



ATAR course examination, 2018

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

Number of additional
answer booklets used
(if applicable):

Time allowed for this paper

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

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	8	8	70	64	50
Section Three Extended answer	4	2	50	30	30
Total					100

Instructions to candidates

- The rules for the conduct of the Western Australian external examinations are detailed in the *Year 12 Information Handbook 2018*. Sitting this examination implies that you agree to abide by these rules.
- Write your answers in this Question/Answer booklet preferably using a blue/black pen. Do not use erasable or gel pens.
- 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. Do not use erasable or gel pens. 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 planning/continuing your answers to questions are 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. Do not use erasable or gel pens. 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.

1. The connective tissue surrounding the entire skeletal muscle is known as
 - (a) epimysium.
 - (b) perimysium.
 - (c) fascicle.
 - (d) myofibril.

2. John is an 8-year-old boy who has begun swimming lessons. Which type of feedback should his teacher avoid using?
 - (a) extrinsic
 - (b) knowledge of results
 - (c) negative
 - (d) positive

3. The benefits for athletes who train at altitude will occur after
 - (a) 2–3 weeks of training at altitude and will last up to 6 months at sea level.
 - (b) 2–3 weeks of training at altitude and will last up to 2 months at sea level.
 - (c) 5–14 days of training at altitude and will last up to 6 months at sea level.
 - (d) 5–14 days of training at altitude and will last up to 2 months at sea level.

4. Recovery for athletes is vital in optimising their performance. One method of aiding recovery is the use of nutritional strategies. What are the **main** benefits of this method?
 - (a) replenish muscle glycogen, replace lost fluids and electrolytes and prevent delayed onset muscular soreness
 - (b) replace lost fluids and electrolytes and manufacture new muscle and red blood cells
 - (c) replace lost fluids and electrolytes and prevent delayed onset muscular soreness
 - (d) replenish muscle glycogen, replace lost fluids and electrolytes and assist in repairing muscle tissue

5. Which statement is **best** related to low GI foods?
- (a) They are digested rapidly and quickly release glucose to the muscles.
 - (b) Athletes are advised to eat them 1–4 hours before a competition.
 - (c) They are more beneficial for power athletes than endurance athletes.
 - (d) Athletes are advised to eat them during competition.
6. A father teaches his son to ride a bike using a 'balance bike' (a bike without pedals as seen in Image 1). Once he is confident in balancing on two wheels while moving, the father puts his son on a normal bike to learn to use the pedals as seen in Image 2.



Image 1

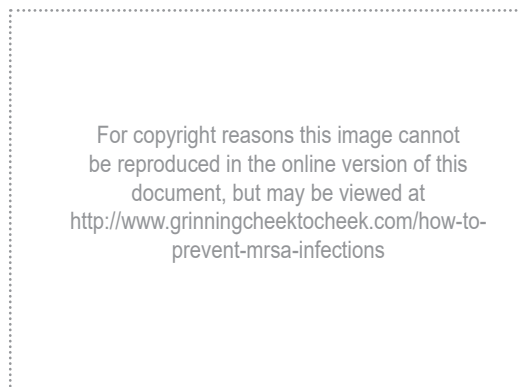


Image 2

What coaching activity is the father using in this situation?

- (a) simple to complex
 - (b) static to dynamic
 - (c) shaping
 - (d) chaining
7. During a game, Perth Heat baseball pitcher Alex Boshers throws the following four pitches, putting a different spin on each throw and creating a different flight path for each pitch.

Pitch	Flight path	Spin
1	fast and straight with no deviation in line	?
2	slow and dips quickly	?
3	slow and breaks sharply to the left	?
4	slow and wobbles unpredictably	?

Which is the correct order for the spin put on each pitch delivered?

	Pitch 1	Pitch 2	Pitch 3	Pitch 4
(a)	back spin	top spin	side spin	no spin
(b)	side spin	no spin	back spin	top spin
(c)	top spin	no spin	side spin	back spin
(d)	no spin	back spin	top spin	side spin

See next page

8. An athlete wanting to transfer from snowboarding to skateboarding changes coaches to prepare. What is the correct order of steps the coach would take to analyse the movement of the athlete to improve their technique?
- (a) Evaluate → Prepare → Observe → Feedback
 - (b) Observe → Prepare → Evaluate → Feedback
 - (c) Prepare → Observe → Evaluate → Feedback
 - (d) Prepare → Observe → Feedback → Evaluate
9. Pictured below is Australian rower, Kim Crow. She is applying the principle of leverage to move her boat through the water. The blade of her oar in the water acts as the fulcrum.

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<https://www.gettyimages.com.au/detail/news-photo/kim-crow-of-australia-rows-in-the-womens-single-sculls-news-photo/145276879#kim-crow-of-australia-rows-in-the-womens-single-sculls-during-day-1-picture-id145276879>

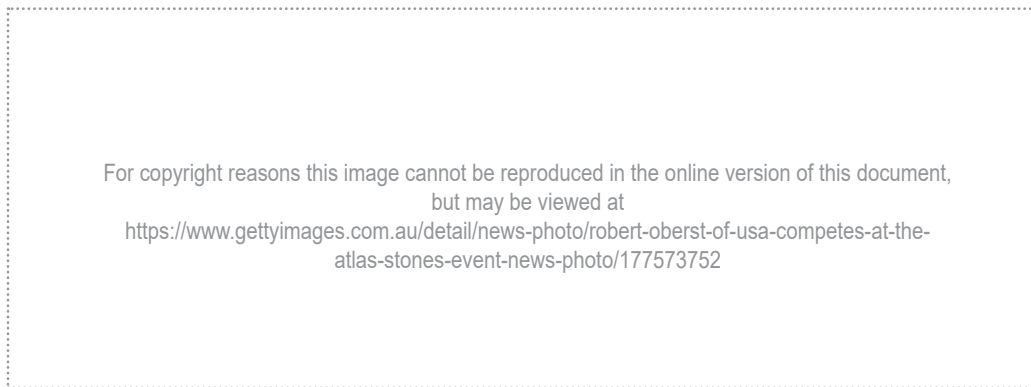
What is the correct statement about the lever system she is employing?

Kim is using a:

- (a) 1st Class lever whereby the load is on the same side of the fulcrum as the effort.
- (b) 1st Class lever whereby the load is on the opposite side of the fulcrum to the effort.
- (c) 2nd Class lever whereby the load is on the opposite side of the fulcrum to the effort.
- (d) 2nd Class lever whereby the load is on the same side of the fulcrum as the effort.

See next page

10. In the World’s Strongest Man competition, the ‘Atlas Stones’ event requires competitors to lift stones weighing from 100 kg to 160 kg onto five platforms.



Competitors generate more force when the stones are lifted

- (a) quickly because it allows the recruitment of more Type IIa muscle fibres.
 - (b) quickly because more sarcomeres can contract simultaneously.
 - (c) slowly because it allows the recruitment of more Type I muscle fibres.
 - (d) slowly because more motor units can contract simultaneously.
11. At the beginning of each season of the Indian Premier League Twenty20 cricket competition, players are recruited by each team via a player auction. The rules of the competition state that teams can only retain a maximum of three players from the previous season. As a result, teams experience a large turnover of players each year.

According to Carron’s Model of Group Cohesion, this is an example of _____ and may have a _____ impact on group cohesion.

- (a) a personal factor, positive
 - (b) an environmental factor, negative
 - (c) a leadership factor, negative
 - (d) a team factor, positive
12. Identify the muscle fibre type that **best** matches the characteristics and relative proportion outlined below.

Characteristic	Relative proportion
Number of mitochondria	Moderate
Motor neuron size	Large
Resistance to fatigue	Moderate
Capillary density	Low

- (a) Type Ia
- (b) Type Ib
- (c) Type IIa
- (d) Type IIb

13. With regard to the athlete's predominant energy system, the **best** recovery strategy for a high jumper to use while waiting for the next jump height to be set is
- to rest.
 - a light walk.
 - to stretch.
 - to eat food.
14. When cold, an athlete will utilise a higher amount of energy to maintain their core body temperature. As a result
- carbohydrate sources are depleted, increasing aerobic endurance.
 - glycogen stores are depleted, decreasing aerobic endurance.
 - protein sources are depleted, decreasing aerobic endurance.
 - fat sources are depleted, increasing aerobic endurance.
15. Before they enter the ice rink to complete their routine a skater takes a minute to breathe deeply a number of times. What type of mental skill strategy are they **most** likely using?
- goal-setting
 - imagery
 - self-talk
 - relaxation
16. To ensure that an athlete performs at their optimal level, they will taper prior to a competition. This involves
- reducing training volume and increasing intensity during training.
 - increasing training volume and reducing intensity during training.
 - reducing training volume and reducing intensity during training.
 - increasing training volume and increasing intensity during training.
17. Provided the same ball is used on each surface, which is the correct statement in relation to the image below?

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- Clay courts have a lower coefficient of restitution than grass courts.
- On grass, a player has less time to hit the ball due to the high coefficient of restitution.
- Hard courts have a higher coefficient of restitution than grass courts.
- A player on grass has more time to hit the ball due to the high coefficient of restitution.

18. A characteristic of a Type IIb muscle fibre compared to a Type I muscle fibre is that it
- (a) has greater stores of creatine phosphate (CP).
 - (b) is a darker shade of red.
 - (c) has a greater number of myoglobin.
 - (d) does not fatigue as quickly.
19. The in-season phase of a training program should aim to
- (a) develop a base level of fitness.
 - (b) correct any weaknesses in speed or strength.
 - (c) decrease the intensity of training while the volume slowly increases.
 - (d) increase the intensity of training while the volume slowly decreases.
20. Compared to a hot and dry day, a hot and humid day increases the risk of heat exhaustion for an athlete because
- (a) radiation from the body is increased.
 - (b) evaporation of sweat is reduced.
 - (c) convection is decreased.
 - (d) conduction from the body is increased.

End of Section One

See next page

Section Two: Short answer

50% (64 Marks)

This section has **eight** questions. Answer **all** questions. Write your answers in the spaces provided.

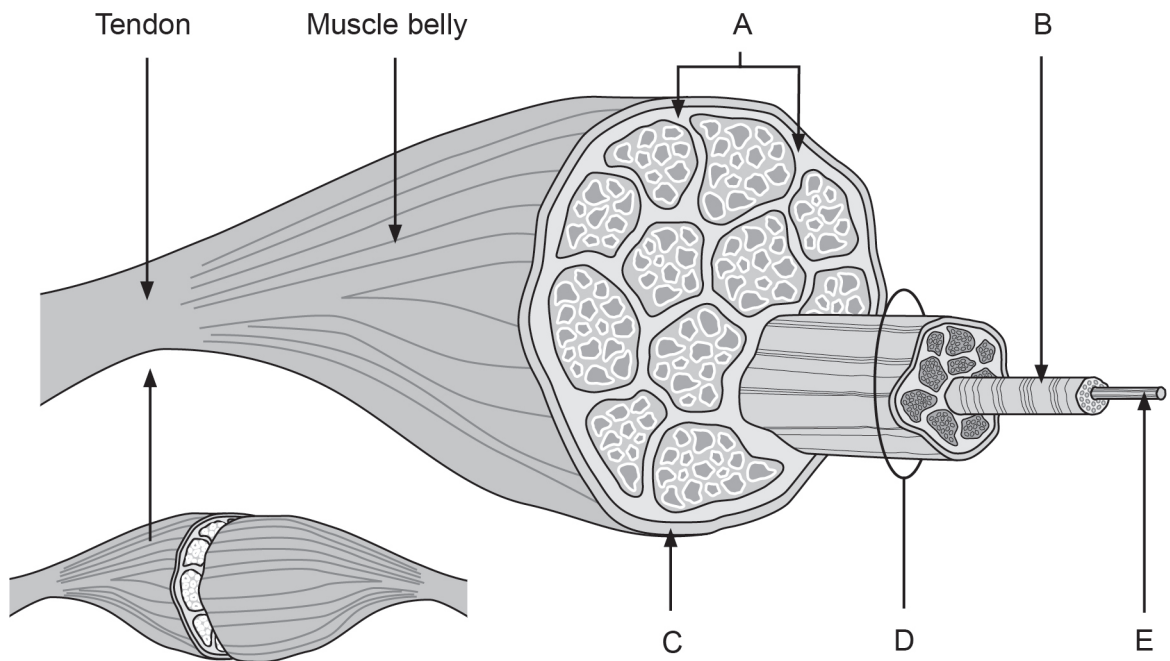
Use a blue or black pen (**not** pencil) for this section.

Supplementary pages for planning/continuing your answers to questions are 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.

Question 21

(9 marks)



(a) Name the structures that are labelled on the diagram above. (5 marks)

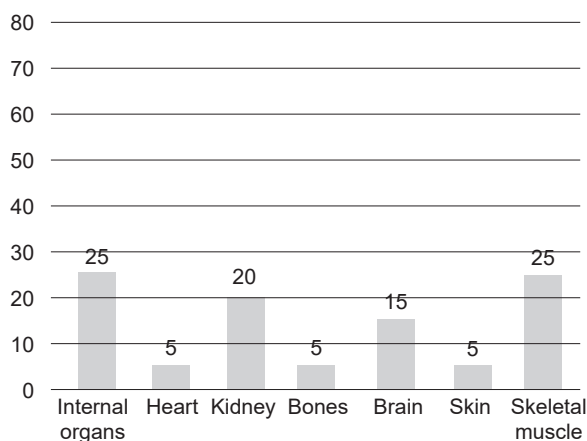
- A: _____
- B: _____
- C: _____
- D: _____
- E: _____

Question 22

(10 marks)

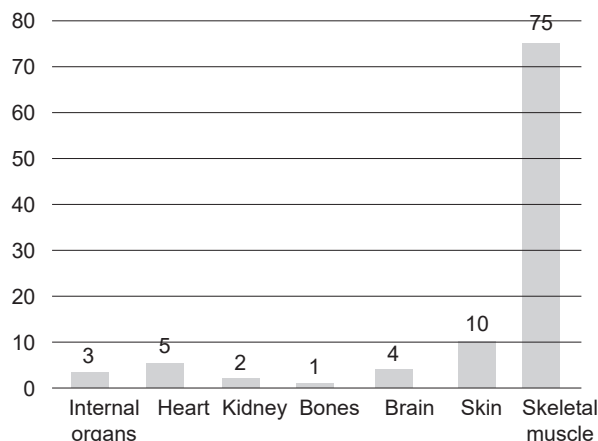
The graphs below represent the distribution of blood around the body under four different conditions; exercising at room temperature, exercising in the heat, exercising in the cold and the body at rest.

Blood distribution %



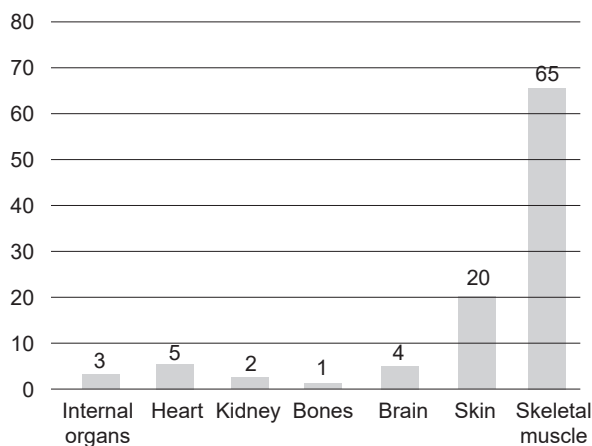
Graph A

Blood distribution %



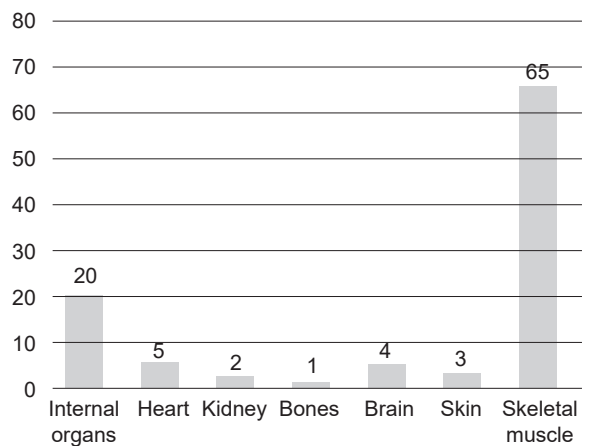
Graph B

Blood distribution %



Graph C

Blood distribution %



Graph D

(a) Identify the condition that each graph represents. (4 marks)

Graph A: _____

Graph B: _____

Graph C: _____

Graph D: _____

See next page

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Question 23**(6 marks)**

Max Duffy was drafted to play in the Australian Football League by the Fremantle Dockers in 2012. In his debut game with Fremantle, he kicked a goal from 52 metres with his first kick of the game. In December 2017, he was awarded a scholarship to the University of Kentucky to play as a punter in the University's gridiron team. The role of the punter is to kick the ball as high and as far as possible to maximise his teammates' ability to run into position. A punt of 45–50 metres is considered a good kick.

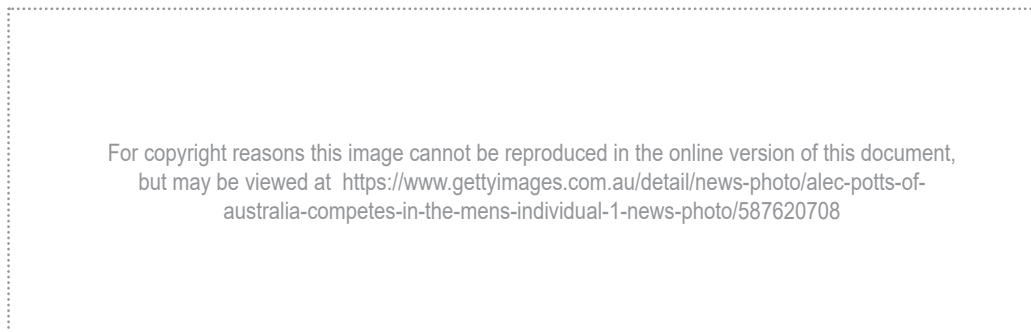
- (a) Describe the category of transfer of learning that Max has experienced. (2 marks)

- (b) Identify **two** other categories of transfer of learning and provide an example of what Max might experience for each category. (4 marks)

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Question 24

(8 marks)



Alec Potts won a bronze medal at the Rio Olympic Games in the men’s archery team event. During this event, competitors aim to shoot their arrows at the centre of a 1.2 m target from a distance of 70 metres. Following a strong start in the Bronze Medal match, Alec and his teammates were able to hold their nerve against their fast-finishing Chinese opponents to win.

- (a) Explain how the biomechanical principle of force-time is applied by the bowstring to project the arrow effectively to the target. (4 marks)

- (b) Outline **two** mental skill strategies Alec could have used during the event and outline how each would have reduced the stress he may have experienced. (4 marks)

See next page

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Question 26

(8 marks)

Jeannette is a beginner lacrosse player who needs to purchase a lacrosse stick. There is a choice of two sticks, 'Il Mostro' and 'Diabelek', and the length and weight of each is given in the table below.

Type of Stick	Length (cm)	Weight (g)
Il Mostro	188	350
Diabelek	101	280

- (a) Use the information provided to identify the **most** relevant biomechanical concept that Jeannette needs to understand to choose the best stick. (1 mark)

- (b) Apply your knowledge of the above biomechanical concept to justify which stick you would suggest Jeanette should select. (4 marks)

- (c) Social loafing can occur in a lacrosse team. What is social loafing? Provide **two** examples of how a coach can minimise it. (3 marks)

Question 27

(8 marks)

Cynthia is a marathon runner who is training for the Australian Marathon Championships to be held in Sydney. A colleague suggests that she should take anabolic steroids to improve her performance in the Marathon.

- (a) Ignoring the legal ramifications of using anabolic steroids, justify if this advice is correct or not for a marathon runner. (3 marks)

- (b) Identify **three** physiological side effects Cynthia could experience from using anabolic steroids. (3 marks)

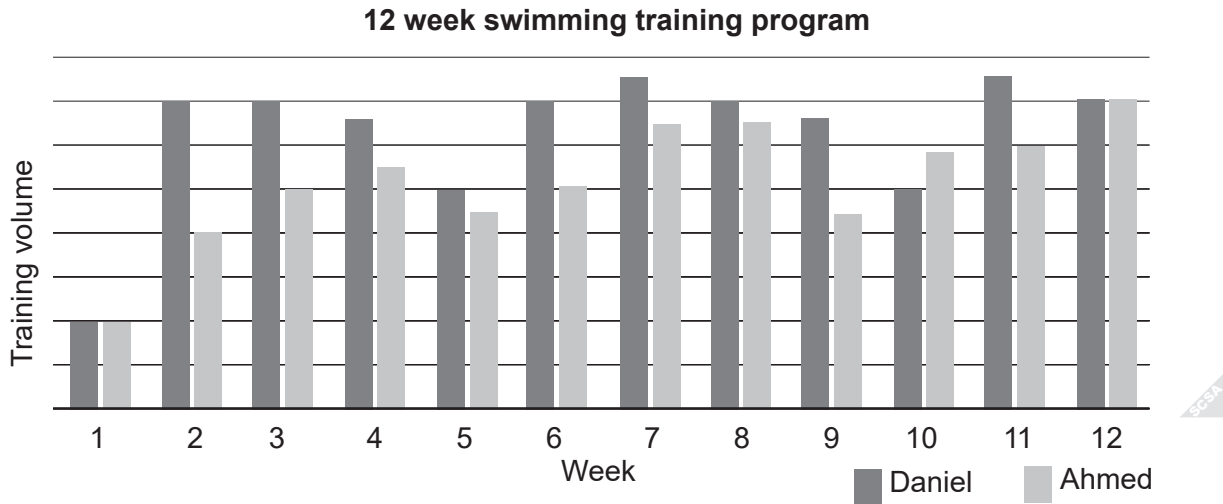
- (c) Other than anabolic steroids, name **two** other categories of performance enhancers. (2 marks)

See next page

Question 28

(10 marks)

Daniel and Ahmed have just finished competing at the State Swimming Championships and from their results have been selected in the Western Australian Team for the National Championships in 15 weeks' time. Below is an outline of the first 12 weeks of the training program the two swimmers use leading up to the National Championships.



(a) For which weeks has Ahmed's coach applied the training principle of recovery? (1 mark)

(b) During week nine, one of the swimmers complains to the coach that his shoulder is sore. Which athlete is **more** likely to have injured his shoulder? (1 mark)

(c) In relation to the training program, identify and explain the potential cause of the injury. (3 marks)

- (d) Identify **two** psychological symptoms the athlete may have experienced prior to the injury occurring? (2 marks)

- (e) With reference to periodisation, identify and explain the training strategy you would advise the coach to apply in weeks 13 and 14 of the training program to ensure that Daniel and Ahmed perform at their optimum level at the National Championships. (3 marks)

End of Section Two

See next page

Section Three: Extended answer

30% (30 Marks)

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

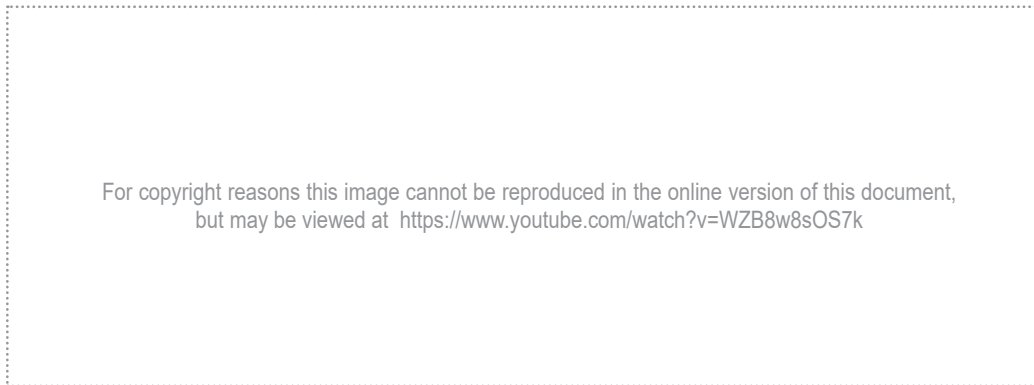
Supplementary pages for planning/continuing your answers to questions are provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.

Suggested working time: 50 minutes.

Question 29

(15 marks)

Professional cycling teams invest time and resources in reducing the amount of drag experienced by their riders from wind resistance. They do this by making adjustments to their cycling technique on the basis of research conducted in a wind tunnel as seen in the two images below:



(a) Identify the image with the **more** aerodynamic position and justify your response by discussing the following points:

- the type of drag being minimised
- the **two** different types of fluid flow seen in the images and how they affect drag.

(7 marks)

See next page

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- (b) During a game of volleyball, players can serve by hitting the ball with topspin. On the diagram below, draw the trajectory of a ball served with topspin and write an explanation of how the flight path is affected by the spin of the ball. (6 marks)

The diagram shows a volleyball net on the left side, represented by a vertical line extending from a horizontal baseline. To the right of the net, a player is depicted in a jumping position, ready to hit a ball. The ball is shown as a small circle above the player's hand. Below the net and player, there are 18 horizontal lines for drawing the trajectory and writing an explanation.

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ACKNOWLEDGEMENTS

- Question 6** **Image 1**
[Photograph of child on wooden bicycle]. (n.d.). Retrieved July, 2018, from <https://tzurikingblog.com/2014/09/01/greatreasonstoridetoschool/>
- Image 2**
[Photograph of child on yellow bicycle]. (2014). Retrieved July, 2018, from <http://www.grinningcheektocheek.com/how-to-prevent-mrsa-infections>
- Question 9** Image: Rose, M. (2012). *Kim Crow of Australia rows in the women's single sculls [...]* [Photograph]. Retrieved June, 2018, from <https://www.gettyimages.com.au/detail/news-photo/kim-crow-of-australia-rows-in-the-womens-single-sculls-news-photo/145276879#kim-crow-of-australia-rows-in-the-womens-single-sculls-during-day-1-picture-id145276879>
- Question 10** Image: Fraile, V. (2013). *Robert Oberst of USA competes at the Atlas Stones event [...]*. Retrieved April, 2018, from <https://www.gettyimages.com.au/event/the-worlds-strongest-man-175959405#robert-oberst-of-usa-competes-at-the-atlas-stones-event-during-the-picture-id177573752>
- Question 17** Image: [Tennis playing surface bounce graphic]. (n.d.). Retrieved April, 2018, from <http://people.ischool.berkeley.edu/~kinshuk/tennis/> (middle player silhouette)
- Question 21** Image adapted from: Lawson, R. (2007). *File:Anatomy and physiology of animals Structure of a muscle.jpg*. Retrieved April, 2018, from https://commons.wikimedia.org/wiki/File:Anatomy_and_physiology_of_animals_Structure_of_a_muscle.jpg.
Used under Creative Commons Attribution 3.0 Unported licence.
- Question 24** Image: Gilham, P. (2016). *Alec Potts of Australia competes against France [...]*. Retrieved April, 2018, from <https://www.gettyimages.com.au/license/587620708>
- Question 29** Images: World of Freesports. (2015). *Ironman equipment* [Still images]. Retrieved April, 2018, from <https://www.youtube.com/watch?v=WZB8w8sOS7k>

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