VCE Physical Education
Written examination – November

Examination specifications

Overall conditions

The examination will be sat at a time and date to be set annually by the Victorian Curriculum and Assessment Authority.

There will be 15 minutes reading time and 2 hours of writing time.

VCAA examination rules will apply. Details of these rules are published annually in the *VCE and VCAL Administrative Handbook*.

The examination will be marked by a panel appointed by the VCAA.

The examination will contribute 50 per cent to the Study Score.

Content

All outcomes in Units 3 and 4 of the *VCE Physical Education 2011–2014 Study Design* will be examined. All of the key knowledge and skills that underpin the outcomes in Units 3 and 4 are examinable.

Format

The examination will be presented in a question and answer book.

The examination will consist of two sections.

Section A will consist of 15 multiple-choice questions worth one mark each.

Section B will consist of a variety of question types including short answer, multiple part, and extended response. Questions will be worth 1–8 marks.

The examination may include items which involve short scenarios and/or refer to a variety of stimulus material.

All outcomes/areas of study will be examined in each section.

All questions will be compulsory.

The examination will be out of 120 marks.

Advice

During the 2011–2014 accreditation period for VCE Physical Education the examinations will be prepared according to the Examination specifications above. Each examination will conform to these specifications and will test a representative sample of the key knowledge and skills.

Detailed advice about the social-ecological model and physical activity is available from the VCAA website: www.vcaa.vic.edu.au/vce/studies/physicaledu/phyeduindex.html

The questions in the attached sample paper relate to

Unit 3 AOS 1 – Section A 2, 6 and 11; Section B 2, 7 and 9

Unit 3 AOS 2 – Section A 1, 3, 5, 8, 9, 10, 12 and 14; Section B 1, 8, 10 and 11

Unit 4 AOS 1 – Section A 15; Section B 4, 6, 10 and 11

Unit 4 AOS 2 – Section A 4, 7 and 13; Section B 3, 5 and 12.

Answers to multiple-choice questions are provided on page 19.

Answers to other questions are not provided.

Version 2 – October 2011

VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

Victorian Certificate of Education 2011

SUPERVISOR TO ATTACH PROCESSING LABEL HERE

STUDENT NUMBER

Figures									Letter
Words									

PHYSICAL EDUCATION

Written examination

Day Date 2011

Reading time: *. to *.** (15 minutes)**
Writing time: *. to *.** (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	12	12	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.

Materials supplied
- Question and answer book of 18 pages.
- Answer sheet for multiple-choice questions.

Instructions
- Write your **student number** in the space provided above on this page.
- Check that your **name** and **student number** as printed on your answer sheet for multiple-choice questions are correct, **and** sign your name in the space provided to verify this.
- 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 book.

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

Version 2 – October 2011

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

A Year 12 student runs for 30 minutes at 75% heart rate max.
At the conclusion of this run there would be

A. an increase in VO_2 max.
B. a decrease in a-VO_2 difference.
C. a decrease in blood plasma volume.
D. an increase in intra-muscular fuel stores.

Question 2

One disadvantage of using a subjective method to measure children's physical activity levels is

A. it avoids recall problems.
B. it is expensive to administer.
C. a large number of participants are needed.
D. it requires a high level of cognitive ability.

Question 3

Which one of the following occurs during sub-maximal exercise at the tissue-capillary interface?

A. Diffusion rates will decrease so less oxygen enters the lungs.
B. Diffusion rates will decrease so less carbon dioxide enters the blood stream.
C. Diffusion rates will increase to allow greater amounts of oxygen to enter the lungs.
D. Diffusion rates will increase to allow greater amounts of oxygen to enter the muscle.

Question 4

An athlete who uses erythropoietin (EPO) is likely to see an improvement in

A. speed due to increased stimulation of the central nervous system.
B. aerobic capacity due to increased oxygen carrying capacity of the blood.
C. muscular strength due to increased cross-sectional area of the filaments.
D. anaerobic capacity due to increased oxygen carrying capacity of the blood.

Question 5

Carbohydrate → glycogen → _____ → $CO_2 + H_2O$ + heat + energy

Which one of the following completes the formula above?

A. ATP
B. ADP
C. lactic acid
D. pyruvic acid

Question 6

Which one of the following physical activity measures would be the **least** practical but **most** accurate measure of physical activity?

A. pedometers

B. accelerometers

C. direct observation

D. physical activity logs

Question 7

The rationale for the implementation of the World Anti-Doping Agency (WADA) Code is to

A. ensure that all events at a national and international level are free of doping violations.

B. protect the athletes and support staff rights to privacy when anti-doping rules are violated.

C. ensure that all sports have their own anti-doping programs at the international and national level to detect doping violations.

D. protect the athlete's fundamental right to participate in doping-free sport and promote health, fairness and equality for athletes worldwide.

Question 8

Which of the following statements is true of the characteristics associated with energy production from anaerobic glycolysis?

A. Maximum ATP production is 0.7 moles.

B. ATP production occurs in the mitochondria.

C. Peak power during maximal efforts occurs in 5–15 seconds.

D. Energy production is limited by the amount of chemical fuel stored in the muscles.

Question 9

The energy substrate stored in the body which can produce the most amount of ATP is

A. lipids.

B. proteins.

C. carbohydrates.

D. phosphate creatine.

Question 10

Lactate levels increase as an immediate (acute) response to exercise.

Once steady state is reached, lactate levels will plateau because

A. oxygen supply equals demand at steady state.

B. there is sufficient oxygen available to breakdown the lactic acid.

C. energy production is no longer reliant on the lactic acid energy system.

D. energy is now being produced entirely from the aerobic energy system.

Question 11

The social ecological model identifies four levels (shown in the table as A, B, C and D) that influence physical activity behaviour.

A	B	C	D
Urban planning legislation	Level of education	Access to facilities such as parks and sporting grounds	Cultural background

From the table, the names of the four correct levels are

A. A – individual, B – social environment, C – physical environment, D – policy.

B. A – policy, B – social environment, C – physical environment, D – individual.

C. A – policy, B – individual, C – physical environment, D – social environment.

D. A – physical environment , B – individual, C – policy, D – social environment.

Question 12

An active recovery is recommended after a 400-metre sprint because

A. lactate acid has accumulated.

B. it allows for the rapid restoration of phosphocreatine (PC).

C. it allows for muscle glycogen to return to pre-exercise levels more quickly.

D. it facilitates and increases the rate of removal of accumulated by products by maintaining oxygen levels.

Question 13

What are the main functions of nutritional and hydration strategies used during recovery?

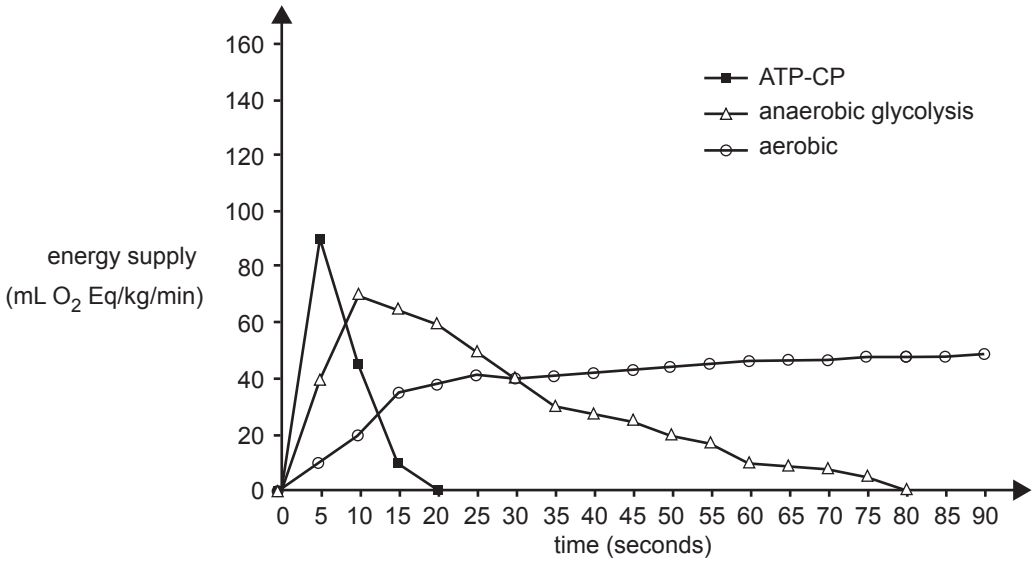
A. restoring muscle glycogen, replacing lost fluids and electrolytes and relaxing of muscles through massage

B. restoring muscle glycogen, replacing lost fluids and electrolytes and manufacturing new muscle and red blood cells in the repair and adaptation process

C. replacing lost fluids and electrolytes, allowing the immune systems to handle any damage caused by the exercise bout and preventing delayed onset muscular soreness

D. replacing lost fluids and electrolytes, manufacturing new muscle and red blood cells in the repair and adaptation process and preventing delayed onset muscular soreness

Question 14



From the graph, at what time does aerobic energy supply exceed anaerobic energy supply?

A. 5 seconds

B. 10 seconds

C. 20 seconds

D. 35 seconds

Question 15

Adrienne has been training with a running team for many years and participates regularly in fun runs that range from 5 km to half marathons.

The results of the four muscle biopsies are shown in the table below.

	Fast-twitch fibre concentration	**Mitochondria level**	**Capillary density**
muscle A	low	high	high
muscle B	moderate	moderate	low
muscle C	high	low	low
muscle D	low	moderate	moderate

Based on the results above, which adaptations are most likely to be evident in Adrienne's quadriceps muscle?

A. muscle A

B. muscle B

C. muscle C

D. muscle D

END OF SECTION A

TURN OVER

SECTION B

Instructions for Section B

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

Question 1

Redistribution of blood flow is an acute response to exercise. This is an important mechanism in the thermoregulation of the body.

Explain how blood flow to the skin assists in regulating the body's temperature during sub-maximal exercise.

3 marks

Question 2

The social ecological model can be used as a tool when designing and evaluating programs that promote physical activity.

a. Using the social ecological model as a framework, draw and label a simple diagram to illustrate the levels of the model and on your diagram provide **one** example of a factor at each level that might influence older adults' (65+ years) participation in physical activity.

5 marks

b. Describe a strategy that could be implemented to target one of the factors identified in **part a.**

2 marks

c. The social-ecological model needs to be tailored to suit particular population groups.

Suggest how planning might be different if a physical activity intervention was targeting adolescents instead of older adults.

4 marks

Question 3

An athlete running a half marathon is offered a choice of drinks at a drink station at the 10-km mark of the race. The athlete has a choice of either a hypotonic, hypertonic or isotonic drink.

a. Which drink would be the best choice at this point of the race?

1 mark

b. Compare the three types of drinks and justify your choice in **part a.**

4 marks

Question 4

Charlotte is doing Year 12 Physical Education and is planning her 6-week training program. There are a number of steps she must complete to collect the relevant data needed to design, implement and evaluate the program.

a. Place the following steps in the order they would need to be undertaken. Use a number from 1 to 5 to indicate the correct order.

1 evaluation ☐

2 activity analysis ☐

3 training program ☐

4 pre-assessment of fitness ☐

5 post-assessment of fitness ☐

1 mark

The following data was collected from the initial fitness assessment.

Test	Result
beep test	Level 7
7 stage sit-up test	Level 6
60 second push up test	8
sit and reach test	+ 15 cm
phosphate recovery test	28%
Illinois agility test	15.8 seconds
vertical jump	35 cm

b. From the data, identify two **health-related** fitness components that Charlotte could focus on in her training program and circle whether she needs to maintain or improve the selected fitness component.

1._____ maintain/improve

2. _____ maintain/improve

4 marks

c. **i.** State an appropriate training method to improve one of the fitness components identified in **part b.**

Method _____

ii. Use the template below to demonstrate how you would apply the training principles of frequency, intensity and specificity to the method of training identified in **part i.**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

1 + 6 = 7 marks

Question 5

Optimal arousal levels are important for a successful performance in sporting activities.

a. On the axes below, draw a graph to demonstrate the relationship between arousal levels and performance. Label both axes.

2 marks

b. Optimal arousal levels are not the same for all sports. Using specific sporting examples, discuss how arousal levels differ in different sporting situations.

3 marks

c. Outline a specific psychological strategy a coach may use to

- lower heart rate and increase an athlete's focus before their event

- increase motivation during their event.

2 marks

Question 6

Participants in a six-week endurance training program completed running training 3–5 days per week for 20–30 minutes per session. The subjects completed an identical **sub-maximal** test on a treadmill **before** and **after** the six weeks of training.

a. Give a reason for performing a fitness test in this situation.

1 mark

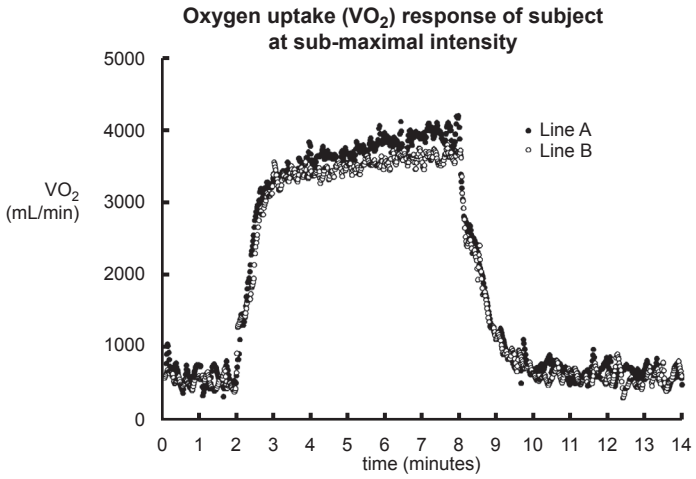
b. List three elements the test administrators would need to consider to ensure that the tests are administered in a reliable manner.

1. _____

2. _____

3. _____

3 marks



c. Which line on the graph above represents the results of the treadmill test **post** training?

1 mark

d. Explain the result shown in the graph by comparing the two tests between three and eight minutes.

2 marks

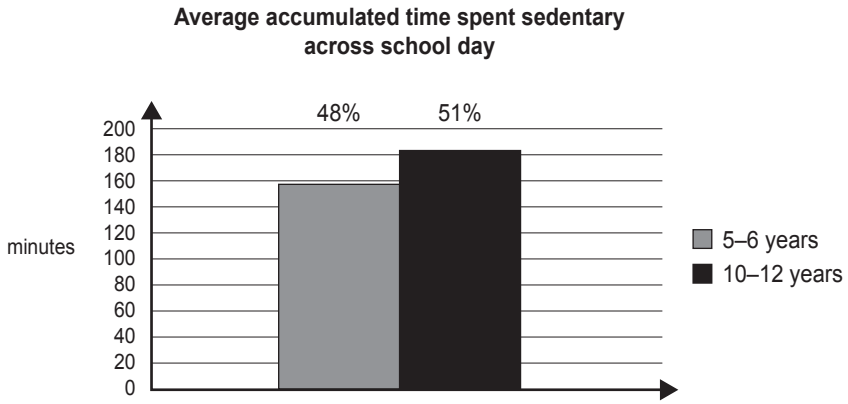
e. Identify one chronic muscular adaptation that would result from the six-week endurance training program and explain how it would lead to the improvement shown in the graph.

Adaptation _____

Explanation _____

3 marks

Question 7



a. Define the term 'sedentary behaviour' and provide an example of a typical sedentary behaviour for these students.

2 marks

b. Suggest a reason why there is a difference in results for the two age groups in the graph shown above.

1 mark

c. **i.** State one subjective method that could be used to measure how much time children aged 10–12 years spend sedentary throughout the school day.

ii. Outline briefly how it could be used.
In your answer, include possible disadvantages of using this method.

1 + 2 = 3 marks

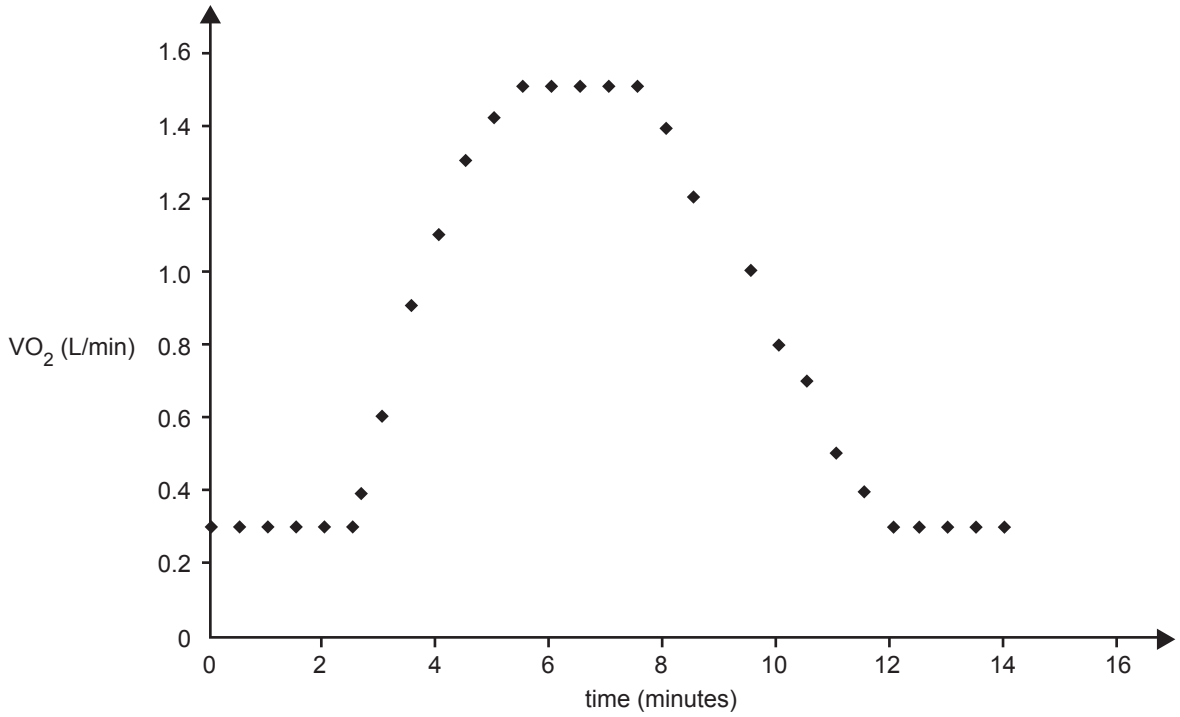
d. Describe a strategy that could be implemented during the school day to decrease the sedentary behaviour of 10 to 12-year-old Australian children.

2 marks

Question 8

The graph below is a representation of an individual's oxygen uptake prior to, during, and after exercise in an outside temperature of 20 °C.

a. On the graph provided below, shade the region of excess post-exercise oxygen consumption (EPOC).



1 mark

b. **i.** What would happen to EPOC after 30 minutes of running at the same pace in an outside temperature of 35 °C compared to 20 °C?

_____

ii. Why does this occur?

_____

_____

1 + 1 = 2 marks

c. **i.** What strategy could an athlete use to reduce EPOC in this situation?

_____

_____

ii. Provide a practical example of how this could be achieved.

_____

_____

1 + 1 = 2 marks

Question 9

Part of the Victorian Government's 'Go for your life' campaign is the Premier's Active Family Challenge, which encourages Victorians to do 30 minutes of physical activity each day for 30 days.

a. **i.** The family environment can be used to influence physical activity behaviour, list two ways this can be achieved.

ii. From those listed, explain how they may lead to an increase in physical activity levels of the family.

2 + 2 = 4 marks

b. Outline two strategies that could be used to encourage families to complete the Premier's Active Family Challenge.

2 marks

c. Discuss **three** factors that need to be considered when planning interventions to target family physical activity.

6 marks

Question 10

a. From the diagram above, provide one **skill-related** and one **health-related** fitness component required to perform **this** action. Define each fitness component and explain why it is important in performing this manoeuvre.

Skill-related fitness component

Health-related fitness component

8 marks

Surfing contests require the surfer to perform in heats and then finals. Each heat lasts for 20 minutes and the surfers are scored on their best four waves.

In each heat the surfer has to

- sprint to the water with their surfboard
- paddle out
- sit and wait for a good wave
- pick the better waves and then perform a series of technical manoeuvres and crazy tricks
- have astounding body control on the water and in the air. The body also has to absorb forces when landing tricks
- paddle back out after each wave that they 'ride' and wait for the next good wave.

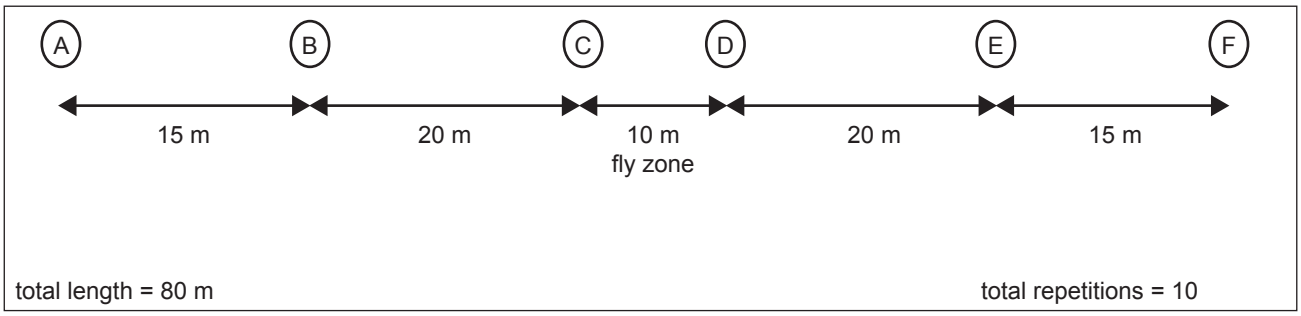
b. Using the information provided, discuss the interplay of the three energy systems in surfing.

6 marks

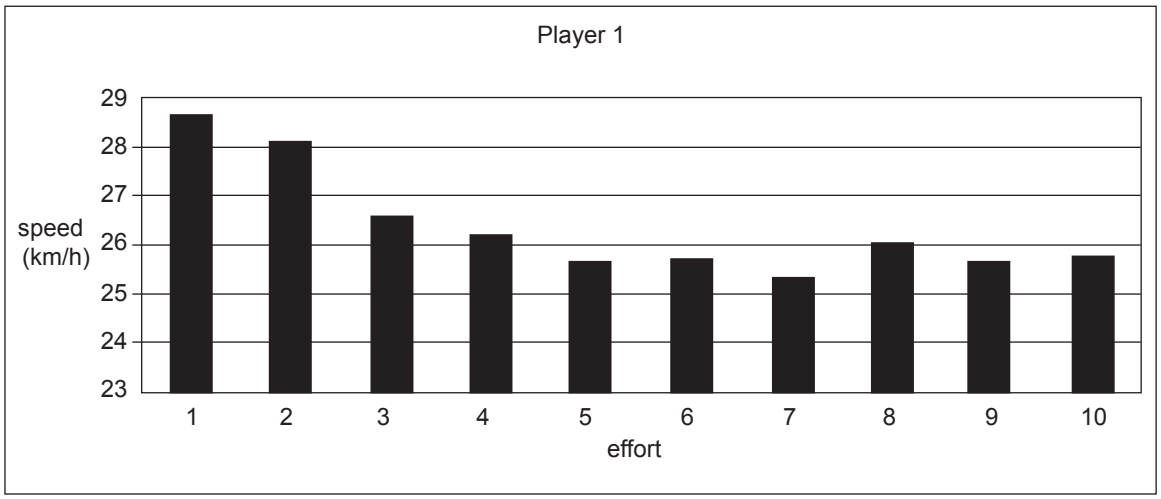
Question 11

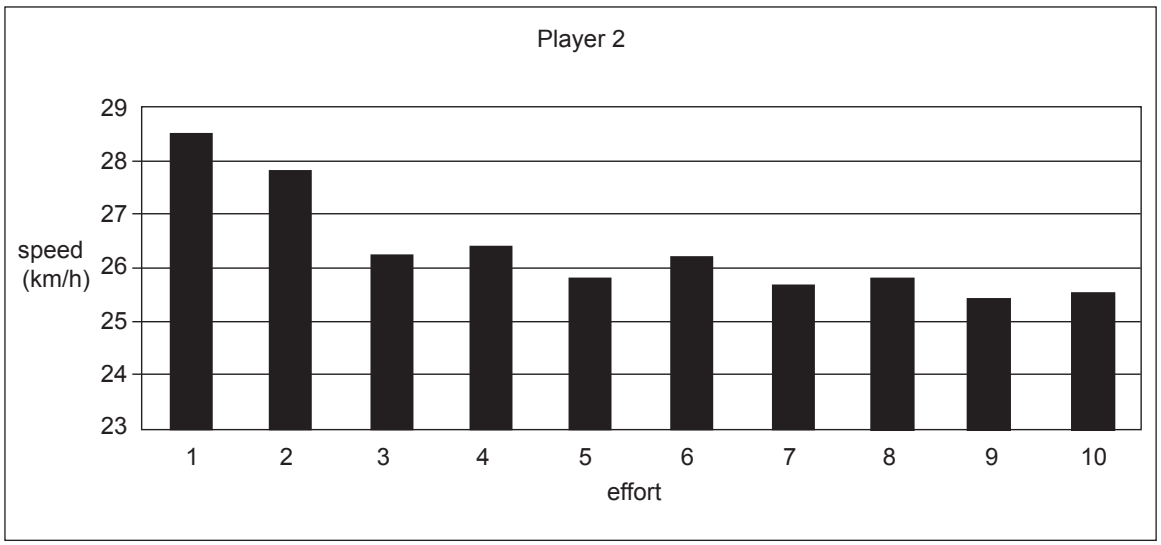
The following data refers to the scores obtained from two elite level AFL football players in a repeated sprint test. Below is a summary of how the test was conducted.

- Players jog from point A to point B.
- At point B players accelerate so that when they get to point C they are at maximum speed.
- Maximum speed is maintained over 10 m from point C to point D (fly zone). The time taken to cover the 10 m in the fly zone is recorded and the speed is calculated.
- From point D to point E the player decelerates (slows down).
- Players jog from point E to point F.
- Players rest for 25 seconds between sprints.
- Players perform 10 repetitions.



The graphs show the maximum speed reached in the fly zone by the two players.





a. Which component of fitness does the repeated sprint test measure?

1 mark

As the test progresses, the ability of the athlete to run at the same speed during the fly zone diminishes.

b. With reference to the recovery rate of the dominant energy system, explain why this occurs.

4 marks

Having a well-developed cardio respiratory system is beneficial to a successful performance in this test.

c. Why is having a good maximum oxygen uptake important in this test? Give two reasons.

1.

2.

2 marks

d. Identify the multi-factorial fatigue mechanisms associated with this activity and explain how they may lead to the decrease in speed from the 1st to the 10th repetition.

4 marks

Question 12

Drug good as gold

Injections of human growth hormone (HGH) can transform an Olympic also-ran into a gold medallist, an Australian study has confirmed.

Research financed by the World Anti-Doping Agency (WADA) has determined the time advantage that unscrupulous athletes can reap from the 'extensively abused' natural substance.

The study revealed a 4 per cent improvement in sprint capacity. So, in a 10-second sprint (about 100 m), the drug would equate to a 0.4 sec advantage, according to Prof Ken Ho, of Sydney's Garvan Institute of Medical Research.

Herald Sun, Wednesday 5 May 2010

a. Explain how the use of HGH may lead to an increase in a sprinter's performance.

3 marks

b. Outline two physiological reasons why WADA has banned the use of HGH by athletes.

2 marks

c. Outline two reasons for the development and implementation of the WADA Code.

2 marks

END OF QUESTION AND ANSWER BOOK

Answers to multiple-choice questions

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