

2019 PRACTICE WRITTEN EXAMINATION

for VCE Units 3 & 4 PHYSICAL EDUCATION

This Practice Exam is NOT an official VCAA paper for the Physical Education written examination. It may take slightly longer than 2hrs to complete.

Reading Time: 15 minutes

Writing Time: 2 hours

Question and Answer Book - Structure of Book

Section	Number of questions	Number of questions to be answered	Number of Marks
A	15	15	15
B	11	11	105
		Total	120

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners and rulers
- Students are not permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape
- No calculator is allowed in this examination
- **STUDENTS ARE NOT PERMITTED TO BRING MOBILE PHONES AND/OR ANY OTHER ELECTRONIC COMMUNICATION DEVICES INTO THE EXAMINATION ROOM**

Instructions

- Answer all parts of all questions.
- Circle correct/most accurate multiple choice responses in this book
- Questions should be answered in the spaces provided in this book
- All written responses must be in English

SECTION A ~ Multiple-choice questions

Instructions

- Answer **all** questions on this exam paper or on the answer sheet provided (end of year exam).
- Tick the correct multiple choice response; in exam ~ place answer sheet inside front cover of this book.
- One mark will be awarded for a correct response & no marks deducted for an incorrect response.
- No marks awarded if more than one response is completed for any question.

Question 1

An acute respiratory response to performing the Semo Agility test would be:

- ☐ A. Increased a-VO₂ difference
- ☐ B. Increased tidal volume
- ☐ C. Increased heart rate
- ☐ D. Decreased PC stores

Question 2

It is important to record what occurs during a training session in order to:

- ☐ A. Allow a coach to see progression of training
- ☐ B. See if training goals are being met
- ☐ C. Evaluate and adjust training loads when necessary
- ☐ D. Show informed consent was obtained

Question 3

The most likely cause of fatigue for someone doing the 6 x 40m sprints with a W: R ratio of 1:2 would be

- ☐ A. Dehydration
- ☐ B. H⁺ ions being produced
- ☐ C. Glycogen depletion
- ☐ D. PC depletion

The following image shows a family taking a fun shot whilst using their trampoline and should be used to answer the next 3 questions.



Question 4

Which family member has the highest angular velocity?

- ☐ A. Max
- ☐ B. Brady
- ☐ C. Tim
- ☐ D. Becky

Question 5

In order to increase his moment of inertia, Mark should:

- ☐ A. Straighten his arms and legs
- ☐ B. Grab his knees and adopt a tuck position
- ☐ C. Bend his knees before the next bounce and push off the trampoline forcefully
- ☐ D. Increase his base of support by placing his feet further apart

Question 6

Steph has only just started trampolining after overcoming her fears and anxieties around injuring herself. In an effort to help her relax before each session, she should try:

- ☐ A. Progressive muscle relaxation
- ☐ B. Slow, deep breathing routines
- ☐ C. Positive self-talk
- ☐ D. All of the above

Question 7

Flavoured drinks containing low levels of dissolved glucose are ideal for performance recovery because they:

- ☐ A. Replace electrolytes and assist with fuel absorption over a longer period of time
- ☐ B. Assist venous return
- ☐ C. Return plasma to pre-exercise levels quickly
- ☐ D. Replace fuels and are absorbed quickly

Question 8

A disadvantage associated with the VO₂ max treadmill test is:

- ☐ A. Accuracy is only around 90%
- ☐ B. It favours endurance runners
- ☐ C. Informed consent must be obtained
- ☐ D. A long / 24-hour recovery is required after doing the test to exhaustion, so no other testing possible

Question 9

Athletes are increasingly consuming carbohydrates and proteins within 30-45mins of finishing a completion or training in order to:

- ☐ A. Restore glycogen and muscle tissue to pre-exercise levels as quickly as possible
- ☐ B. Resynthesize ATP as quickly as possible
- ☐ C. Repair muscle tissue and rebuild enzymes
- ☐ D. Refuel whilst the circulatory system is still active and capable of higher absorption rates

Question 10

In any Third Class lever that occurs within the human body, which of the following is TRUE?

- ☐ A. The force is applied between the axis and the resistance
- ☐ B. The resistance occurs between the axis and the force
- ☐ C. The axis is found between the force and the resistance
- ☐ D. The force is equidistant from the resistance, being separated by the axis

Question 11

HIIT has been found to produce the following chronic cardiovascular adaptation:

- ☐ A. Increased fast twitch fibres size
- ☐ B. Increased blood volumes
- ☐ C. Increased lactate tolerance
- ☐ D. Increased neural transmission speeds

Question 12

A junior cricketer, picks up her fathers' bat and in order to be able to use it more effectively, she holds the handle as low as possible. This makes it easier to use by:

- ☐ A. Decreasing the moment of inertia
- ☐ B. Increasing the moment of inertia
- ☐ C. Decreasing the angular velocity
- ☐ D. Increasing the moment arm

Question 13

When contrasting someone at the associative stage with someone at the cognitive stage, they are more likely to:

- ☐ A. Respond better to massed practice
- ☐ B. Detect errors they are making and start self-correcting
- ☐ C. Improve performance levels with knowledge of results
- ☐ D. Retain information/skills via blocked practice

Question 14

Two students stand at the free-throw line on a basketball court – a Year 3 student and a Year 12 student. They both attempt to score by shooting the ball through the basket. The Year 3 student will need a:

- ☐ **A.** Greater amount of impulse than the Y12 student to succeed
- ☐ **B.** Greater height of release than the Y12 student to succeed
- ☐ **C.** Lower height of release than the Y12 student to succeed
- ☐ **D.** Greater speed of release than the Y12 student to succeed

Question 15

Which of the following DOES NOT occur at steady state:

- ☐ **A.** The anaerobic glycolysis system is the major producer of ATP
- ☐ **B.** Oxygen supply is able to meet oxygen demand
- ☐ **C.** The arteriovenous oxygen difference remains unchanged
- ☐ **D.** The aerobic energy system is the major producer of ATP

SECTION B ~ Short-answer questions

Question 1 (4 marks)

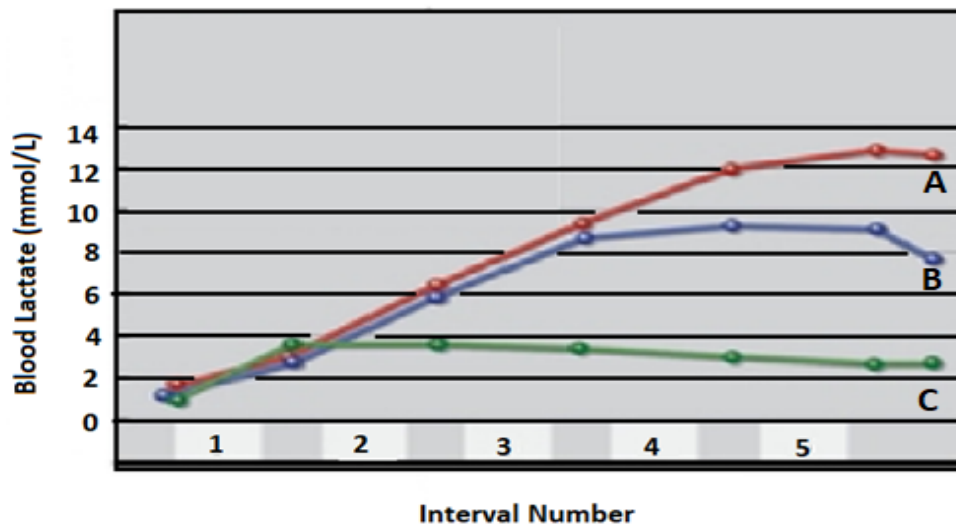
The following table reveals norms for the 300-yard shuttle run for 4 different Division 1 Athletes in the USA.

PERCENTILE RANKS FOR 300-YARD SHUTTLE RUN FOR NCAA DIVISION I ATHLETES (TIME IN SECONDS)				
Percentile Rank	Baseball	Men's Basketball	Women's Basketball	Softball
90th	56.7	54.1	58.4	63.3
80th	58.9	55.1	61.8	65.1
70th	59.9	55.6	63.6	66.5
60th	61.3	56.3	64.7	67.9
50th	62.0	56.7	65.2	69.2
40th	63.2	57.2	65.9	71.3
30th	63.9	58.1	66.8	72.4
20th	65.3	58.9	68.1	74.6
10th	67.7	60.2	68.9	78.0

- a. What fitness component does the 300-yard shuttle run assess? _____ **1 mark**
- b. What is the most likely cause of fatigue in the 300-yard shuttle run? **1 mark**
- _____
- c. Discuss one physiological factor that might explain why Men's basketball times are considerably faster than Women's basketball times for the 300-yard shuttle run? **2 marks**
- _____
- _____
- _____

Question 2 (9 marks)

The following data was collected from the same runner after she had completed five repetitions of interval training on 3 different days, using 3 different intensities (A, B and C).



- a. One of the intervals required the runner to complete 5 x 800m with a 30 second rest in between each repetition. Identify which letter (A, B or C) corresponds to this type of interval training and use information from the graph to support your answer.

3 marks

- b. If the runner wanted to improve her lactate tolerance, why would she need to work above her LIP?

2 marks

- c. Her coach wants to run a series of fitness tests at the start of the next 'in-season' training. Discuss two sociocultural factors that might be considered by the coach in determining whether or not the tests are appropriate.

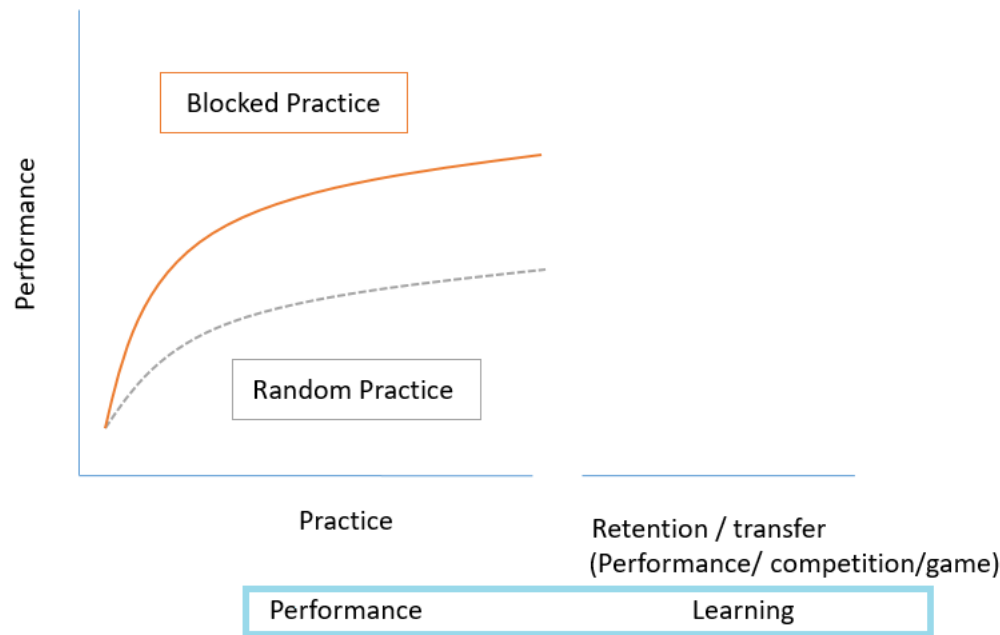
4 marks

Factor:

Factor:

Question 3 (8 marks)

The following graph reveals many relationships associated with skill acquisition.



a. State the relationship that exists between Performance and Practice 1 mark

b. (i) By referring to the above graph, which type of practice would lead to quickest improvements in skills for someone at the cognitive stage of learning? 1 mark

(ii) Discuss why the type of practice you have chosen above leads to the quickest improvements in skills for someone at the cognitive stage of learning 2 marks

c. By drawing two lines on the above graph, clearly indicate what happens to retention/transfer of information (learning) when using blocked or random practice.

2 marks

d. Provide an example of intrinsic feedback a National level tennis player might use during a match, and discuss how this might contribute to performance improvements.

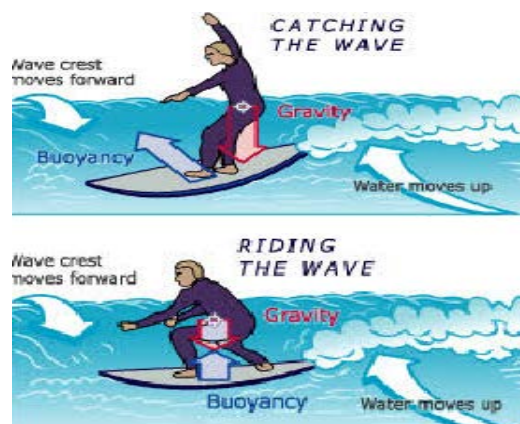
2 marks

Question 4 (12 marks)

Australia's Stephanie Gilmore won her 7th world surfing title at Maui in November 2018 and the win establishes her as one of the greatest surfers of all time.



a. The following graphic shows how surfers catch a wave (start) and then ride a wave (continue surfing)



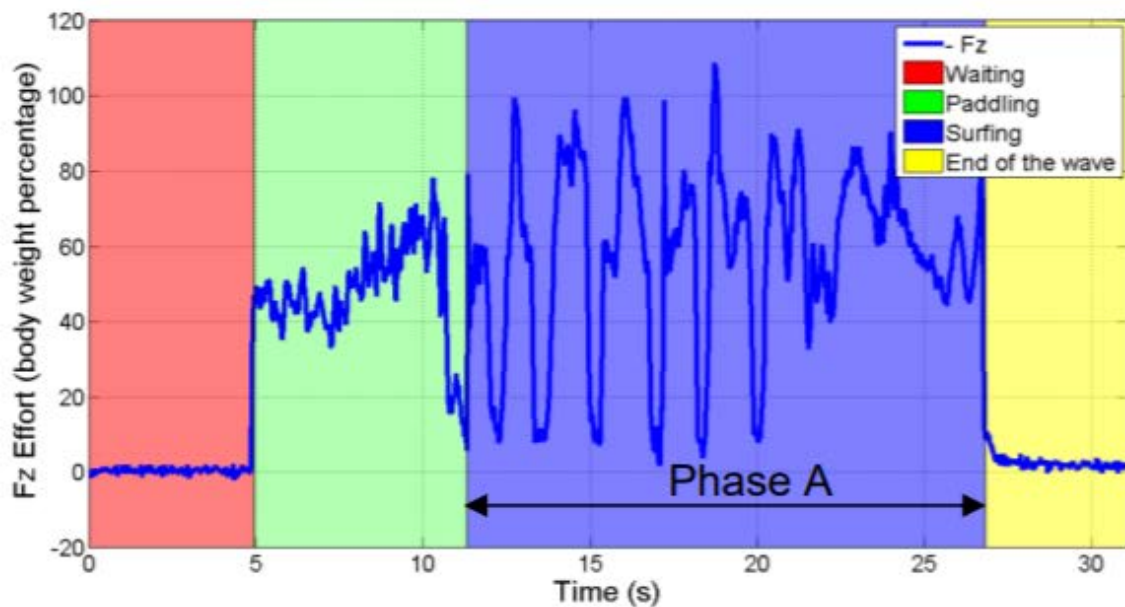
(i) List two strategies the surfer has used when riding the wave to improve balance?

2 marks

(ii) How can Newton's third law of motion be applied to this surfing scenario? Briefly discuss.

2 marks

b. The following graph reveals the vertical force (F_z) exerted on the surfboard by a surfer during the different phases – waiting for a wave; paddling; surfing and end of wave:



(i) Discuss the energy system contribution during the 30 second period shown in the above graph

4 marks

-
-
-
- (ii) By referring to the photo of Stephanie Gilmore, and the vertical force graph, select two fitness components that she would need to have developed to a high level in order to succeed in surfing. Clearly discuss how they contribute to successful performance. **4 marks**

Component: _____

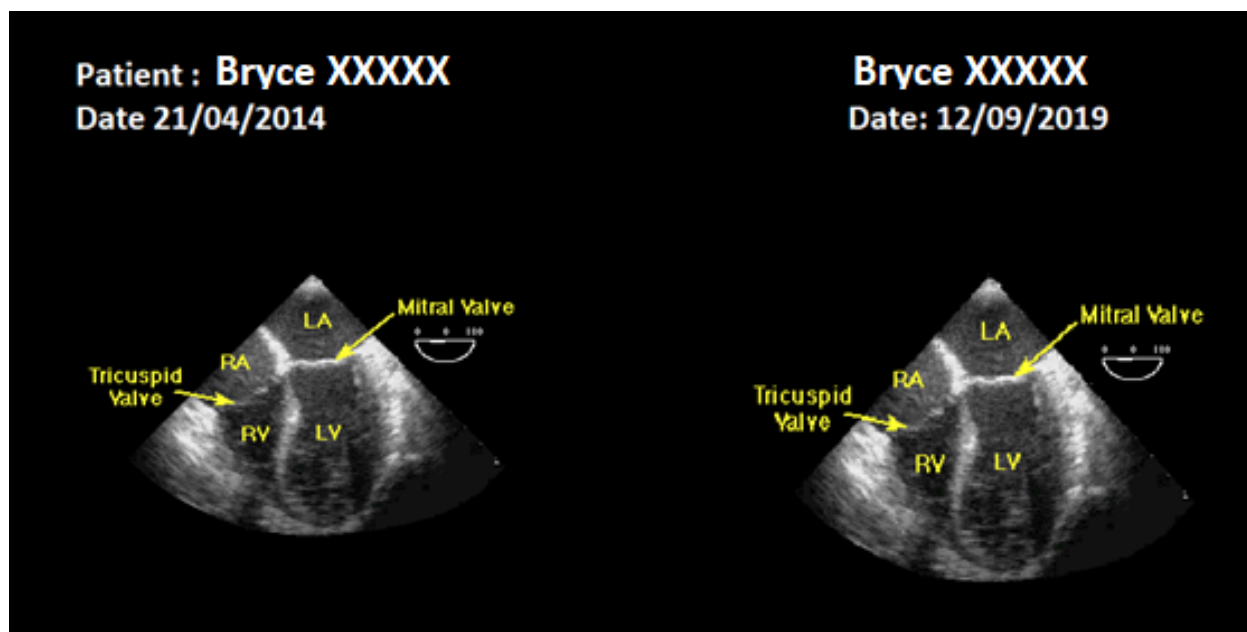
Contribution to successful surfing:

Component: _____

Contribution to successful surfing:

Question 5 (13 marks)

Bryce has been training and competing in Triathlons for over 10 years now. He started this as a 17-year old when he was diagnosed with asthma and his doctor recommended taking up swimming as a way of improving his condition. Bryce had further tests done 5 years ago, including an echocardiogram (ultrasound) which provided an image of his heart. He again had an echocardiogram on his heart last week.



- a. List three chronic cardiovascular adaptations Bryce would have experienced as a part of his triathlon training, and discuss how the adaptation leads to improved performances in the Triathlon. **6 marks**

Chronic Cardiovascular Adaptation	Performance Benefit
1.	
2.	
3.	

- b. The more Bryce trained for the triathlon, the harder he found it to achieve the same rate of improvement – i.e. it took longer for him to experience any gains. Identify the training principle evident in this example and in your own words discuss how it applies to all sports training. **3 marks**

Training principle: _____

Application to sports:

- c. The training Bryce has undertaken for the triathlon would also have resulted in chronic muscular adaptations. Apart from increased mitochondria size & number, list two other muscular adaptations he is likely to have experienced. **2 marks**

(i) _____

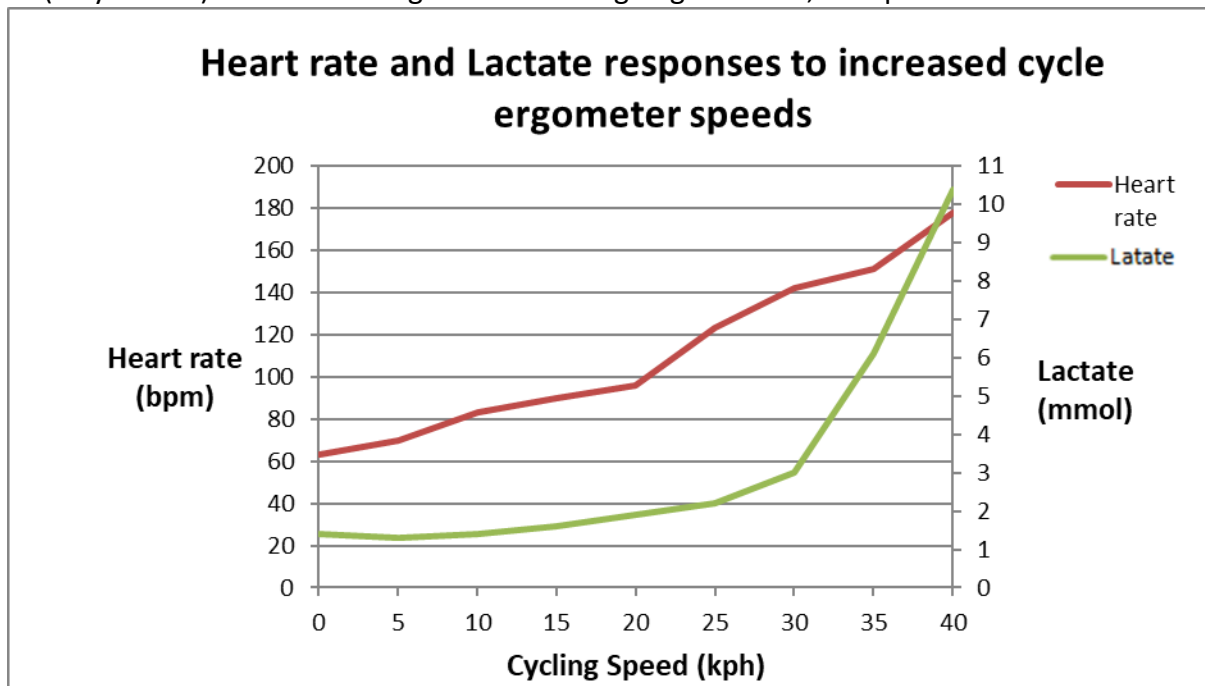
(ii) _____

- d. Bryce's coach has set him a fairly high work-rate to cycle at during training sessions. This has been set at 87% maxHR and when Bryce told his PE teacher he seemed a bit puzzled and said "Mate, that's above your LIP, are you sure you heard your coach correctly?"

Clearly discuss how it is possible for Bryce to cycle at 87% maxHR for 35 minutes. **2 marks**

Question 6 (4 marks)

The following graph shows the heart rate and lactate responses to a graduated cycle ergometer test performed by a Veteran (35 year-old) Triathlete being tested before going overseas, to represent Australia.



- a. Apart from increased muscle temperature, list two acute muscular variables likely to be seen as the test progresses.

2 marks

- b. When the cycle speed goes above 35kph, the athlete struggles to keep going but manages to do so by using a couple of psychological strategies. List two strategies that might be used towards the end of this test to enable the athlete to keep going.

2 marks

Question 7 (7 marks)

The following is an extract from a training log belonging to a Year 12 student completing her 6-week program during Term 3 this year.

<i>Exercise number</i>	<i>Exercise</i>	<i>One min. max.</i>	<i>75% max</i>	<i>Reps Week 1</i>	<i>Reps Week 2</i>	<i>Reps Week 3</i>	<i>Reps Week 4</i>	<i>Reps Week 5</i>	<i>Reps Week 6</i>
1	Skippping	100	75	75	82	90	105	112	130
2	Sit-ups	20	15	15	17	19	25	37	49
3	Press-ups	25	19	19	21	23	27	41	53
4	Squat jumps	35	26	26	29	32	36	49	52
5	Shuttle runs (10 m)	32	24	24	26	29	34	46	59
6	Pull-ups	6	4	4	5	6	8	10	15

a. What is this type of training known as?

1 mark

b. How has overload been applied to this method?

2 marks

c. Has overload been applied correctly? Briefly discuss by using examples from his program.

2 marks

d. List two **different** ways he could have applied overload to his program, other than those evident above.

2 marks

Question 8. (12 marks)

Arizona coach Sean Miller aggressively tries to make a point to one of his players as he is subbed off after registering his 4th foul.



- a. By referring to the photo, if the player was already over-aroused due to his team falling behind with only 3 minutes of play left, what effect would the coach's actions have on the player's performance when he returns to the court? Briefly discuss. **2 marks**

- b. It is highly likely that the basketball player is at the autonomous stage of learning. Provide an example of an individual constraint the coach may focus on in an effort to improve the player's performances – clearly discuss how improving this factor might bring about improvements. **2 marks**

- c. Briefly discuss why the Semo agility test would be a better selection than the Illinois agility test to assess the agility of basketball players. **2 marks**

- d. The following time lapse photo shows a basketball player taking a jump shot.



- (i) Briefly discuss how force summation is used by the player to improve the force applied to the basketball at point of release. **2 marks**

- (ii) When considering the basketballer's shooting arm, clearly identify the force, axis and resistance and place your answer in the table below, as well as identifying the class of lever shown: **4 marks**



Letter	Force or Axis or Resistance
A	
B	
C	
Class of lever	

Question 9 (12 marks)

Darren Clark holds the Australian record for the 400m sprint, with a time on 44.38 seconds set in 1988. Jarrod Bannister holds the Australian Javelin record with a throw of 89.02m and this was achieved in 2008.

a. Briefly discuss how Bannister's recovery in between throws would be different from Darren Clark's recovery in between the semi-final and 400m final. **2 marks**

b. Which one of the above two athletes, would most likely achieve the best "core muscle strength test"?

Clark ☐

Bannister ☐

1 mark

c. Clark completes 6 repetitions of a 300-metre section of an athletics track in 40 seconds, with 160 seconds recovery between repetitions.

i. What is the name given to this type of training?

1 mark

ii. What is the predominant energy system being trained whilst undertaking this training?

1 mark

iii. Calculate the **work: rest** ratio being applied.

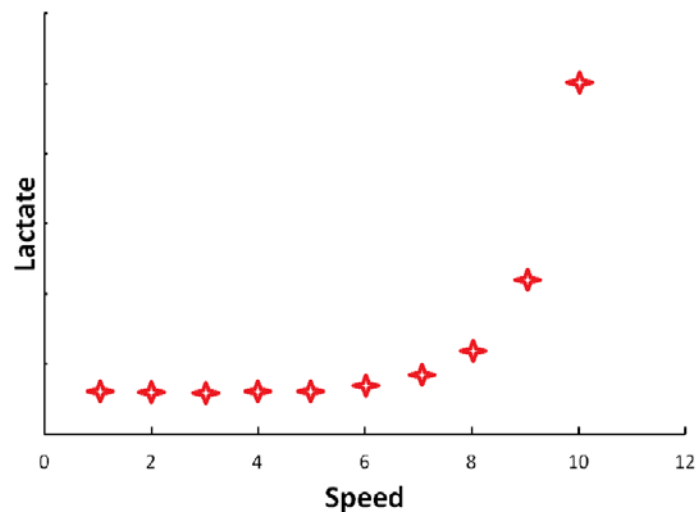
1 mark

d. (i) As a result of their training, adaptations would have occurred to their muscles – specifically to their fast twitch fibres. Complete the following table by inserting the words ~ **increased, decreased or unchanged** to indicate the likely change following 2-3 years of training. **5 marks**

<i>Characteristic</i>	<i>Fast-twitch</i>
<i>Oxidative enzymes</i>	
<i>Glycolytic capacity</i>	
<i>Mitochondria density</i>	
<i>Capillary density</i>	
<i>Myosin ATPase</i>	

(ii) The following graph shows the lactate levels of a 400m runner at the start of the 2015 season, in response to a graduated treadmill test.

On the same graph draw a line to indicate the lactate levels following 12 months of lactate tolerance training. **1 mark**



Question 10 (11 marks)

Brendan is a promising young rugby player who has recently been selected to train with the Victorian team. The table below is an extract from his training diary which shows some of the activities undertaken during the physical session on Tuesdays, which is then followed by a skills session (2 hours later).

Activity	Sets & Reps
Side throws (medicine ball)	5 x 10
Zig Zag Hops	4 x 8
Overhead throws (medicine ball)	5 x 10

a. What type of training does this represent? _____ **1 mark**

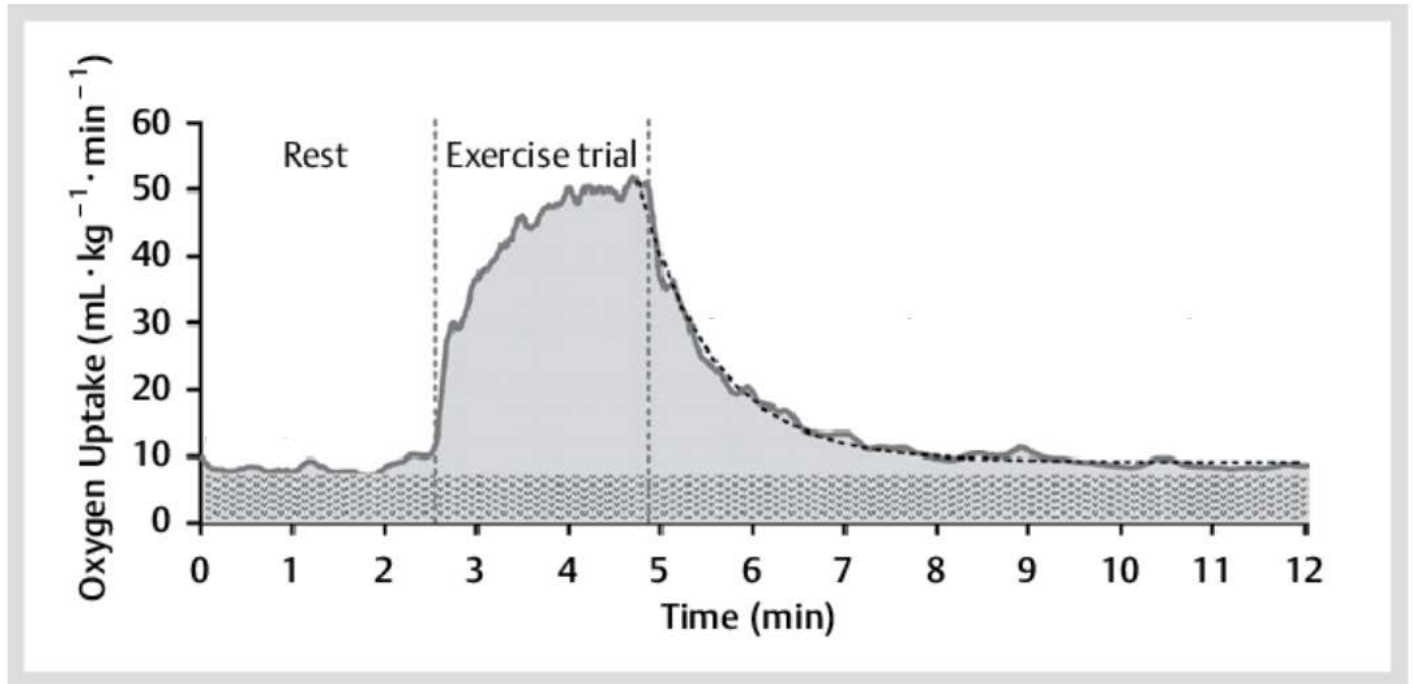
b. How is the principle of ‘specificity’ being applied during this particular type of training? **2 marks**

c. Discuss two sociocultural influences that would have contributed to Brendan increasing his rate of skill development as a junior player. **4 marks**

d. As Brendan improves is skill development, discuss two reasons why his coach would increase the practice variability, with particular emphasis on performance improvements **4 marks**

Question 11 (10 marks)

The following graph reveals the oxygen uptake during an all-out/maximal effort by a State Triathlon rep on a bicycle ergometer. The subject is able to cycle maximally for just over 2 minutes before experiencing severe localised fatigue requiring the test to be stopped.



- a. Other than increased oxygen uptake, list two other acute respiratory responses to the cycle ergometer test. **2 marks**
-
-
- b. How long does the oxygen debt last for? **1 mark**
-
- c. Assuming the subject does a passive recovery, list two key recovery mechanisms that would occur. **2 marks**
-
-
- d. On the above graph, draw the likely oxygen consumption during rest, a maximal effort on the cycle ergometer followed by a passive recovery for an Australian Representative Triathlete. **3 marks**

- e. It is likely that the higher performing Triathlete has a higher LIP. How would this be an advantage during a Triathlon? **2 marks**

Question 12 (3 marks)

Louise Burke is the Head of Sports Nutrition at the AIS and her team has found that Marathon runners who drink 'slushies' 20 minutes prior to the race starting, are better able to keep their core temperatures around 36.5–37.0 °C for longer periods of time into the race. Slushies are flavoured drinks made of ice crystals or 'frozen foam'.

Outline three ways maintaining a core temperature for longer in the marathon leads to improved performances and quicker running times. **3 marks**

END OF EXAM