



## ATAR course examination, 2017

### Question/Answer booklet

# PHYSICAL EDUCATION STUDIES

Place one of your candidate identification labels in this box.  
Ensure the label is straight and within the lines of this box.

Student number: In figures

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In words

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### Time allowed for this paper

Reading time before commencing work: ten minutes  
Working time: two and a half hours

Number of additional  
answer booklets used  
(if applicable):

### Materials required/recommended for this paper

#### *To be provided by the supervisor*

This Question/Answer booklet  
Multiple-choice answer sheet

#### *To be provided by the candidate*

Standard items: pens (blue/black preferred), pencils (including coloured), sharpener,  
correction fluid/tape, eraser, ruler, highlighters

Special Items: non-programmable calculators approved for use in this examination

### Important note to candidates

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised material. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.



## Structure of the examination

The Physical Education Studies ATAR course examination consists of a written component and a practical (performance) component.

## Structure of this paper

Section	Number of questions available	Number of questions to be answered	Suggested working time (minutes)	Marks available	Percentage of written examination
Section One Multiple-choice	20	20	30	20	20
Section Two Short answer	10	10	70	86	50
Section Three Extended answer	4	2	50	30	30
				<b>Total</b>	100

## Instructions to candidates

- The rules for the conduct of the Western Australian external examinations are detailed in the *Year 12 Information Handbook 2017*. Sitting this examination implies that you agree to abide by these rules.
- Answer the questions according to the following instructions.

**Section One:** Answer all questions on the separate Multiple-choice answer sheet provided. For each question, shade the box to indicate your answer. Use only a blue or black pen to shade the boxes. If you make a mistake, place a cross through that square, then shade your new answer. Do not erase or use correction fluid/tape. Marks will not be deducted for incorrect answers. No marks will be given if more than one answer is completed for any question.

**Sections Two:** Write your answers in this Question/Answer booklet. Wherever possible, confine your answers to the line spaces provided.

**Section Three:** Consists of four questions. You must answer two questions. Write your answers in this Question/Answer booklet.

- You must be careful to confine your answers to the specific questions asked and to follow any instructions that are specific to a particular question.
- Supplementary pages for the use of planning/continuing your answer to a question have been 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.

**See next page**

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

This section has **20** questions. Answer **all** questions on the separate Multiple-choice answer sheet provided. For each question, shade the box to indicate your answer. Use only a blue or black pen to shade the boxes. If you make a mistake, place a cross through that square, then shade your new answer. Do not erase or use correction fluid/tape. Marks will not be deducted for incorrect answers. No marks will be given if more than one answer is completed for any question.

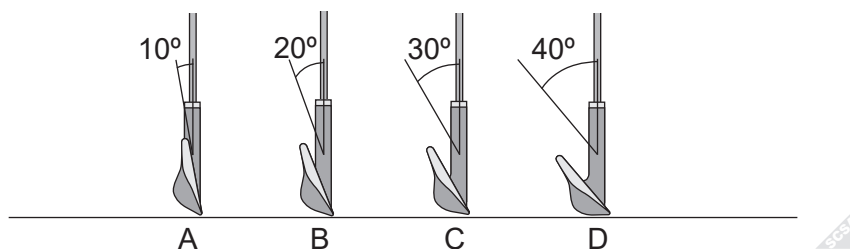
Suggested working time: 30 minutes.

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1. The connective tissue surrounding a bundle of muscle fibres is known as the
  - (a) epimysium.
  - (b) perimysium.
  - (c) fascicle.
  - (d) myofibril.
  
2. The design of lane ropes in a swimming pool focuses on reducing
  - (a) form drag.
  - (b) wind drag.
  - (c) surface drag.
  - (d) wave drag.
  
3. A baseball player in the outfield throwing the ball to the home plate should do so with
  - (a) topspin for longer distance.
  - (b) backspin for longer distance.
  - (c) topspin for faster velocity.
  - (d) backspin for faster velocity.
  
4. Glycaemic index refers to a rating of a food's ability to contribute to increasing
  - (a) glucose levels in the blood.
  - (b) protein levels in the body.
  - (c) the body's ability to absorb creatine.
  - (d) the body's ability to absorb fats.
  
5. Dendrites are the
  - (a) long slender thread-like fibres protruding from the neuron that receive nerve impulses and carry them toward the cell body.
  - (b) long slender thread-like fibres protruding from the neuron that receive nerve impulses and carry them away from the cell body.
  - (c) short branched fibres protruding from the neuron that receive nerve impulses and carry them toward the cell body.
  - (d) short branched fibres protruding from the neuron that receive nerve impulses and carry them away from the cell body.

**See next page**

6. If a golfer swings with the same force and technique in relation to the clubs below, which statement is correct?



- (a) Club A will hit the ball less distance than Club B.  
(b) Club B will hit the ball the least distance of all clubs.  
(c) Club C will hit the ball further than Club A.  
(d) Club D will hit the ball less distance than Club B.
7. During the quarter-time break, an Australian rules football coach needs to provide feedback for his team out on the ground to make improvements for the second quarter. What type of feedback would **most** likely be used in this situation?
- (a) video analysis  
(b) kinaesthetic  
(c) coach and peer feedback  
(d) questionnaires
8. Why does a dimpled golf ball travel further than a smooth golf ball?
- (a) A smooth golf ball has a larger area of turbulent air behind it, thus decreasing drag.  
(b) A dimpled golf ball has a larger area of turbulent air behind it, thus decreasing drag.  
(c) A smooth golf ball has a smaller area of turbulent air behind it, thus decreasing drag.  
(d) A dimpled golf ball has a smaller area of turbulent air behind it, thus decreasing drag.
9. A bundle of muscle fibres is known as the
- (a) epimysium.  
(b) perimysium.  
(c) fascicle.  
(d) myofibril.

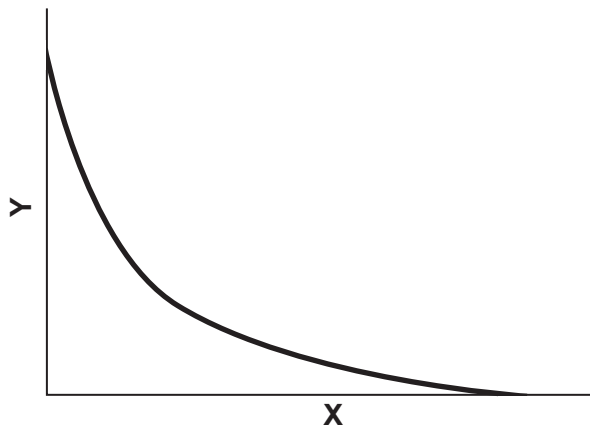
For copyright reasons this image cannot be reproduced in the online version of this document, but may be viewed at [www.stgeorgeutah.com/news/archive/2015/05/16/spo-3a-baseballwarriors-hit-pitch-way-to-championship-saturday-stgnewsvideocast/#.WRpu85KGPb0](http://www.stgeorgeutah.com/news/archive/2015/05/16/spo-3a-baseballwarriors-hit-pitch-way-to-championship-saturday-stgnewsvideocast/#.WRpu85KGPb0)

10. According to the diagram above, which lever system is the baseball player using?
- (a) class 1
  - (b) class 2
  - (c) class 3
  - (d) class 4
11. A child who is learning to swim breaststroke is taught the action in three stages: using a flutter/dolphin kick with the correct arm action, a frog kick action using a kickboard and finally, the complete stroke, with the arm and leg action together. This coaching activity is known as
- (a) shaping.
  - (b) chaining.
  - (c) simple-complex.
  - (d) static-dynamic.
12. The thick contractile protein found in a myofibril is known as
- (a) actin.
  - (b) myosin.
  - (c) the fascicle.
  - (d) the sarcomere.
13. Which of the following combinations of sports will have **no** transfer of learning between them?
- (a) tennis and squash
  - (b) skateboarding and snowboarding
  - (c) swimming and water polo
  - (d) cricket and netball

14. Which of the following is a negative side effect of the excessive, prolonged use of protein powders?
- (a) kidney disease
  - (b) increased risk of stroke
  - (c) heart disease
  - (d) increased lipid storage
15. For athletes who are recovering from short-term injuries, the **greatest** benefit provided by the use of anabolic steroids is to
- (a) reduce the sensation of pain.
  - (b) reduce the onset of fatigue.
  - (c) increase the rate of repair of muscle tissue.
  - (d) increase the cross-sectional area of the muscle.
16. A physical education teacher has her students throw the ball to each other standing on the pool deck before moving into the pool and throwing while treading water. Of what type of coaching activity is this an example?
- (a) shaping
  - (b) chaining
  - (c) simple-complex
  - (d) static-dynamic
17. At the 2016 Rio Olympic games, an Australian, Chloe Esposito, won the women's Modern Pentathlon event by being first to cross the finishing line of the combined 3200 m run and pistol shooting event. As a response to the hot environment, she was dripping with sweat and her face was flushed red due to
- (a) vasoconstriction of the peripheral blood vessels to increase heat loss from the body via conduction and evaporation.
  - (b) vasodilation of the peripheral blood vessels to increase heat loss from the body via evaporation and convection.
  - (c) vasoconstriction of the peripheral blood vessels to increase heat loss from the body via evaporation and convection.
  - (d) vasodilation of the peripheral blood vessels to increase heat loss from the body via conduction and evaporation.
18. During a runner's yearly training program, a week-long block is dedicated to activities designed to improve technique and performance. What phase of the training program does this represent?
- (a) mesocycle
  - (b) microcycle
  - (c) macrocycle
  - (d) myocycle

See next page

19. The Fremantle Dockers AFL Women's team coach, Michelle Cowan, stated that a preseason training goal for the squad was improvement in the anaerobic capacity of each player. Which of the following training activities would be the **most** beneficial in improving anaerobic capacity?
- (a) interval training
  - (b) continuous training
  - (c) resistance training
  - (d) flexibility training
20. Below is a diagrammatic representation of the relationship between two factors involved in a concentric muscle contraction.



The labels on the graph should be

- (a) X = Force and Y = Length.
- (b) X = Length and Y = Force.
- (c) X = Force and Y = Velocity.
- (d) X = Velocity and Y = Force.

**End of Section One**

**See next page**

**Section Two: Short answer**

**50% (86 Marks)**

This section has **10** questions. Answer **all** questions. Write your answers in the spaces provided. Use a blue or black pen (**not** pencil) for this section.

Supplementary pages for the use of planning/continuing your answer to a question have been 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: 70 minutes.

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**Question 21**

**(12 marks)**

Curtis Luck is a 21-year-old Western Australian golfer who recently turned professional after being selected as the 2016 Sportsman of the Year.

- (a) Name and outline **two** activities that Curtis' coach would have used to teach him how to swing and hit the ball correctly when he first started to play golf. (4 marks)

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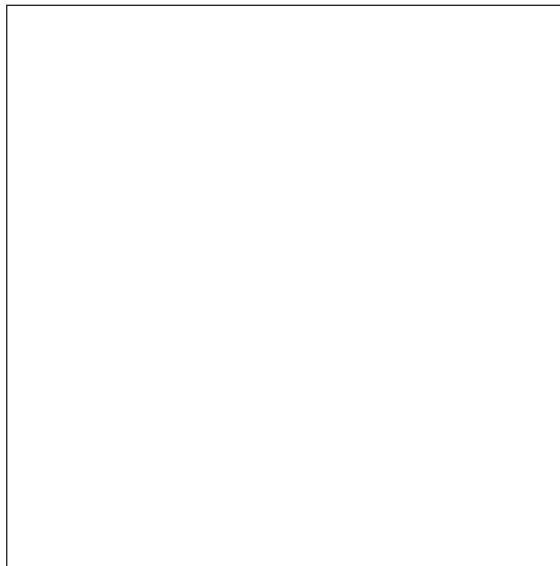
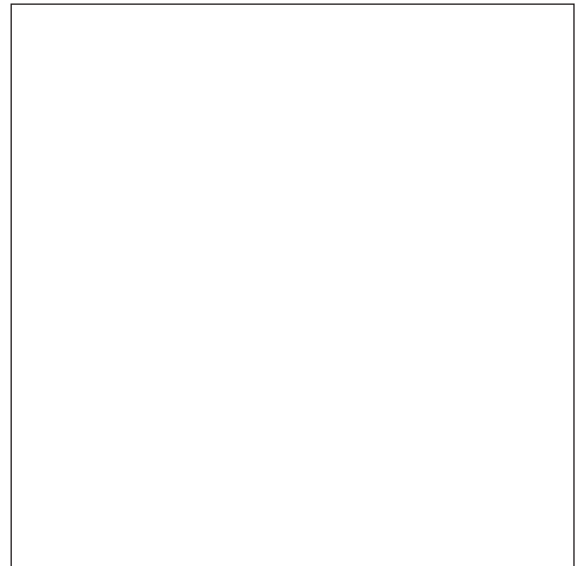
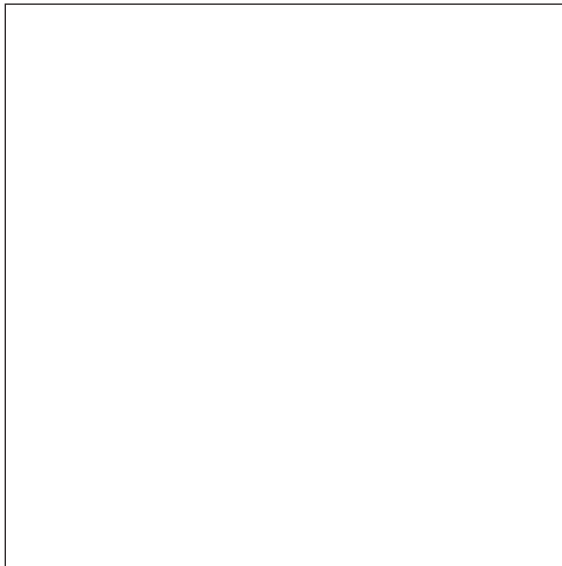
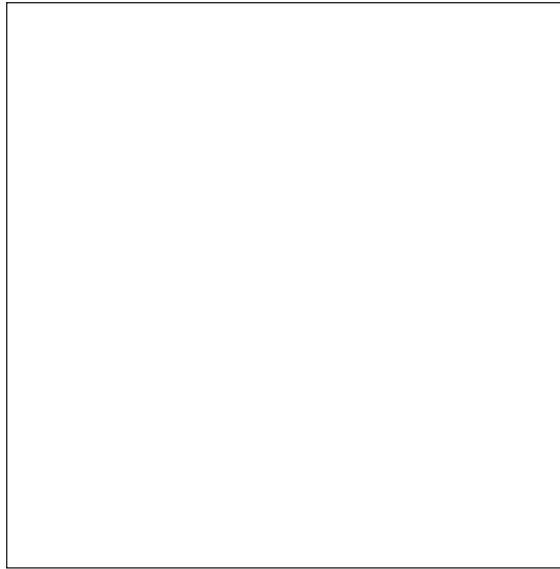
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- (b) Complete the model below by naming and outlining the stages of qualitative analysis Curtis' coach would use to improve his golf swing. (8 marks)



See next page

Question 22

(7 marks)

During her first match of the 2015 Hopman Cup tournament, after losing her first set, Serena Williams called on a ball girl to fetch her an espresso coffee. She went on to win the match.

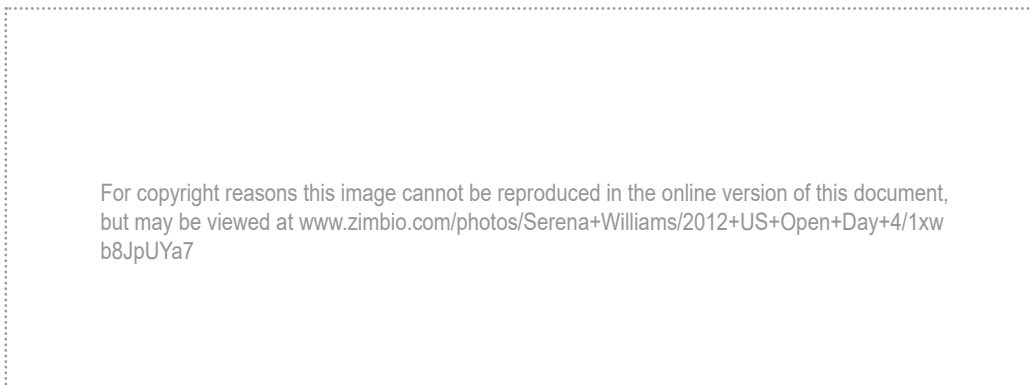
- (a) Identify the category and name of the drug that Serena ingested during the match. (2 marks)

Category of drug: \_\_\_\_\_

Name of drug: \_\_\_\_\_

- (b) Identify **two** physiological effects on Serena’s body of drinking the coffee during her match. (2 marks)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



- (c) In preparing to receive her opponent’s serve, Serena sets herself in the position depicted in the above image. Name the biomechanical principle she is applying and identify **two** aspects of the principle that she is demonstrating. (3 marks)

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\_\_\_\_\_

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**Question 23****(10 marks)**

New Zealand's national rugby team, the All Blacks, won 18 consecutive international matches during 2015–2016 to break the world record. Before every match, the team performs a traditional Maori dance called the *haka*.

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- (a) Identify which mental skill strategy the team is using in the photograph above and state a benefit for the All Blacks performing this dance. (2 marks)

Mental skill strategy: \_\_\_\_\_

Benefit to the team: \_\_\_\_\_

\_\_\_\_\_

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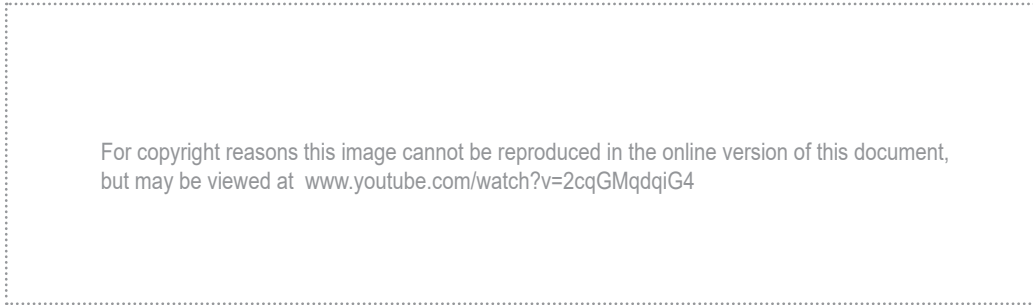




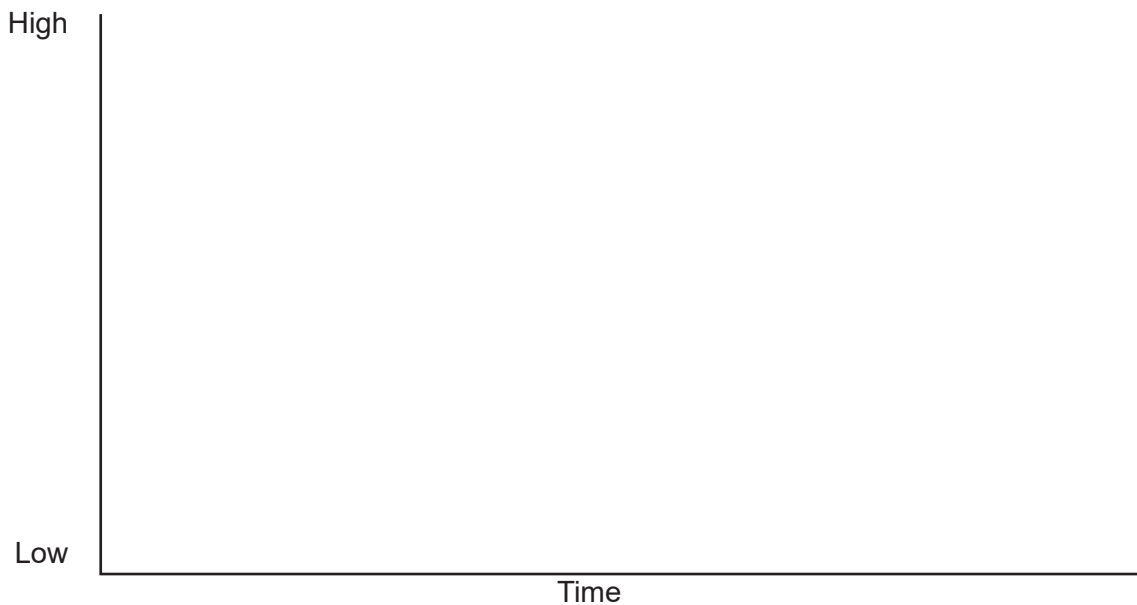
Question 25

(7 marks)

In 2016 an Australian, Rhiannan Iffland, produced the dive pictured below to win the Red Bull Cliff Diving World Series.



(a) Draw a clearly-labelled graph in the space below to represent the effect that her body's position of rotation had on her moment of inertia, angular velocity and angular momentum. (3 marks)



(b) Name **two** mental skill strategies Rhiannan could have used immediately before her winning dive to maximise her performance, and provide an example of each. (4 marks)

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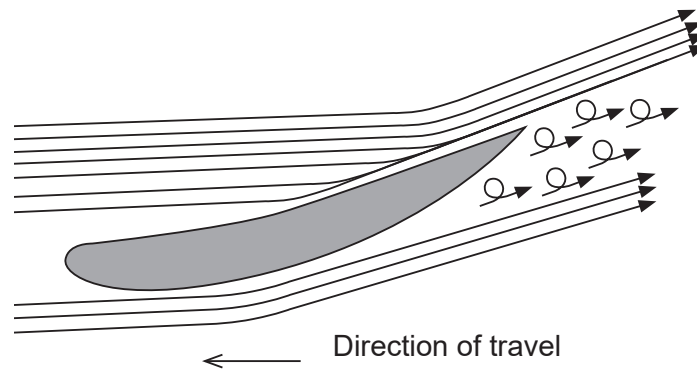
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Question 26 (continued)

- (b) The engineers also apply their understanding of Bernoulli's Principle by placing front and rear wings on the car to generate a force to help it maintain traction with the road. Label the diagram of the car wing below to explain how Bernoulli's Principle works in improving the car's traction and identify the lift force. (3 marks)



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## Question 27

(10 marks)

Stephanie Rice is an Australian swimmer who broke five world records and won three Olympic gold medals at the 2008 Beijing Olympics. In 2014, she announced her retirement from professional swimming. Overtraining could have been one reason behind her decision.

- (a) State what is meant by 'overtraining'. Identify **five** symptoms of overtraining Stephanie may have experienced. (6 marks)

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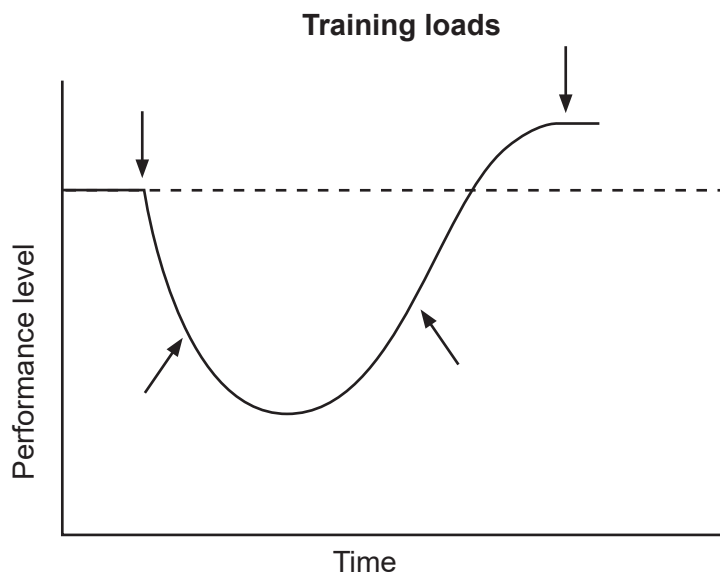


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- (b) Coaches and athletes use their understanding of the diagram below to design training programs that produce better performances and prevent overtraining.

Label the **four** arrows.

(4 marks)



See next page



- (b) The International Tennis Federation uses a system called Court Pace Rating to measure the effect the surface has on the tennis ball. This process takes into consideration the 'coefficient of restitution'. Describe what coefficient of restitution is and identify the coefficient of a ball that bounces to the same height as that from which it has been dropped. (3 marks)

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## Question 29

(5 marks)

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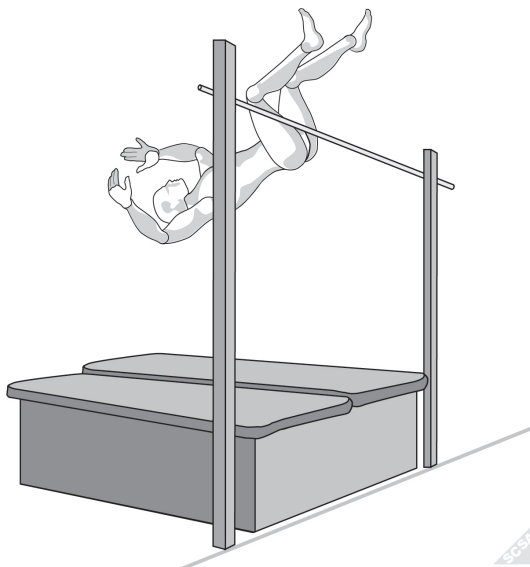
During his debut for Melbourne City in the professional soccer A League, Tim Cahill kicked a ball from 40 metres out that went low and flat curling away from the goalkeeper into the top right-hand corner of the goal. In the space below, draw a bird's eye view of the ball's path to explain the deviation as the ball travels towards the intended target.

See next page

## Question 30

(7 marks)

At the 2016 Olympic games, an Australian Brandon Starc, made the high jump final with a qualifying jump of 2.29 metres.



- (a) In relation to the biomechanical principle of force-time, explain why high jumpers land on a large, soft mat. (4 marks)

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- (b) Why would Brandon **not** carbohydrate load for his event? Name an event that would require athletes to carbohydrate load. (3 marks)

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End of Section Two

See next page

**Section Three: Extended answer**

**30% (30 Marks)**

This section contains **four (4)** questions. You must answer **two (2)** questions. Write your answers in the spaces provided.

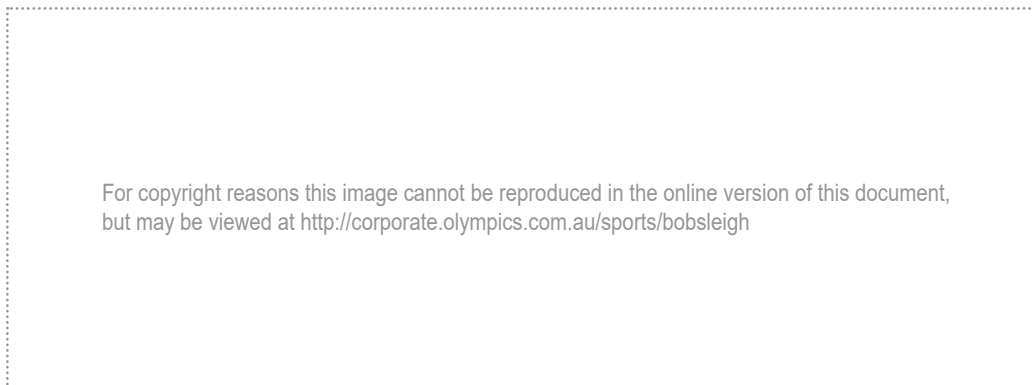
Supplementary pages for the use of planning/continuing your answer to a question have been provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.

Suggested working time: 50 minutes.

**Question 31**

**(15 marks)**

Since the 1988 Calgary Winter Olympic Games, Australia has entered a bobsled team in all but one Olympic Games. The bobsled is pushed 50 m down the track, reaching speeds of up to 40 km/h before the team jump into the sled and accelerates to speeds of up to 150 km/h while twisting and turning sharply down an icy chute.



Bobsledding is not a common sport in Australia due to the absence of snow and competitors are often recruited from among track athletes, specifically 100 m runners.

- (a) Identify which muscle fibre type the bobsled athletes would have predominantly and list **six** characteristics of this type. (7 marks)

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**Question 32**

**(15 marks)**

La Paz in Bolivia is located approximately 3600 m above sea level and in 2016 was the host city for the Americas Zone tournament for the Davis Cup tennis competition. Not all teams were prepared adequately for the local conditions and as a result, performed significantly worse than expected.

- (a) Identify **four** physiological effects the players will experience immediately on their arrival in La Paz and describe the main reason for these effects. (6 marks)

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In order to reduce the effect of altitude on their performance, the better-performing teams undertook acclimatisation prior to arriving in La Paz.

- (b) Describe **two** types of regimes the teams could have used to acclimatise for the tournament and identify how **five** physiological changes from effective acclimatisation would allow athletes to perform better at a high altitude. (9 marks)

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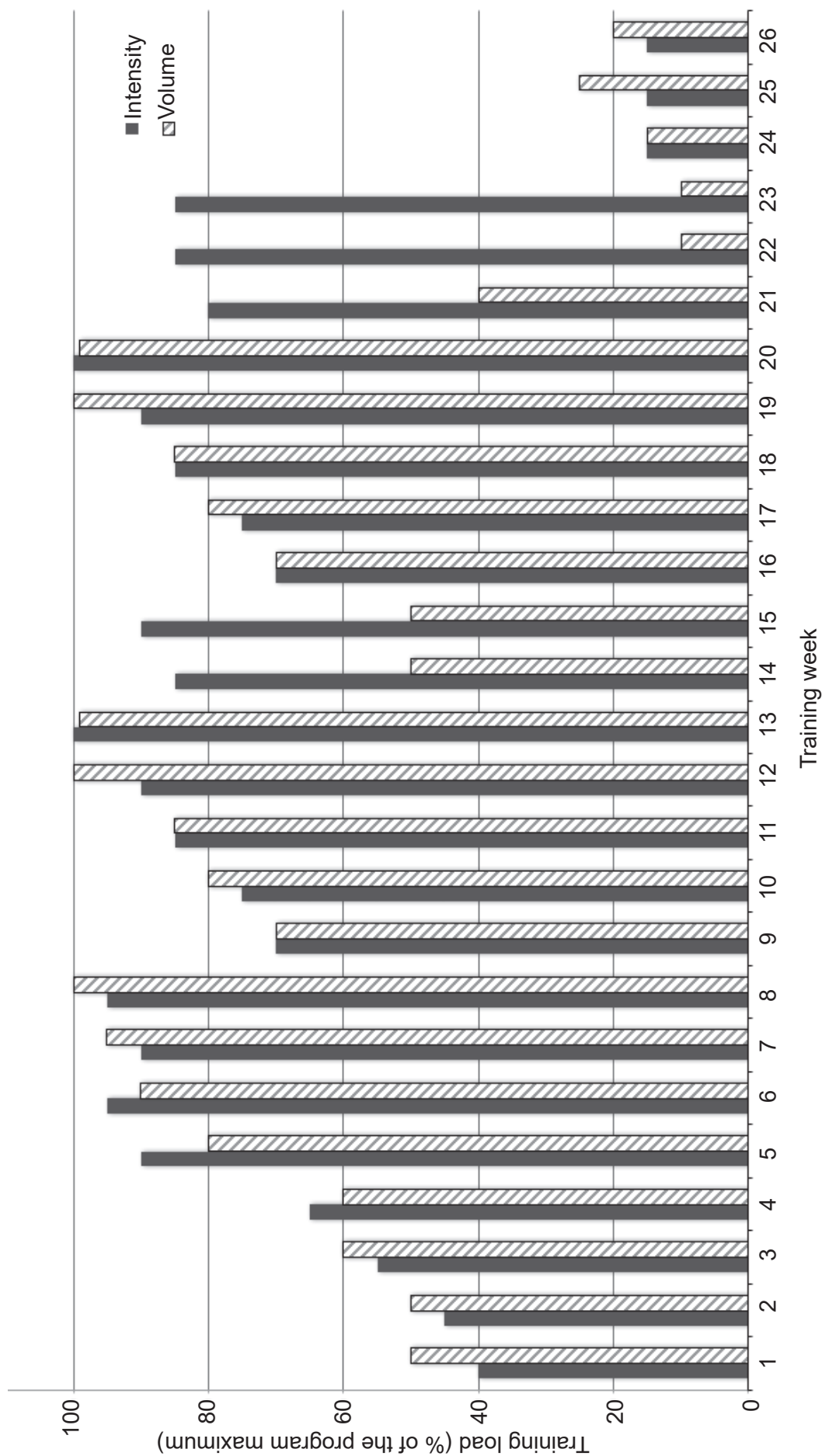
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Swimming strength and conditioning programming, 2016–2017 season

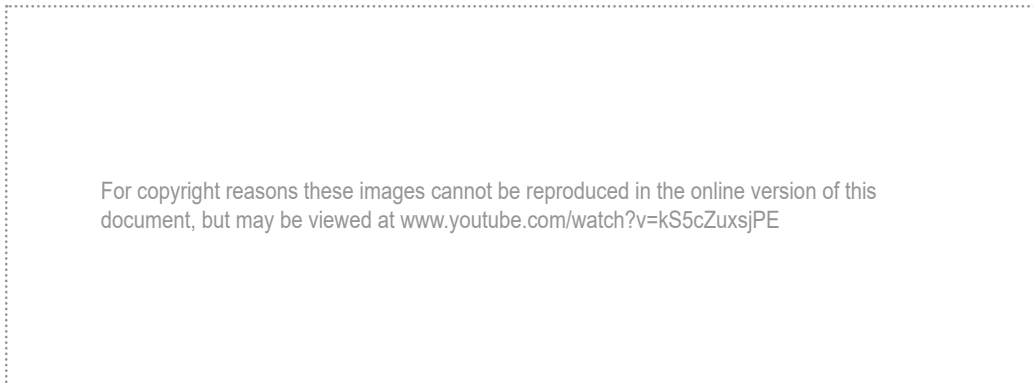
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Question 34 (continued)



Nick is renowned for his powerful forehand strokes. The photo montage above demonstrates how Nick generates his power.

- (b) Describe segmental interaction and outline **five** of its characteristics that Nick applies to generate the most force when hitting the ball. (7 marks)

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## ACKNOWLEDGEMENTS

- Question 10** Adapted from: Hoppie, R. (2015, May 15). *Brady Sargent with a hit for Snow Canyon* [Photograph]. Retrieved March, 2017, from [www.stgeorgeutah.com/news/archive/2015/05/16/spo-3a-baseball-warriors-hit-pitch-way-to-championship-saturday-stgnews-videocast/#.WRpu85KGPb0](http://www.stgeorgeutah.com/news/archive/2015/05/16/spo-3a-baseball-warriors-hit-pitch-way-to-championship-saturday-stgnews-videocast/#.WRpu85KGPb0)
- Question 22(c)** Bello, A. (2012, August 29). *Serena Williams* [Photograph]. Retrieved March, 2017, from [www.zimbio.com/photos/Serena+Williams/2012+US+Open+Day+4/1xwb8JpUYa7](http://www.zimbio.com/photos/Serena+Williams/2012+US+Open+Day+4/1xwb8JpUYa7)
- Question 23(a)** Oritz, G. (n.d.). *Rugby Memes* [Photograph]. Retrieved March, 2017, from <https://memesuper.com/download/796bd821d82603465999c3f590196a70db704aaa.html>
- Question 25** Red Bull. (2016). *Top 3 cliff dives from Texas (women): Cliff diving World Series 2016* [Stills from video]. Retrieved March, 2017, from [www.youtube.com/watch?v=2cqGMqdqjG4](http://www.youtube.com/watch?v=2cqGMqdqjG4)
- Question 26** [Formula 1 racing car] [Image]. (n.d.). Retrieved March, 2017, from <http://s2.glbimg.com/jbhvhR2u3RJYQBVUx9GIT6Ugmak=/0x0:1500x848/690x390/s.glbimg.com/es/ge/f/original/2016/02/22/rb12.jpg>
- Question 28(a)** 1st image: Stockman, M. (2016, September 9). *Dylan Alcott: 2016 Rio Paralympics (wheelchair tennis)*. Retrieved March, 2017, from [www.abc.net.au/news/2016-09-14/file-photo-of-dylan-alcott/7843548](http://www.abc.net.au/news/2016-09-14/file-photo-of-dylan-alcott/7843548)  
2nd image: Thorne, B. (2012, July 18). *Dylan Alcott: 2012 World Challenge (wheelchair basketball)*. Retrieved March, 2017, from [www.dailymail.co.uk/sport/sportsnews/article-3777128/Wheelchair-crowd-surfer-honorary-Wu-Tang-Clan-member-Dylan-Alcott-going-gold-SECOND-Paralympic-sport.html](http://www.dailymail.co.uk/sport/sportsnews/article-3777128/Wheelchair-crowd-surfer-honorary-Wu-Tang-Clan-member-Dylan-Alcott-going-gold-SECOND-Paralympic-sport.html)
- Question 29** News Corp. (2016, October 16). *Cahill fires from 40 metres* [Still from video]. Retrieved April, 2017 from <http://www.heraldsun.com.au/sport/football/a-league/teams/melbourne-city/melbourne-derby-live-tim-cahill-debuts-for-city-against-victory-at-etihad-stadium/news-story/1ec7b71ce480dbca6926cb8b44e7cddb>
- Question 31** Mason, C. (2010, February 20). *2010 Winter Olympics bobsledding team Duncan Pugh and Jeremy Rolleston* [Image]. Retrieved March, 2017, from <http://corporate.olympics.com.au/sports/bobsleigh>
- Question 34** Exquisite Tennis. (2014). *Nick Kyrgios forehands in slow motion* [Stills from video]. Retrieved March, 2017, from [www.youtube.com/watch?v=kS5cZuxsjPE](http://www.youtube.com/watch?v=kS5cZuxsjPE)

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