the security staff to develop. For each component describe how a principle of training and a training method could be implemented to improve their performance.

Description	Marks
For each component of fitness (3 x 5 marks)	
Identifies the component	1
Subtotal	**3**
Clear description of how a principle of training could be implemented with reference to improving their performance	2
Simple description of how a principle of training could be implemented with minimal reference to improving their performance	1
Subtotal	**6**
Clear description of how a training method could be implemented with reference to improving their performance	2
Simple description of how a raining method could be implemented with minimal reference to improving their performance	1
Subtotal	**6**
Total	**8**
Refers to any two of the following:	
• cardiorespiratory endurance • muscular strength • flexibility • body composition • agility • balance • coordination • reaction time • speed • power	
Accept other relevant answers	

Question 31 **(15 marks)**

(a) Outline **four** characteristics of an effective goal. Select two of the types of goals from performance, outcome, and process goals and provide an example of a goal that Corey may set himself for the festival. (8 marks)

Description	Marks
Outlines **four** characteristics (4 x 1 mark)	1
Subtotal	**4**
Any four from the following: • **Specific: c**lear, unambiguous goals to focus on • **Measurable:** need to be assessable to see if progress is happening • **Actionable:** the actions required to achieve desired goal are clear. • **Realistic:** goals need to be achievable and within the athlete's capacity • **Timely:** specific date for completion needs to be set • **Evaluated:** goal must be able to be evaluated for future improvements • **Revised:** goals must be regularly revised to ensure that progress is made	
Examples of goals	
Clear, comprehensive goal reflecting the SMARTER characteristics	2
Simple goal reflecting some of the SMARTER characteristics	1
Subtotal	**4**
Provides an example for any **two** of the following:	
• **Performance goal** • **Outcome goal** • **Process goal**	1
Total	**8**
Accept other relevant answers	

(b) On race day, after running cautiously and conserving energy for most of the run, Corey spots his friend George running in front of him in the stadium and decides to sprint the last 400m in an attempt to overtake him. Discuss the energy system interplay Corey may experience leading up to and in this last portion of the run. (7 marks)

Description	Marks
• The aerobic energy system is the predominant energy system over the whole marathon • At the commencement of the sprint, all three energy systems are contributing at the same time • The ATP-PC system has the largest contribution to the sprint in the first 10-seconds as it can produce ATP at the fastest rate • After 10-seconds the ATP-PC system depletes resulting in a reduction in speed from Corey • The Anaerobic glycolysis/lactic acid system is the most dominant after 10-seconds until near the end of the race • Around 30-seconds in, lactic acid/hydrogen ions build up in the muscle causing fatigue resulting in another drop in performance • The aerobic energy system then returns to being the dominant energy system for the remainder of the race and Corey is limited to his ability to utilise oxygen for aerobic respiration	1-7
Total	**7**