Government of **Western Australia**
School Curriculum and Standards Authority

PHYSICAL EDUCATION STUDIES

Stage 2

WACE Examination 2014

Marking Key

Marking keys are an explicit statement about what the examiner expects of candidates when they respond to a question. They are essential to fair assessment because their proper construction underpins reliability and validity.

Section One: Multiple-choice **14% (20 Marks)**

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

Section Two: Short answer **42% (58 Marks)**

Question 21 **(7 marks)**

(a) Describe the **three** forms of motion shown this image. (3 marks)

Description	Marks
Linear motion – movement in straight line. Bike and rider translate in one direction	1
Angular – movement turning through an angle. Wheels are rotating and cranks are rotating	1
General motion – combination of linear and angular motion. Both occur in riding a bicycle	1
Total	**3**

(b) Name the type of balance involved in the above situation and describe **three** ways the athlete could improve her stability. (4 marks)

Description	Marks
Dynamic balance	1
The centre/line of gravity – maintaining line of gravity within the base of support	1
Width of base of support – increase the base of support by changing support of two feet/blades down	1
Height of centre of gravity – description of lowering the COG to increase stability	1
Total	**4**

Question 22 **(3 marks)**

Describe how Newton's Laws are applied in this vertical jump test situation.

Description	Marks
A maximum of 1 marks for each law applied to the vertical jump	
Newtons 1St Law of motion – Law of inertia The athlete exerts a large muscular force against the ground causing them to accelerate off the ground and upwards through the air. Gravity is a force pushing the athlete on the ground but not causing any change only when off the ground. An object will remain at rest or in its current state of motion unless acted upon by a force.	1
Newtons 2nd Law of motion – Law of acceleration (F=ma not accepted) The greater force applied at take off causing them to have greater acceleration and the highest jump. The acceleration of a body is directly proportional to the force acting on it and indirectly proportional to its mass.	1
Newtons 3rd Law of motion – Law of action-reaction When the force is applied to the body there is an equal and opposite force that is applied to the floor (ground force reaction). The higher the force applied to the floor the higher the reaction force (lift) on the take off. For every action there is an equal and opposite reaction.	1
Total	**3**

Question 23 **(6 marks)**

(a) What principle of training is illustrated in the performance of an athlete who spends extended time away from training and competition due to injury? (1 mark)

Description	Marks
Reversibility	1
Total	**1**

(b) Define the principle of progressive overload and explain **one** way by which this principle is achieved. (2 marks)

Description	Marks
Progressive overload is the gradual increase of stress placed upon the body during exercise training to increase their level of fitness. (or similar definition)	1
One of these: effort/work/duration/intensity/frequency over a period of time = overload	1
Total	**2**

(c) Power is a fitness component athletes utilise to varying extents. Discuss the use of leg power for each athlete shown below. (3 marks)

Description	Marks
Badminton smash – gain maximum vertical distance when jumping to increase clearance over the net for the smash	1
Backstroke start – gain maximum horizontal distance when pushing off the wall	1
Marathon runner – power required for accelerate past other runners during the race, start of race; finish of race	1
Total	**3**

Question 24 **(6 marks)**

(a) Provide **one** example of an immediate physiological response in his respiratory system and **one** example in his circulatory system. (2 marks)

Description	Marks
Any 1 of the following:	1
Respiratory system Increase tidal volume Increase respiratory rate Increase max VO_2 uptake (VO_2 max) Increase gas exchange Increase arteriovenous O_2 difference	
Any 1 of the following:	1
Circulatory system Increase heart rate (HR) Increase stroke volume Increase blood pressure (BP) Increase cardiac output blood redistribution to muscles as needed	
Total	**2**

(b) Explain why the respiratory and circulatory systems respond in this way. (2 marks)

Description	Marks
Respiratory system	1
Oxygen in – Oxygen demand in lungs Increased need for oxygen entering body and/or for carbon dioxide to be exhaled	
Circulatory system	1
Redistribution of blood volume Increased need for oxygen delivery to working muscles and/or the removal of carbon dioxide and other waste products	
Total	**2**

(c) Identify the key difference between continuous and interval training. (1 mark)

Description	Marks
Any 1 of the following:	1
Continuous training does not involve breaks in the session, whereas interval training does Interval training is anaerobic/high intensity, continuous is aerobic/low intensity	
Total	**1**

(d) Discuss how the principle of specificity could be applied in the continuous program for this athlete. (1 marks)

Description	Marks
Specificity could be applied by going for low intensity runs for 90+ mins to replicate duration of soccer game	1
Total	**1**

Question 25 **(6 marks)**

(a) Insert the missing labels that identify the phases of the information processing model. (3 marks)

Description	Marks
Label must be in the correct box for awarding the mark	
Identification of signal/stimuli/input	1
Response identification/decision making	1
Response/output	1
Total	**3**

(b) Using your understanding of the information processing model, explain why few teams playing on outdoor ovals choose green as the colour for their uniforms. (1 mark)

Description	Marks
Poor contrast of stimuli against background i.e., players positions where players are on field; makes identification of stimuli hard or similar words	1
Total	**1**

(c) A junior player in the early phases of learning a sport is easily overloaded by too much information during the game. When this happens, identify **two** performance outcomes for this junior player. (2 marks)

Description	Marks
Slow decision making/ slow response	1
Performance errors – incorrect decision/ incorrect response selection	1
Total	**2**

Question 26 **(6 marks)**

(a) Identify the Fitts and Posner phase of motor learning shown in Image 1. (1 mark)

Description	Marks
Associative phase	1
Total	**1**

(b) Describe **two** features that distinguish this stage of learning from the stage represented in Image 2. (2 marks)

Description	Marks
1 mark each description for any 2 valid features of performance, can be from one area	
Skill learning to chain / coordinate actions together / basic performance is shaped gross motor errors are reduced	1–2
Attention understands what she is trying to achieve in the performance	
Cues / Feedback able to incorporating a incorporates visual, verbal proprioceptive cues to improve performance can recognise proprioceptive cues remembers key teaching points	
Errors begins to self-assess errors; can practice on own without coach	
Total	**2**

(c) In Image 1, written comments have now been added by the coach for the athlete to review between coaching sessions. Describe the forms of feedback used by the coach in this instance and state the main purpose of this feedback. (3 marks)

Description	Marks
Non-verbal (written comments, visual (photo))	1
Terminal (after the throw);	1
Reinforcing technique	1
Total	**3**

Question 27 **(6 marks)**

Using the diagram below, identify the bones and the muscles that cause movement at that joint.

	Description	Marks
A	Humerus	1
B	Biceps (m)	1
C	Radius	1
D	Deltoid (m)	1
E	Quadriceps (m)	1
F	Tibia	1
	Total	**6**

Question 28 **(6 marks)**

(a) Define the function of the circulatory system. (1 mark)

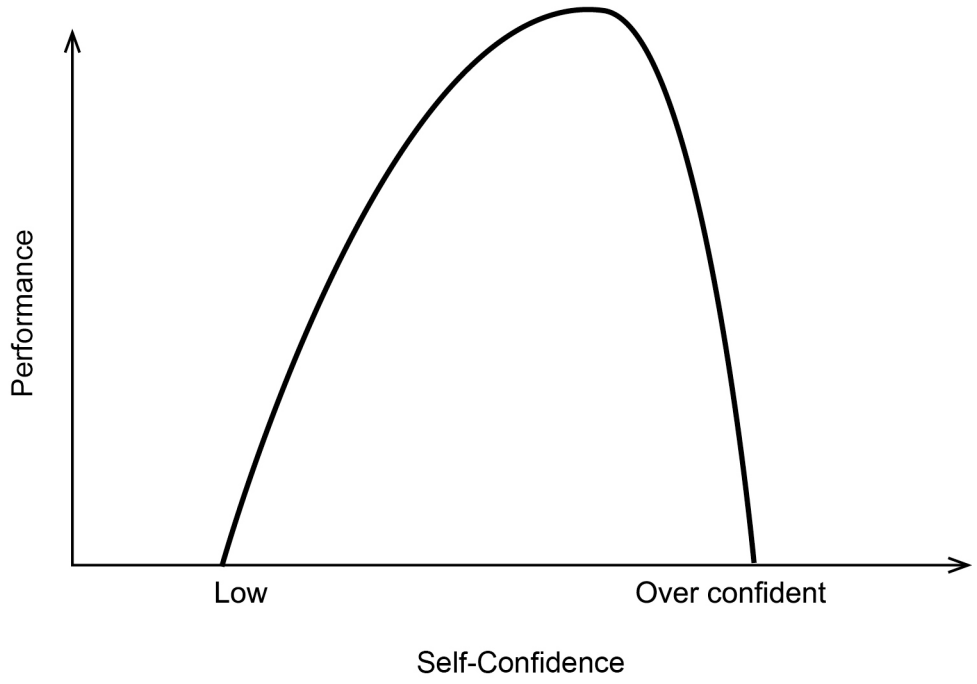
Description	Marks
Definition: the system that circulates blood to all tissues and organs of the body providing nutrients, oxygen, hormones and transporting waste products or similar words.	1
Total	**1**

(b) Consider the main structures of the circulatory system and their function. Complete the table below. (5 marks)

Description	Marks
1 mark for name of structure or correct definition/similar words (highlighted the minimium or similar)	
Heart	1
Vessels that carry (oxygenated) blood away from the heart to working muscles (and others organs)	1
Vessels that carry (de-oxygenated) blood back from muscles to the heart	1
Capillaries	1
The liquid made up with speciaised types of cells that carry oxygen, carbon doioxide, clotting factors, fight infection	1
Total	**5**

Question 29 **(6 marks)**

Illustrate the relationship between self-confidence and performance on the graph below.
(2 marks)



Description	Marks
Curve which is inverted.	1
Inverted U curve which is skewed	1
Total	**2**

(b) Classify the following, using the main type of attentional focus according to Nideffer's model. (4 marks)

Description	Take first word if doubled	Marks
A cricket batter scanning the field of play.	Broad (multiple cues)	1
A tennis player focusing on elbow extension.	Narrow (one cue)	1
A basketball player jumping to gain a rebound of a failed shot.	External (toward an object)	1
A hockey goalkeeper feeling nervous before a penalty shot.	Internal (thoughts feelings)	1
	Total	**4**

Question 30 **(6 marks)**

(a) Describe **three** mental skill strategies used to control arousal levels related to improving performance. (3 marks)

Description	Marks
Self Talk – talking internally or external giving positive affirmation to remove negative thoughts to control arousal	1
Self Imagery – visualise yourself successfully performing a tasks. Can be used prior to any performance and to refocus when performance is dropping, visualising the next action/s	1
Relaxation – centred breathing to reduce arousal levels	1
Total	**3**

(b) Goals are influenced by changing motivation. For the following goals related to sport, identify the key factors influencing motivation. (3 marks)

Personal goals	Factors	Marks
Now in my forties, I want to gain muscle bulk and look fitter.	Age	1
I want to win my local A grade tennis tournament this January.	Skill level	1
I want to complete the Busselton Ironman event instead of the marathon.	Type of Activity	1
	Total	**3**

Section Three: Extended answer **14% (20 Marks)**

Question 31 **(10 marks)**

(a) Consider two elite athletes, a track sprint cyclist and a road cyclist. In relation to their pedalling action, examine the following characteristics of skeletal muscle for each athlete.

- fibre type
- excitability
- contractibility
- extendibility
- elasticity (6 marks)

Description	Marks
Fibre type; slow twitch for road cyclist; allows for continuous sustained muscle contraction due to supply of oxygen to muscle fast twitch for track cyclist; allows for explosive muscle contractions over a short period of time	1–2
Excitability; muscles respond to rapid and multiple electrical signals at the start of the race for the sprint cyclist or muscles respond to chemical signals for the duration of the race/stage for the road cyclist	1
Contractibility; muscles in the legs of the cyclist need to shorten (contract) to allow for pedalling action to occur	1
Extendibility; muscles in legs of cyclist need to extend to allow for pedalling action to occur	1
Elasticity; muscles will return to their original length after being stretched during the pedalling action	1
Total	**6**

(b) For a person undertaking a regular, continuous training program, discuss how **three** energy sources are used by the body to improve their cycling performance and **one** consequence of **not** following correct nutrition guidelines. (4 marks)

Description	Marks
Carbohydrates Main fuel used in the form of glucose, stored in muscles as glycogen Stores can be sustained for up to 90 mins of activity	1
Fats Main fuel source for long duration, low-mod intensity activity Utilised by the body to allow for glycogen sparring	1
Protein Used for repair and rebuilding of muscles	1
Fatigue (cannot just state the term) Inadequate carbohydrate intake leads to muscle fatigue or body Utilises fats stores which has an energy cost/overconsumption/weight gain will also lead to fatigue	1
Total	**4**

Question 32 **(10 marks)**

(a) Sports skills can be classified according to the size of the muscles involved, the signals/cues in the environment for control and the nature of actions in the performance. Refer to the images below and use these classification categories to compare the characteristics of (i), the tennis serve; and (ii), the racing dive off the blocks. (6 marks)

	Description	Marks
(i)	Tennis serve gross skill = whole body action; large muscles of legs, arms, trunk; all muscles of body closed = self paced action; server can decide when to serve; choose the type of serve discrete = defined start and end points of serve action (wind up to follow through)	1–3
(ii)	Racing dive off the blocks gross skill = all large muscles of legs, arms (whole body action) to propel body; open skill = reactive skill; responding to an external signal (gun) i.e., external cue dictates movement pacing discrete skill = racing start skill has a clear start and end point to the action (from preparation to water entry)	1–3
	Total	**6**

(b) The images below show a badminton overhead drop shot being played, from preparation to follow through. The shuttle will angle sharply downward to just clear the net. Analyse the movement types observed at both the elbow and the forearm in performing this stroke from preparation to follow through. (4 marks)

Description	Marks
Elbow action – from flexion in preparation (images i to ii) to extension for impact and into follow through (images iii to iv) *[must identify in a sensible sequence or refer to specific images for each mark]*	1–2
Forearm action – shows supination during preparation to impact (images ii to iii) to pronation (image iv) *[must identify in a sensible sequence or refer to specific images for each mark]*	1–2
Total	**4**

Question 33 **(10 marks)**

(a) Using the three components of projectile motion, provide **two** examples for each component that (while keeping all other factors constant) will influence the distance a golf ball will travel. (6 marks)

Description	Marks
Angle of release (2 of 3 descriptions of different angles) – Higher angle (>45 degrees) and shorter distance or – Lower (<45 degrees) and shorter or – 45 degrees for furtherest distance	1–2
Velocity of projectile / release – The harder the ball is hit vs softer / More force greater distance And – less force reduced distance Or different club head velocity driver vs 9 iron – diff radius of rotation comparison acceptable	1–2
Height of release – compare two different heights in relation to distance travelled using the same force and angle Increasing the height results in greater flight times and greater distances travelled – least distance covered in comparison to and/or – greatest distance covered e.g. sand trap e.g. teeing off a hill	1–2
Total	**6**

(b) When a golfer hits the ball on the driving range, there are two main types of feedback they can rely on to improve their stroke. Define each type of feedback and give an example specific to golf that differentiates each type. (4 marks)

Description	Marks
Define: Intrinsic (or inherent) feedback – feedback information that is internal/inherent to the learner's action/performance , or similar phrase	1
One example to illustrate 'intrinsic': Must be specific to golf/hitting action: such as: • proprioceptive information/feelings of the grip/muscles used for the stroke; • visual information such as shape of the ball flight in air; ball was hooked or sliced; ball dribbles along ground; • distance from target flag on range); • 'top' ball off the tee	1
Define : Extrinsic or augmented feedback – extra information provided by coach or other device to guide performer, or similar phrase	1
One Example to illustrate 'extrinsic': Must be specific to golf/hitting action such as: • coach's verbal statement – 'change your grip'; 'let club head swing through ball'; coach giving key teaching points – grip, stance, backswing, action, follow-through, or • coach's demonstration of how to play the stroke, or • video of the strokes being made to highlight error in backswing action, or • club head pathway guide apparatus, or other relevant example.	1
Total	**4**

Question 34 **(10 marks)**

(a) Damian is a State grade touch football player, competing for the Southern Stars Touch Football team. At the State grade level, a game of touch football consists of two 20 minute halves. There are six players per team on the field at one time. Also, regular substitutions after approximately two minutes on the field are a critical part of the game at this level.

(i) Consider **one** relevant characteristic of each of the energy systems Damian will utilise during a State grade game of touch football.

(ii) Use the energy system continuum to explain how the body's energy systems are utilised during the game. (6 marks)

Description	Marks
Any 1 of the following	1
ATP-PC system short duration (1-5 secs) high intensity effort instant supply of ATP	
Any 1 of the following	1
Lactic Acid (or similar terminology) moderate duration (5-60 secs) high intensity effort or for increasing intensity fast supply of ATP	
Any 1 of the following	1
Aerobic system long duration (75+ secs) resting or submaximal intensity effort on the field large supply of ATP	
1 mark for each energy system (max 3)	1–3
Interplay of energy systems ATP –PC system used for single explosive effort (scoring a touchdown, chasing an opponent), restart of play LA system used for repeated efforts when ATP stores are depleted (attacking and/or defending) Aerobic used to regenerate ATP stores when subbed off, during a stoppage in play or at half time break	
Total	**6**

(b) Like all high level sportspeople, Damian is aware that he will not be able to keep playing touch football at a State grade level indefinitely. There will come a point in his playing career when he will have to reassess his personal goals.

Discuss **two** factors that will influence Damian's future goals. For each factor, recommend **one** way in which Damian can address its effect so he can continue to be involved in touch football at a State grade level. (4 marks)

Description	Marks
1 mark each (max 2)	1–2
Factors Age; as he gets older his level of fitness will decrease meaning he won't be able to sustain the levels needed for state levels (e.g. loss of endurance, speed) and/or Skill level; his skill level will not be at the same level as it is now (e.g. loss of coordination, power, reaction time) and/or Type of activity; he will not be the 'key' player he currently is, he will have to share the responsibility with other players	
1 mark each (max 2)	1–2
Addressing factors (or similar examples) Age; he could play in a seniors/masters/veterans state league against players of similar age; play for shorter periods of time; sub off at more regular intervals Skill level; play in a specialist position e.g. on the wing so he only has to focus on one aspect of the game (i.e. receiving the ball), A to B grade, open to over 35's Type of activity; take on more of a coaching/development role in the team/sport; umpiring, administration	
Total	**4**

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