



Trial Examination 2019

# VCE Physical Education Units 3&4

Written Examination

## Question and Answer Booklet

Reading time: 15 minutes

Writing time: 2 hours

Student's Name: \_\_\_\_\_

Teacher's Name: \_\_\_\_\_

### Structure of booklet

<i>Section</i>	<i>Number of questions</i>	<i>Number of questions to be answered</i>	<i>Number of marks</i>
A	15	15	15
B	9	9	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 correction fluid/tape.

No calculator is allowed in this examination.

#### Materials supplied

Question and answer booklet of 23 pages

Answer sheet for multiple-choice questions

#### Instructions

Write your **name** and your **teacher's name** in the space provided above on this page, and on the answer sheet for multiple-choice questions.

All written responses must be in English.

#### At the end of the examination

Place the answer sheet for multiple-choice questions inside the front cover of this booklet.

**Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic devices into the examination room.**

Students are advised that this is a trial examination only and cannot in any way guarantee the content or the format of the 2019 VCE Physical Education Units 3&4 Written Examination.

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## SECTION A – MULTIPLE-CHOICE QUESTIONS

### Instructions for Section A

Answer **all** questions in pencil on the answer sheet provided for multiple-choice questions.

Choose the response that is **correct** or that **best answers** the question.

A correct answer scores 1; an incorrect answer scores 0.

Marks will **not** be deducted for incorrect answers.

No marks will be given if more than one answer is completed for any question.

### Question 1

Which one of the following energy systems would be predominant in the triple-jump event?

- A. aerobic glycolysis
- B. ATP-CP
- C. anaerobic glycolysis
- D. aerobic lipolysis

### Question 2

An athlete completes the following on a bench-press machine as part of her session: 3 sets × 6 repetitions at 65% of 1 repetition maximum (RM) at a fast speed.

The fitness component the athlete is most likely trying to develop is

- A. muscular strength.
- B. muscular power.
- C. muscular endurance.
- D. aerobic capacity.

### Question 3

The most predominant cause of fatigue for an athlete running the 400 m sprint for a gold medal at the Olympic Games would be

- A. increased hydrogen ions in the muscles.
- B. decreased creatine phosphate in the muscles.
- C. decreased glycolytic capacity in the muscles.
- D. inhibition of the neuromuscular junction.

### Question 4

Running a 100 m sprint race would be considered

- A. linear motion.
- B. angular motion.
- C. general motion.
- D. continual motion.

**Question 5**

Which one of the following sociocultural factors is most likely to impact the learning of an autonomous basketball player?

- A. child-rearing practices
- B. role models
- C. family structure
- D. politics

**Question 6**

An athletics coach is looking to apply an environmental constraint on her athletes.

Which one of the following is the best way to do this?

- A. setting up shorter sprint intervals
- B. introducing a biomechanist to refine technical skills
- C. including a beach running session
- D. handing out instructions for appropriate work-to-rest ratios

**Question 7**

Which one of the following statements about fuel use is correct?

- A. As intensity is increased, triglycerides are used more predominantly as a fuel source.
- B. At rest, glycogen is used as the predominant fuel source.
- C. As intensity is increased, glycogen is used more predominantly as a fuel source.
- D. Creatine phosphate is only used during high intensity.

**Question 8**

Which one of the following is the most appropriate test of a person's muscular power?

- A. phosphate recovery test
- B. maximal bench press
- C. 30-second Wingate cycle ergometer test
- D. standing broad jump

**Question 9**

An 80 kg male and a 50 kg male are riding bikes. As they ride down a hill, the cyclists are accelerating at 5 m/s.

Which one of the following statements comparing the two cyclists is correct?

- A. The 80 kg male would be creating more force.
- B. The 50 kg male will eventually travel faster as he has less wind resistance.
- C. The 80 kg male will eventually lose speed as he has a greater mass.
- D. The 50 kg male would have greater inertia.

### Question 10

An athlete has decided to engage in a new training program to improve his aerobic capacity. He has decided to train three times a week for half an hour each session.

Which one of the following statements is correct?

- A. This new program is most likely going to lead to overtraining.
- B. The athlete needs to consider the training principle of intensity in order to increase success.
- C. The athlete must increase the time of their training to increase success.
- D. The variety in this program is sufficient for success.

### Question 11

Understanding the lactate inflection point (LIP) is most critical for success for which one of the following athletes?

- A. a 400 m sprinter
- B. a volleyball player
- C. an AFL midfielder
- D. a body builder

### Question 12

Ashleigh Barty is ranked among the top tennis players in the world. In the 2019 Australian Open, she competed in the fourth round against Maria Sharapova in a match lasting 2 hours and 22 minutes.

The most appropriate post-game recovery for this match would be to

- A. ride a bike for half an hour.
- B. ingest carbohydrates within an hour of completing the game.
- C. take protein and remain active.
- D. perform a passive recovery and drink water.

### Question 13

A Year 12 Physical Education student wanting to improve their anaerobic capacity has decided to use short-interval training as their major training method.

Which of the following is an **incorrect** application of this training method?

- A. training at an intensity at or above 90% max.
- B. working for 20 seconds and resting for 1 minute 40 seconds
- C. completing 2 sets of 10 repetitions with no rest between sets
- D. increasing the number of sets after three weeks

**Question 14**

A primary school student is beginning to learn how to play volleyball for the first time.

Which one of the following lists of practice strategies would be the most appropriate for the teacher to adopt for this beginner?

- A. massed, whole, random
- B. distributed, whole, random
- C. massed, part, blocked
- D. distributed, part, blocked

**Question 15**

Which one of the following chronic adaptations is most likely to occur following a 12-week resistance program targeting muscle strength?

- A. increased myoglobin content
- B. increased muscle hypertrophy
- C. increased capillarisation
- D. increased arteriovenous oxygen difference (a-vO<sub>2</sub> diff.)

**END OF SECTION A**

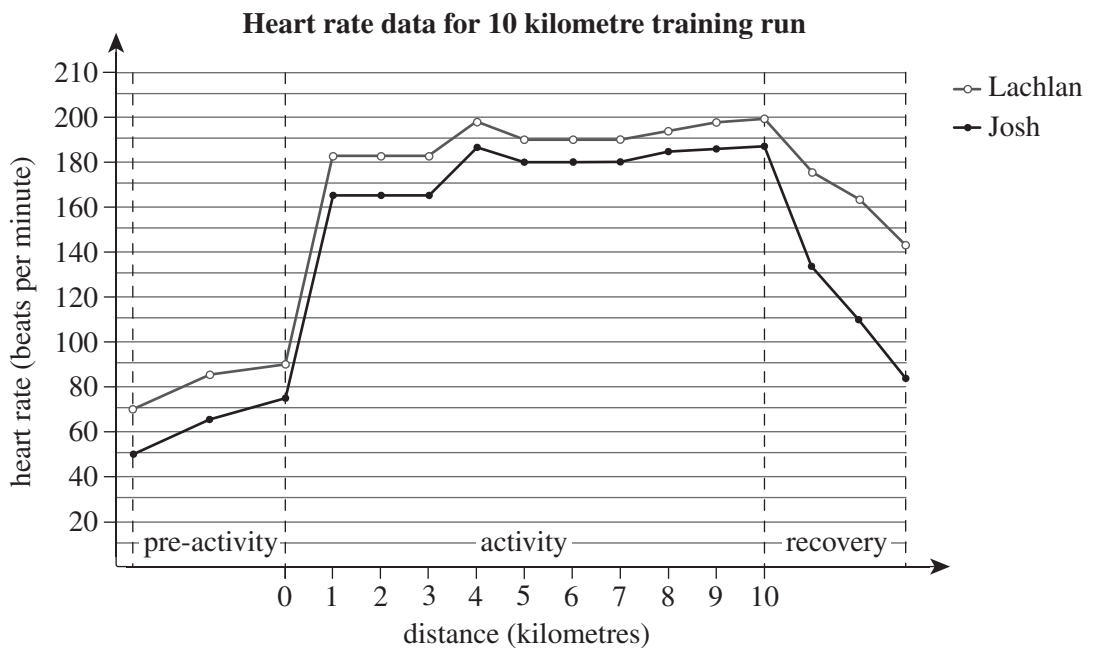
**SECTION B**

**Instructions for Section B**

Answer **all** questions in the spaces provided.

**Question 1** (9 marks)

Josh and Lachlan are two 17-year-old males who have been training over the last six months for the Melbourne Half Marathon, a 21 km race. On their most recent training run, Josh and Lachlan wore heart rate monitors to ascertain their physiological response to the session. They ran together throughout the entire run and tried to push each other as hard as they could. The graph below shows the data received from the heart rate monitors during the session.



- a. When the energy system relevant to the above activity is predominant, what is the ATP yield for glycogen? 1 mark
  


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- b. On the graph above, label where the following physical states would occur: oxygen deficit, excess post-exercise oxygen consumption (EPOC) and steady state. 3 marks
  
- c. Define **one** of the physical states listed in **part b.** and outline what occurs physiologically during this state. 2 marks

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**d.** Who would have the highest  $\text{VO}_2$  max.? Explain your answer with reference to the data provided.

3 marks

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**Question 2** (10 marks)

In the following images, Sam is hitting a tennis ball off a tee-ball stand as far as he can using a baseball bat.



Image 1



Image 2



Image 3



Image 4



Image 5



Image 6

As a way of improving the performance of Sam's baseball swing, a qualitative movement analysis (QMA) can be performed to analyse skill movement, prevent injury and identify strengths and weaknesses.

a. An important principle of a QMA is correcting errors in athletes.

What are the three **other** principles of a QMA?

3 marks

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Summation of forces is an important biomechanical principle in the effective performance of hitting a ball for distance.

**b. i.** Define the term ‘force summation’. 1 mark

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**ii.** Describe how force summation relates to Sam during his swing and how it can be used to increase his hitting distance. Reference the images to support your answer. 3 marks

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**c.** Explain **one** negative observation about Sam’s complete swing technique. In your answer, reference the biomechanical principles involved. 2 marks

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**d.** Sam was interested in calculating the velocity of his bat at the point of impact. What equation would he need to use to calculate this? 1 mark

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**Question 3** (12 marks)

Amiru Chandrasena is the 2019 under-18 national champion for men’s long jump. He won the event at the 2019 Australian Track and Field Championships with a jump of 7.14 m.

**a.** What stage of learning is Amiru in? 1 mark

\_\_\_\_\_

**b.** List **two** characteristics of the stage of learning identified in **part a.** 2 marks

1. \_\_\_\_\_

2. \_\_\_\_\_

**c.** Amiru may use a number of psychological strategies to assist him to perform his best. Identify **one** psychological strategy Amiru could use on the runway just prior to the event and explain how it may benefit his performance. 2 marks

Strategy \_\_\_\_\_

Benefit \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**d.** List **two** muscular adaptations that Amiru may have gained through his training to be an elite long jumper. 2 marks

1. \_\_\_\_\_

2. \_\_\_\_\_

**e.** Explain how **one** of the muscular adaptations identified in **part d.** would assist Amiru in the event. 2 marks

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- f. i.** Define **one** fitness component that is relevant for Amiru as a long jumper. 1 mark

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- ii.** Outline how the fitness component defined in **part f.i.** is important in the long-jump event. 2 marks

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**Question 4** (5 marks)

Jamaica is the most dominant sprinting nation in the world. While their country has a population of only 2.9 million people, the Jamaican athletics team consistently dominates all sprinting events against countries with far larger populations. In the 2016 Rio Olympic Games, Jamaica won gold in the men's and women's 100 m and 200 m sprint events and won both the men's 110 m hurdles and the men's 4 × 100 m relay.

- a.** Outline **one** sociocultural factor that could explain Jamaica's dominance in sprinting events. 2 marks

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- b.** Explain how the sociocultural factor chosen in **part a.** would affect all **three** stages of learning. 3 marks

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**Question 5** (6 marks)

An activity analysis is used to assist sport scientists, coaches and trainers in determining the physiological requirements of different sports and activities.

**a.** List **two** types of data that could be collected as part of an activity analysis for volleyball. 2 marks

1. \_\_\_\_\_

2. \_\_\_\_\_

**b.** Explain how the types of data listed in **part a.** can be used to determine the physiological requirements of volleyball. 4 marks

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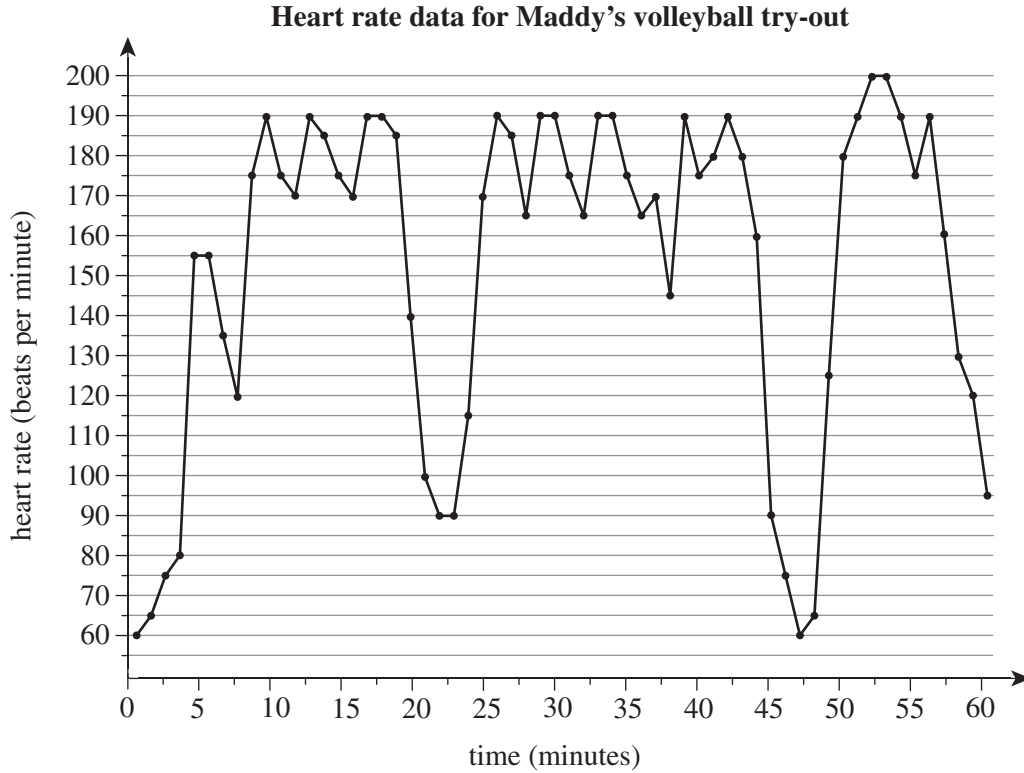
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**Question 6** (18 marks)

Maddy is a 17-year-old female who is attempting to make the under-18 Victorian beach volleyball squad for the upcoming national championships on the Gold Coast. The Victorian squad is taking six players to the championships, where each of the players will represent their state and play with a partner in a doubles competition.

During their last try-outs at St Kilda beach, Maddy played a three-set match with her partner Chloe. Maddy’s heart rate was recorded over the match, which lasted for one hour. Her heart rate during this competitive game is shown in the graph below.



Each set went to 25 points and the players were given a five-minute break between each set. Maddy and Chloe won the match two sets to one and were selected for the Victorian squad.

- a. i.** Identify the predominant fatigue mechanism for the above activity. 1 mark

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- ii.** Outline the physiological effect of the fatigue mechanism identified in **part a.i.** and indicate how it would influence the players’ performance. 3 marks

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- b.** Describe the energy system interplay that contributed to Maddy’s energy production from the beginning to the end of the volleyball match. Reference the data and the volleyball match to support your answer.

6 marks

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During the national championships, the Gold Coast’s weather is forecast to reach 40°C.

- c.** Describe the body’s physiological response to these conditions and the impact it will have on the players’ performance.

4 marks

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- d.** Outline a relevant strategy that Maddy and Chloe could use to assist their performance in the hot conditions. In your answer, reference the physiological benefit of your strategy and explain how it could enhance the players' performance.

4 marks

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**Question 7** (9 marks)

You have recently been employed as the health, fitness and wellbeing instructor at the Johnson Street Youth Correctional Centre. Your employment conditions state specific objectives around increasing the physical and mental health and wellbeing of the 40 teenagers in the centre. The centre houses males ranging from the ages of 15 to 19 with varying physical capabilities. The centre has a weights room, tennis court and a large oval with a walking track around it.

- a.** You are interested in conducting some fitness testing to improve your understanding of the physical health of the teenagers in the centre.  
Identify **two** measures that should be carried out prior to conducting the fitness tests. 2 marks

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- b. i.** Identify **one** test relevant to assessing either muscular strength or aerobic capacity. 1 mark

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- ii.** Outline the appropriate equipment and method you would undertake to run the testing session identified in **part b.i.** 2 marks

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- c.** List **two** other appropriate tests that you could carry out with the teenagers and identify a relevant fitness component of each test. Do **not** use the test identified in **part b.i.** 4 marks

Fitness test 1 \_\_\_\_\_

Fitness component 1 \_\_\_\_\_

Fitness test 2 \_\_\_\_\_

Fitness component 2 \_\_\_\_\_

**Question 8** (27 marks)

Zac was a talented middle-distance runner before his social circumstances changed and he lost motivation for the sport. He has been inactive for the past two years. Now at the age of 19, Zac wants to refocus his efforts and improve his muscular strength and aerobic capacity. He has submitted the following weekly exercise program that he would like you to provide feedback on. Zac plans to repeat the program for the first two months of his training cycle.

	<b>Activity</b>	<b>Details</b>
<b>Monday</b>	weights training	chest: 20 repetitions @50% of 1 repetition maximum (RM) biceps: 20 repetitions @50% 1 RM shoulders: 20 repetitions @40% 1 RM back: 20 repetitions @50% 1 RM
<b>Tuesday</b>	sprint training	10 repetitions × 90 sec sprints at 80% intensity 90 sec rest after each sprint
<b>Wednesday</b>	yoga and meditation	1 hour yoga and meditation session in the 'chill out' room
<b>Thursday</b>	running	40 min continuous running @50% intensity
<b>Friday</b>	weights training	chest 20 repetitions @50% 1 RM biceps 20 repetitions @50% 1 RM shoulders 20 repetitions @40% 1 RM back 20 repetitions @50% 1 RM
<b>Saturday</b>	tennis	five-set tennis match with Jarrod
<b>Sunday</b>	rest and relaxation day	

- a.** Outline **two** principles of training that Zac has applied correctly in his weekly exercise program.

4 marks

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- b.** Outline **one** principle of training that Zac has applied **incorrectly** in his weekly exercise program. In your answer, include what Zac would need to do to ensure that this principle is correctly applied.

2 marks

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- c.** After amending his program, Zac has asked you for the best strategies to monitor his progress.

Outline **one** strategy that Zac could use to monitor and/or record his progress during his eight-week training program.

2 marks

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Zac completed testing at the beginning and the end of his eight-week program to review his physical development. The results are outlined in the table below.

<b>Fitness test</b>	<b>Pre-training result</b>	<b>Post-training result</b>
grip dynamometer	36	46
max bench	45 kg	70 kg
20 m shuttle run	level 10.5	level 12.3
max push-ups	55	57
flexed arm hang	23 sec	22 sec

- d.** Which fitness component has shown little to no development over the eight-week training cycle? Outline a possible reason for this with reference to the data and Zac’s training. 4 marks

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- e.** Which **two** fitness components have shown the greatest development? 2 marks

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- f.** List **two** chronic muscular adaptations that would occur for each of the fitness components identified in **part e.** 4 marks

Fitness component 1 \_\_\_\_\_

Chronic adaptations \_\_\_\_\_

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Fitness component 2 \_\_\_\_\_

Chronic adaptations \_\_\_\_\_

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- g.** Outline the physiological change that has occurred in **one** of the chronic adaptations listed in **part f.** and explain how the change would assist Zac to perform better in the relevant fitness test. 2 marks

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- h.** Identify an appropriate training method that Zac could use to develop any of the fitness components identified in **part d.** or **part e.** 1 mark

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- i.** Outline a complete practical session you could undertake with reference to the training method identified in **part h.** with detail about **three** specific principles of training that are relevant to your session. You may use a diagram to support your answer. 6 marks

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**Question 9** (9 marks)

Auskick is a nationwide Australian Football League (AFL) initiative for young boys and girls from the age of five that is used to develop the fundamental skills required to play AFL.

- a.** List **two** fundamental movement skills required for the game of AFL. 2 marks

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- b.** Choose **one** of the fundamental movement skills listed in **part a.** and circle its **two** correct skill classifications below. 2 marks

Fundamental movement skill \_\_\_\_\_

fine          gross          discrete          continuous

- c.** Apply **one** of Newton's three laws of motion to **one** of the fundamental skills identified in **part a.** and link it to performance in a game of AFL. 3 marks

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- d.** Outline a coaching constraint that could be successfully applied to an Auskick training session. In your answer, include how your chosen constraint would allow individuals to perform better in the session. 2 marks

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**END OF QUESTION AND ANSWER BOOKLET**