



NSW Education Standards Authority

This sample HSC examination paper is designed to show one way the Health and Movement Science syllabus could be examined. It reflects the layout of a formatted HSC examination paper.

The structure of the Health and Movement Science HSC examination is different to the structure of past PDHPE HSC examinations. All questions are compulsory and there are no optional extended-response questions.

Sample

HIGHER SCHOOL CERTIFICATE EXAMINATION

Health and Movement Science

General Instructions

- Reading time – 10 minutes
- Working time – 3 hours
- Write using black pen

Total marks: 100

Section I – 20 marks (pages 3–9)

- Attempt Questions 1–20
- Allow about 35 minutes for this section

Section II – 56 marks (pages 10–20)

- Attempt Questions 21–27
- Allow about 1 hour and 35 minutes for this section

Section III – 24 marks (pages 21–23)

- Attempt Questions 28–29
- Allow about 50 minutes for this section

The first HSC examination for the Health and Movement Science Stage 6 syllabus will be held in 2026.

The HSC Health and Movement Science examination specifications can be found in the assessment information for the Stage 6 syllabus.

This sample examination provides examples of some types of questions that may be found in HSC examinations for Health and Movement Science. Each question has been mapped to show how the question relates to syllabus outcomes and content. Answers for the objective-response questions (Section I) and marking guidelines for all other questions are provided. The marking guidelines indicate the criteria for each mark or mark range.

In the examination, students will record their answers to Section I on a multiple-choice answer sheet and their answers to Section II in the spaces provided on the examination paper. They will record their responses to Section III in separate writing booklets.

The sample questions, marking criteria, sample answers and annotations provide teachers and students with guidance as to the types of questions to expect and how they may be marked. They are not meant to be prescriptive. Each year the structure of the examination may differ in the number and types of questions, or focus on different syllabus outcomes and content.

Note:

Comments in coloured boxes are annotations that provide guidance for future examinations.

Section I

20 marks

Attempt Questions 1–20

Allow about 35 minutes for this section

Use the multiple-choice answer sheet for Questions 1–20.

- 1** Which complementary healthcare approach involves fine needles being inserted into the body?

 - A. Acupuncture
 - B. Aromatherapy
 - C. Chiropractic
 - D. Reflexology

- 2** Which of the following athletes requires the highest amount of carbohydrate post-performance?

 - A. Weightlifter
 - B. Discus thrower
 - C. Marathon runner
 - D. 100-metre swimmer

- 3** The main purpose of a pre-exercise questionnaire is to identify a person's

 - A. fitness level.
 - B. health issues.
 - C. strength level.
 - D. exercise preference.

- 4** A sporting team will be playing multiple games on the same day.

Which recovery strategy would be most beneficial for the athletes to use between games?

 - A. Sleep
 - B. Relaxation
 - C. Cool down
 - D. Hydrotherapy

- 5** Which of the following areas is a target of Sustainable Development Goal (SDG) 11: Sustainable Cities and Communities?
- A. Safe and affordable housing
 - B. Upgraded education facilities
 - C. Well-managed migration policies
 - D. Reduced number of deaths from road accidents
- 6** Which of the following is the most suitable method of anaerobic training for a 100-metre runner?
- A. Circuit
 - B. Dynamic
 - C. Plyometrics
 - D. Resistance bands
- 7** Which of the following is most important in the design of a group training session in order to prevent injury?
- A. Peaking
 - B. Skill instruction
 - C. Coach evaluation
 - D. Strategies and tactics
- 8** A batter in cricket is about to receive a fast ball from a bowler.
- Which of the following would be the most effective psychological strategy for the batter to use to maximise their performance?
- A. Goal setting
 - B. Visualisation
 - C. Concentration skills
 - D. Relaxation techniques

- 9 Digital health records, such as the Australian Government's *My Health Record*, were introduced to support patients and the work of healthcare providers.

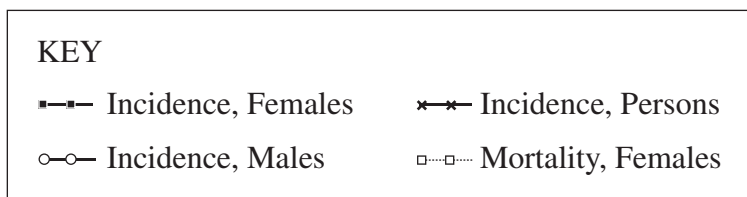
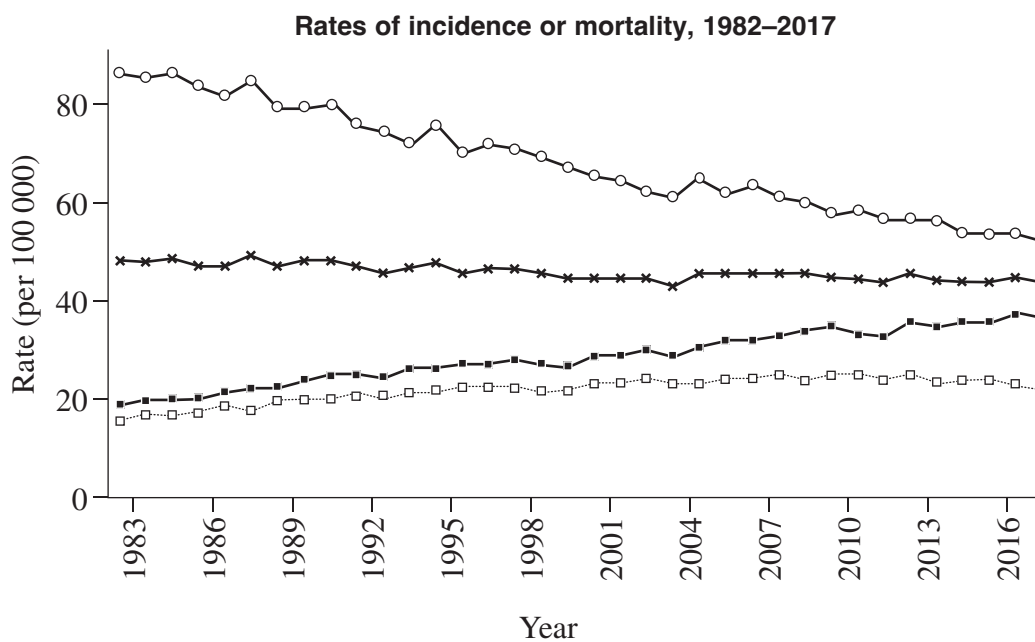
What is a key benefit of digital health records for healthcare providers?

- A. Large content database
 - B. In-built translator service
 - C. Streamlined payment for services
 - D. Up-to-date information about patients
- 10 What is a coach's main purpose in evaluating a team when designing a future training session?
- A. To establish a targeted personal program
 - B. To plan how to address identified weaknesses
 - C. To focus on identified strengths to enhance progress
 - D. To select competitions to increase the chance of success
- 11 Which row in the table identifies the recording option that provides the most effective data for monitoring an athlete's training and performance?

| | <i>Recording option</i> | <i>Data</i> |
|----|-----------------------------|---------------------------------------------------------------|
| A. | Heart rate monitor | Aerobic and anaerobic thresholds |
| B. | GPS tracking unit | Distance covered during training and number of calories burnt |
| C. | Athlete reflection activity | Rate of perceived exertion during training |
| D. | Smart watch | Approximate measurement of distance and steps |

- 12 Which of the following shows ways that sleep could positively influence movement?
- A. Improved focus, reduced fine motor skills, improved reaction time
 - B. Reduced risk of injury, improved skill accuracy, reduced anaerobic power
 - C. Improved relaxation, improved decision making, reduced fine motor skills
 - D. Reduced risk of injury, improved concentration skills, improved gross motor skills

- 13 The graph shows incidence and mortality rates (per 100 000 of the selected group) for a chronic disease.



Based on Australian Institute of Health and Welfare material

To which chronic disease does the graph relate?

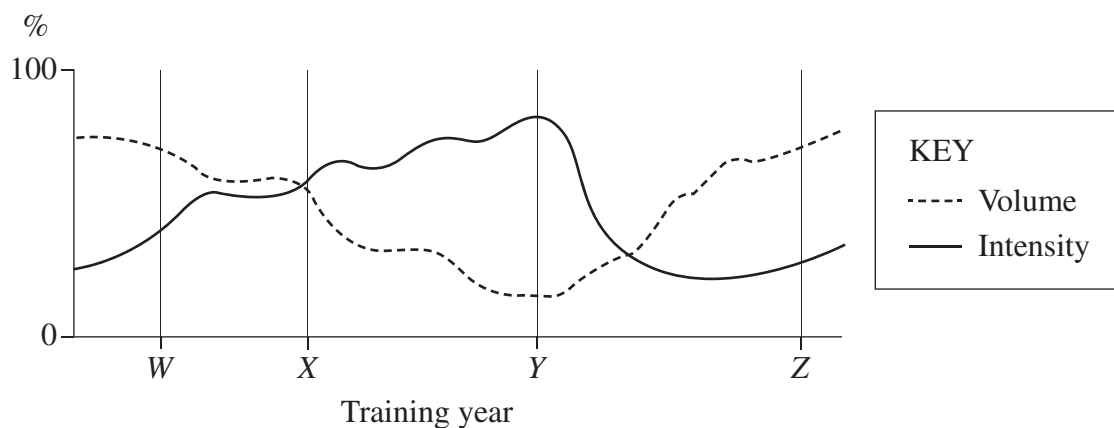
- A. Diabetes
- B. Lung cancer
- C. Breast cancer
- D. Cardiovascular disease

This shows one way that a multiple-choice question could incorporate stimulus material.

- 14 A swimmer is training for a 5-kilometre swim.

Which set of physiological adaptations is likely to occur?

- A. Decreased resting heart rate, increased stroke volume, decreased oxygen uptake
 - B. Decreased resting heart rate, decreased stroke volume, decreased oxygen uptake
 - C. Increased resting heart rate, increased haemoglobin levels, increased oxygen uptake
 - D. Decreased resting heart rate, increased haemoglobin levels, increased oxygen uptake
- 15 Which of the following identifies examples of how big data could be used to reduce hospital expenditure?
- A. Personalised online medical appointments and reduced staff numbers
 - B. Improved pharmaceutical research and enhanced management performance
 - C. Improved population health measures and patient access to digital health records
 - D. Personalised, targeted healthcare and early diagnosis resulting in specialist referrals
- 16 The graph shows the volume and intensity of an aerobic athlete's training plan over a year.



At which point in the year is the athlete entering the pre-season phase of competition?

- A. W
- B. X
- C. Y
- D. Z

- 17 The table shows the Australian Government's health expenses for 2020–21 and projected health expenses for 2023–25.

Australian Government Health Expenses

| | <i>2020–21</i> \$ million (estimates) | <i>2023–24</i> \$ million (projected) | <i>2024–25</i> \$ million (projected) |
|-------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
| Medical services and benefits | 94 533 | 99 300 | 103 177 |

www.aph.gov.au

What could account for the projections shown?

- A. Decreased spending on Medicare, increased private health insurance uptake
 - B. Decreased spending on Medicare, decreased private health insurance uptake
 - C. Decreased spending on health promotion, increased private health insurance uptake
 - D. Decreased spending on health promotion, decreased private health insurance uptake
- 18 Which of the following could result in improved health status for all people as identified in Sustainable Development Goal (SDG) 10: Reduced Inequalities?
- A. Access to safe and inclusive green and public spaces
 - B. Equal access for all to affordable and quality education
 - C. Promotion of inclusive political, economic and social policies
 - D. Reduced deaths and illnesses from hazardous chemicals and pollution

19 Consider the following statements.

Statement 1: The federal, state and territory governments share responsibility for the regulation of the health workforce and the regulation of pharmacies and pharmaceuticals.

Statement 2: Medicare covers part of the Medicare Benefits Schedule (MBS) fee for services and procedures for private patients in a public or private hospital.

Which of the following is correct?

- A. Both statements are true.
- B. Both statements are false.
- C. Statement 1 is false and statement 2 is true.
- D. Statement 1 is true and statement 2 is false.

20 Sam woke with an intense headache and almost no vision. Sam's doctor recommended an MRI scan at the local public hospital and sent Sam to see a specialist. The specialist thought that Sam may have had a stroke. Sam then had tests and treatment in the hospital emergency department, followed by months of rehabilitation with a research institute.

Adapted from:
Health Research Institute
www.hri.org.au

Which combination of sectors contributed to the management of Sam's health situation?

- A. State government, private, not-for-profit
- B. Local government, private, not-for-profit
- C. State government, federal government, private
- D. Local government, state government, federal government

This shows one way that a multiple-choice question could use a scenario as stimulus material.

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Centre Number

Health and Movement Science

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Student Number

Section II Answer Booklet

56 marks**Attempt Questions 21–27****Allow about 1 hour and 35 minutes for this section**

Instructions

- Write your Centre Number and Student Number at the top of this page.
 - Answer the questions in the spaces provided. These spaces provide guidance for the expected length of response.
 - Extra writing space is provided at the back of this booklet. If you use this space, clearly indicate which question you are answering.
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Question 21 (3 marks)

Why might a basketball player consider using micronutrient supplements to improve their performance?

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This is an example of how a question could require students to apply their knowledge and understanding of syllabus concepts to a well-known sport.

Question 22 (6 marks)

- (a) Outline why an athlete would use Proprioceptive Neuromuscular Facilitation (PNF) training. **2**

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- (b) With reference to a specific sport, explain how pre-exercise assessment of an athlete can assist in developing a flexibility training program for them. **4**

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Question 23 (7 marks)

- (a) The risk of developing colorectal (bowel) cancer increases from 50 years of age. **3**

Outline possible challenges this situation could present for healthy ageing in Australia.

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- (b) Explain how ONE current health strategy could continue to support healthy ageing for older Australians. **4**

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Question 24 (10 marks)

- (a) Explain the challenges for both patients and medical professionals of online medical consultations.

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- (b) Discuss the use of technology in Australia's healthcare system. Provide examples, other than online medical consultations, to support your answer.

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Question 25 (8 marks)

Analyse how the principles of progressive overload and training thresholds could be applied to a cyclist's aerobic training program to improve performance. Provide examples to support your answer.

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This image shows a full page of white paper with horizontal dotted lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This is an example of how a question could require students to apply their knowledge and understanding of syllabus concepts to a well-known sport.

Question 26 (12 marks)

- (a) In Australia, there are groups experiencing inequities in health.

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Describe TWO factors that can contribute to the health status of ONE group experiencing inequities in health.

Group:

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Question 26 continues on page 17

Question 26 (continued)

(b) Explain how TWO approaches to health used in other OECD countries could be used in Australia to improve health outcomes. Provide examples to support your answer.

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[illegible]

End of Question 26

Question 27 (10 marks)

A tennis player is competing in a tournament over several days.

- (a) In the first match, the tennis player loses several points by hitting the ball into the net.

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How can biomechanics be used to improve this athlete's performance?

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Question 27 continues on page 19

Question 27 (continued)

- (b) The tennis player has just finished a match that lasted more than 3 hours and is scheduled to play another match in 48 hours.

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Justify psychological recovery strategies to improve the tennis player's performance.

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This shows one way that students could be asked to apply their knowledge and understanding of syllabus concepts to a variety of sports.

End of Question 27

Section II extra writing space

If you use this space, clearly indicate which question you are answering.

Health and Movement Science

Section III

24 marks

Attempt Questions 28–29

Allow about 50 minutes for this section

The rubric provides the assessment criteria for both questions in Section III. The rubric will be the same in future examinations.

Answer both questions in the Section III Writing Booklet. Extra writing booklets are available.

Your answers will be assessed on how well you:

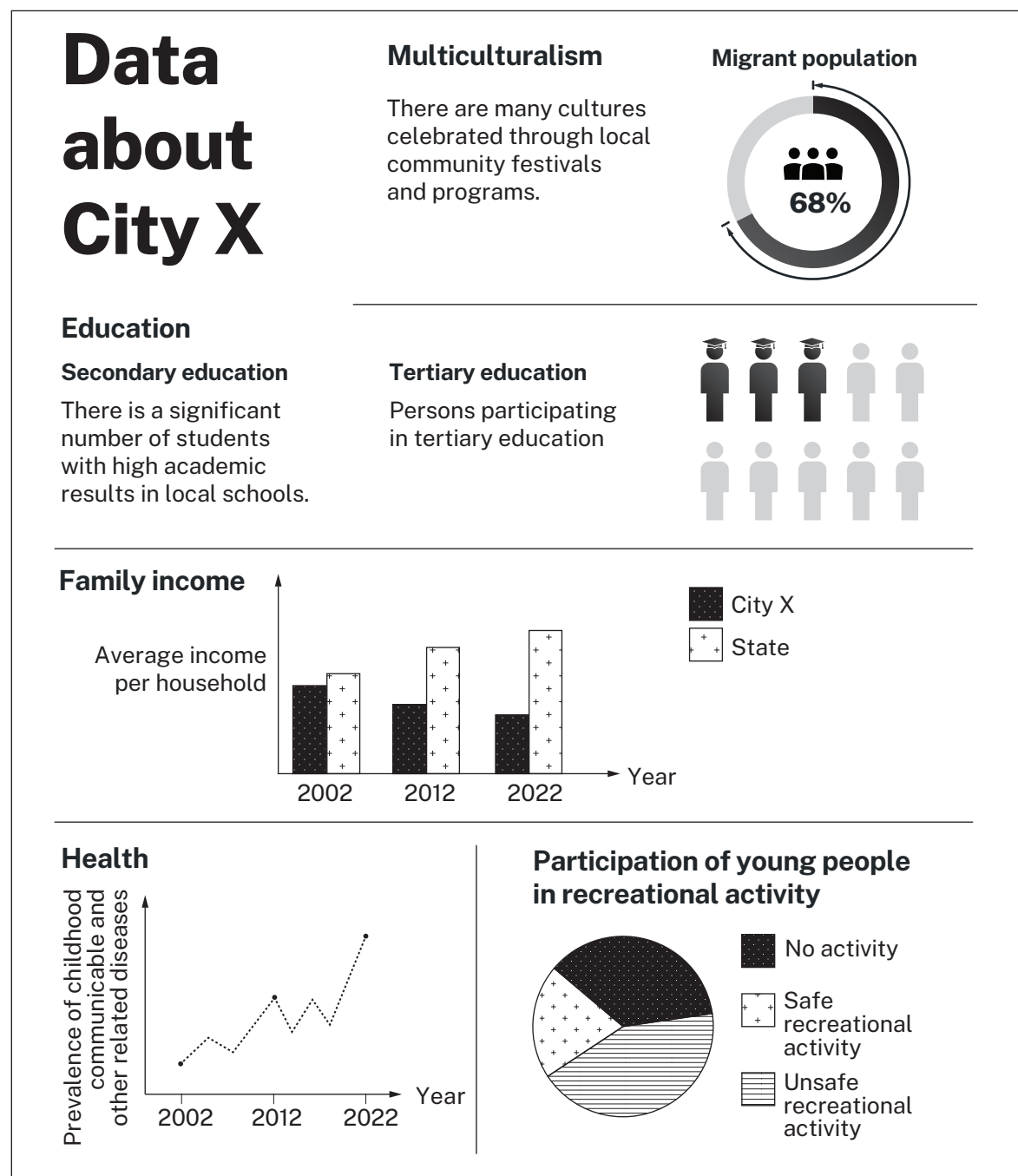
- apply knowledge and understanding of health and movement science concepts relevant to the question
 - apply critical thinking skills to health and movement science issues or scenarios
 - communicate ideas and information using relevant examples, concepts and terms
 - present a logical and cohesive response
-

Please turn over

Question 28 — Health in an Australian and global context (12 marks)

Refer to the information below as well as your own knowledge to answer the question.

City X is an urban area with a large number of young people, aged 10–24. The infographic provides information about City X.



To what extent could the application of Sustainable Development Goal 3: Good Health and Wellbeing and Sustainable Development Goal 4: Quality Education assist in improving the health status of young people in City X?

This shows one way that an extended response question could include different types of stimulus.

Question 29 — Training for improved performance (12 marks)

Refer to the information below as well as your own knowledge to answer the question.

The information relates to the treatment of a sports injury.

A player is tackled in a football game and feels pain in their shoulder. During the assessment of the injury, the sports trainer identifies that the player has sustained a shoulder dislocation. The coach instructs the player to apply cold compression, immobilise their shoulder and completely rest for the next four weeks so that they can play in the grand final.

Evaluate the coach's advice and propose a suitable rehabilitation program for the football player.

End of paper

HSC Health and Movement Science Sample Marking Guidelines

Section I, Part A

Multiple-choice Answer Key

| Question | Answer |
|----------|--------|
| 1 | A |
| 2 | C |
| 3 | B |
| 4 | C |
| 5 | A |
| 6 | C |
| 7 | B |
| 8 | C |
| 9 | D |
| 10 | B |
| 11 | A |
| 12 | D |
| 13 | B |
| 14 | D |
| 15 | B |
| 16 | D |
| 17 | D |
| 18 | C |
| 19 | A |
| 20 | C |

Section II

Where exam questions use terms listed in NESA's glossary of key words, it is assumed that teachers and students will be familiar with the definitions and the terms will not need to be defined in the marking guidelines.

Question 21

| Criteria | Marks |
|---------------------------------------------------------------------------------------------------------------------------------------|-------|
| • Demonstrates a sound understanding of why a basketball player might consider using micronutrient supplements to improve performance | 3 |
| • Demonstrates some understanding of why a basketball player might consider using micronutrient supplements | 2 |
| • Provides some relevant information | 1 |

Sample answer:

A basketball player might consider using micronutrient calcium supplements to maintain bone density, therefore making them less susceptible to brittle bones and hard tissue injuries. This could help them when competing, as they may need to perform high impact, explosive movements.

Question 22 (a)

| Criteria | Marks |
|----------------------------------------------------------------------------------------------|-------|
| • Outlines why an athlete would use Proprioceptive Neuromuscular Facilitation (PNF) training | 2 |
| • Provides some relevant information | 1 |

Sample answer:

Proprioceptive Neuromuscular Facilitation (PNF) training is an isometric contraction that allows athletes such as gymnasts to increase their range of motion and strengthen muscle fibres during the stretching process.

Question 22 (b)

| Criteria | Marks |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------|
| • Explains how pre-exercise assessment can assist in the development of a flexibility training program for an athlete in a specific sport | 4 |
| • Describes how pre-exercise assessment can assist in the development of a flexibility training program for an athlete in a specific sport | 3 |
| • Outlines pre-exercise assessment AND/OR a flexibility training program | 2 |
| • Provides some relevant information | 1 |

Sample answer:

In the development of a rower's flexibility training program, it is essential to undertake pre-exercise assessments to establish the athlete's baseline results. This pre-testing could include a shoulder over/under test to measure and determine the muscle length in the rower's shoulders. This allows the flexibility-training program to be individually developed. If the left shoulder's measurement was less than the right shoulder's, the program would target that imbalance in the types of flexibility exercises and the number of sessions required.

Question 23 (a)

| Criteria | Marks |
|-------------------------------------------------------------------------------------------------------------|-------|
| • Demonstrates a sound understanding of possible challenges of bowel cancer for healthy ageing in Australia | 3 |
| • Demonstrates some understanding of possible challenges of bowel cancer AND/OR healthy ageing in Australia | 2 |
| • Provides some relevant information | 1 |

Sample answer:

Australia's population is increasing in age and this could pose challenges for timely diagnosis and treatment of bowel cancer. A likely increase in incidence of the disease could lead to an increase in waiting times to access treatment and this could result in higher mortality rates from the disease.

Question 23 (b)

| Criteria | Marks |
|------------------------------------------------------------------------------------------------------------|-------|
| • Explains how ONE current health strategy could continue to support healthy ageing for older Australians | 4 |
| • Describes how ONE current health strategy could continue to support healthy ageing for older Australians | 3 |
| • Outlines a health strategy AND/OR how it could support healthy ageing for older Australians | 2 |
| • Provides some relevant information | 1 |

Sample answer:

The Heart Foundation Walk is a free program currently offered as part of the Active Living program. This program supports healthy ageing by encouraging older Australians to participate in regular walking which can have cardiovascular and respiratory benefits. Continued implementation of this strategy could support the physical and mental wellbeing of older Australians by providing an accessible program that encourages social connections within local communities.

Question 24 (a)

| Criteria | Marks |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> Provides detailed reasons on why AND/OR how online medical consultations can be challenging for BOTH patients AND medical professionals | 4 |
| <ul style="list-style-type: none"> Provides reason(s) showing why AND/OR how online medical consultations can be challenging for BOTH patients AND medical professionals | 3 |
| <ul style="list-style-type: none"> Outlines challenge(s) of online medical consultations for patients AND/OR medical professionals | 2 |
| <ul style="list-style-type: none"> Provides some relevant information | 1 |

Sample answer:

One of the main challenges of online medical consultations for patients is using unfamiliar technology. They may not trust that the technology will maintain their privacy and may find it impersonal.

A challenge for medical professionals could be providing a clear diagnosis without seeing symptoms in person, particularly where patients are unable to clearly communicate their health concerns or where a physical examination is required. Another challenge for medical professionals could be prescribing medication for a condition that could be misrepresented.

Question 24 (b)

| Criteria | Marks |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> Provides detailed points for AND/OR against the use of technology in Australia's healthcare system Supports response with relevant examples | 6 |
| <ul style="list-style-type: none"> Provides points for AND/OR against the use of technology in Australia's healthcare system Provides relevant examples | 5 |
| <ul style="list-style-type: none"> Describes the use of technology in Australia's healthcare system Provides examples | 4 |
| <ul style="list-style-type: none"> Outlines the use of technology in Australia's healthcare system May provide example(s) | 2–3 |
| <ul style="list-style-type: none"> Provides some relevant information | 1 |

Sample answer:

The use of technology in Australia's healthcare system can affect short-term and long-term costs linked to patient care outcomes. Technologies like GPS monitoring systems and automatic medication dispensers can support people living with dementia by reducing the risk of accidents, premature entry into residential care and hospitalisation rates. Each of these factors can affect the healthcare system by increasing patient independence through managed self-care and reducing long-term costs. However, there are high costs associated with purchasing GPS equipment and automatic medication dispensers, training in how to use them and potential maintenance costs. This impacts the healthcare system in the short term by placing initial funding pressure on government agencies.

Question 25

| Criteria | Marks |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> • Demonstrates a thorough understanding of how the principles of progressive overload and training thresholds can be applied to a cyclist's aerobic training program to improve performance • Makes the relationship between the principles of progressive overload and training thresholds and a cyclist's aerobic training program clearly evident • Provides relevant examples | 8 |
| <ul style="list-style-type: none"> • Demonstrates a sound understanding of how the principles of progressive overload and training thresholds can be applied to a cyclist's aerobic training program to improve performance • Makes the relationship between the principles of progressive overload and training thresholds and a cyclist's aerobic training program evident • Provides relevant examples | 6–7 |
| <ul style="list-style-type: none"> • Explains how the principles of progressive overload and training thresholds can be applied to a cyclist's aerobic training program to improve performance • Makes some relationship between the principles of progressive overload and training thresholds and a cyclist's aerobic training program evident • Provides example(s) | 4–5 |
| <ul style="list-style-type: none"> • Describes the principles of progressive overload AND/OR training thresholds AND/OR a cyclist's aerobic training program • May provide an example | 3 |
| <ul style="list-style-type: none"> • Outlines progressive overload AND/OR training thresholds AND/OR aerobic training | 2 |
| <ul style="list-style-type: none"> • Provides some relevant information | 1 |

Sample answer:

The principle of progressive overload can be effectively used to improve a cyclist's aerobic performance. Once the cyclist has adapted to their training program, they should gradually increase the frequency, duration and/or intensity of training. This can be achieved by increasing the duration of sessions from one hour to 75 minutes. If the training program of a cyclist did not allow for progressive overload, they would not experience the increased stresses on the cardiovascular and respiratory systems which result in the physiological adaptations of increased haemoglobin and stroke volume levels. The cyclist would therefore experience fatigue earlier in their performance, resulting in a slower time.

An aerobic training program also needs to apply the principle of training thresholds to ensure that the training is at an intensity above the aerobic threshold and below the anaerobic threshold (aerobic training zone). To improve the performance of a cyclist this would involve the athlete cycling continuously at 70–80% MHR within their training program. As a result, the cyclist would experience physiological adaptations including increased oxygen uptake and stroke volume, enabling them to train and compete at a higher intensity for a longer duration because their heart is more efficient in delivering oxygen to the working muscles.

Question 26 (a)

| Criteria | Marks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> Provides a description of TWO factors that can contribute to the health status of ONE group in Australia experiencing inequalities in health | 4 |
| <ul style="list-style-type: none"> Outlines TWO factors that can contribute to the health status of ONE group in Australia experiencing inequalities in health | 3 |
| <ul style="list-style-type: none"> Outlines ONE factor that can contribute to the health status of ONE group in Australia experiencing inequalities in health OR <ul style="list-style-type: none"> Identifies TWO factors that can contribute to the health status of ONE group in Australia experiencing inequalities in health | 2 |
| <ul style="list-style-type: none"> Provides some relevant information | 1 |

Sample answer:

Group: Rural and remote populations

Factors that can contribute to poor health status for rural and remote populations include occupational hazards and exposure to natural disasters. Working in industries with heavy machinery and chemicals, such as mining and agriculture, puts people at risk of accidents, injuries and respiratory illnesses. Experiencing floods and fires can also increase the risk of injuries and respiratory illnesses. Loss and grief associated with natural disasters can also have a negative effect on mental health.

Question 26 (b)

| Criteria | Marks |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> Demonstrates a comprehensive understanding of TWO approaches to health used in other OECD countries that could improve health outcomes in Australia Makes the relationship clearly evident between TWO approaches used in other OECD countries and how they could improve health outcomes in Australia Provides relevant examples | 8 |
| <ul style="list-style-type: none"> Demonstrates a clear understanding of TWO approaches to health used in other OECD countries that could improve health outcomes in Australia Makes the relationship evident between TWO approaches used in other OECD countries and how they could improve health outcomes in Australia Provides relevant examples | 6–7 |
| <ul style="list-style-type: none"> Describes TWO approaches to health used in other OECD countries that could improve health outcomes in Australia Provides example(s) | 4–5 |
| <ul style="list-style-type: none"> Describes ONE approach to health used in another OECD country that could improve health outcomes in Australia OR <ul style="list-style-type: none"> Outlines TWO approaches used in another OECD country(ies) that could improve health outcomes in Australia | 2–3 |
| <ul style="list-style-type: none"> Provides some relevant information | 1 |

Answers could include:

OECD approaches

- New Zealand Government recognition of the distinct health needs of Māori people is seen in:
 - partnership, or working together with iwi (tribes), hapū (sub-tribes/kinship groups), whānau (family groups) and Māori communities.
 - the involvement of Māori at all levels of decision-making, planning, development and delivery services.
 - the government working to ensure Māori have at least the same level of health as non-Māori, and safeguarding Māori cultural concepts, values and practices.

(Source: www.equityhealthj.biomedcentral.com)

- United Kingdom Soft Drinks Industry Levy ('Sugar Tax')
 - The United Kingdom applies a levy to UK-produced or imported soft drinks that contain added sugar. This is known as the Soft Drinks Industry Levy or colloquially as the 'Sugar Tax'.
 - It was introduced to reduce childhood obesity.
 - The revenue from the levy has also been used to fund programs for childhood obesity.
- How approaches could be used:
 - Prioritising and funding Aboriginal and Torres Strait Islander community-controlled health services
 - Supporting health service providers to improve cultural safety
 - Ensuring better communication between healthcare services and patients
 - Improving coordination of healthcare services
 - Introducing economic approaches to addressing chronic health conditions
 - Making unhealthy choices less affordable
 - Applying tax from unhealthy products to fund programs that address health concerns.

Question 27 (a)

| Criteria | Marks |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> Explains how biomechanics can be used to improve this athlete's performance | 4 |
| <ul style="list-style-type: none"> Describes how biomechanics can be used to improve this athlete's performance | 3 |
| <ul style="list-style-type: none"> Outlines features of biomechanics OR <ul style="list-style-type: none"> Outlines performance improvement | 2 |
| <ul style="list-style-type: none"> Provides some relevant information | 1 |

Sample answer:

Biomechanics can be used to improve the performance of this tennis player by examining the movement patterns of the body during execution of a skill to ensure it is performed correctly. The biomechanical analysis may identify that during a shot, the player is unbalanced. This could cause them to drop their shoulder and affect their follow-through, reducing the chance of hitting the ball over the net. It could also reveal that the athlete does not have a good swing technique or racquet grip which can affect the angle at which they hit the ball, and result in the ball hitting the net. The analysis could be used to improve the ability of the athlete to perform the skill successfully, and also reduce the risk of injury.

Question 27 (b)

| Criteria | Marks |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> • Demonstrates a comprehensive understanding of psychological recovery strategies • Makes well-informed judgements about the extent to which these psychological recovery strategies could improve this athlete's performance • Provides relevant examples | 6 |
| <ul style="list-style-type: none"> • Demonstrates a sound understanding of psychological recovery strategies • Makes a judgement about the extent to which these psychological recovery strategies could improve this athlete's performance • Provides relevant examples | 5 |
| <ul style="list-style-type: none"> • Describes how psychological recovery strategies could improve this athlete's performance • Provides some link(s) between psychological recovery strategies and improving this athlete's performance • Provides example(s) | 4 |
| <ul style="list-style-type: none"> • Outlines psychological recovery strategies AND/OR performance improvements | 2–3 |
| <ul style="list-style-type: none"> • Provides some relevant information | 1 |

Sample answer:

Psychological recovery strategies can effectively disengage the tennis player from their previous match and prepare them for optimal performance in the next match. Relaxation techniques can reduce the tennis player's breathing rate, heart rate and muscle activity after a match. An effective progressive muscular relaxation would include progressively tensing and relaxing muscle groups from the top to the bottom of the body. This will speed up the recovery process by reducing muscle tension and anxiety which supports better sleep quality and reduces fatigue. Meditation can also help to reduce arousal levels and help the tennis player to focus on their next match.

Section III

Question 28

| Criteria | Marks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> • Demonstrates a comprehensive understanding of Good Health and Wellbeing (SDG 3), Quality Education (SDG 4) and City X • Provides an informed judgement about how the application of SDG 3 and SDG 4 could improve the health status of 10–24-year-old people in City X • Presents a logical and cohesive response • Communicates ideas and information using relevant examples, concepts and terms | 11–12 |
| <ul style="list-style-type: none"> • Demonstrates a sound understanding of Good Health and Wellbeing (SDG 3), Quality Education (SDG 4) and City X • Provides a judgement about how the application of SDG 3 and SDG 4 could improve the health status of 10–24-year-old people in City X • Presents a logical response • Communicates ideas and information using relevant example(s), concept(s) and term(s) | 8–10 |
| <ul style="list-style-type: none"> • Describes how the application of Good Health and Wellbeing (SDG 3) and Quality Education (SDG 4) could improve the health status of 10–24-year-old people in City X • May use relevant example(s) AND/OR concepts AND/OR terms | 5–7 |
| <ul style="list-style-type: none"> • Outlines Good Health and Wellbeing (SDG 3) and Quality Education (SDG 4) <p>OR</p> <ul style="list-style-type: none"> • Outlines the health status of 10–24-year-old people in City X | 3–4 |
| <ul style="list-style-type: none"> • Provides some relevant information | 1–2 |

Answers could include:

The infographic shows various areas where City X could improve using SDGs 3 and 4.

- The infographic of City X shows that there are high academic results in secondary school which are not reflected in participation in tertiary education. SDG 3 and SDG 4 can be used to support the youth of City X in enhancing opportunities for success by encouraging greater participation in tertiary education which could lead to improved health and wellbeing through workplace opportunities and increase in income.
- City X has a high migrant population, some of whom may speak languages other than English at home. SDG 4 supports young people to have equal access to all levels of education. Promotion of SDG 4 would support an increase in the number of young people who have access to relevant tertiary training and skills for the workplace. This could affect the data relating to lower incomes through greater workplace opportunities and improving understanding of the importance of immunisation programs and vaccination. Increased educational attainment and development of skills through increased participation in tertiary education can lead to positive health and welfare outcomes supporting the fulfilment of SDG targets. The data on health can be improved with greater education about the importance of immunisation and vaccination programs. This would reduce the risks and associated health issues and mortality rates caused by communicable diseases.

- The data reflects a low participation in recreational activity. SDG 3 promotes the reduction of premature mortality through prevention programs such as healthy lifestyle education. Greater participation in tertiary education could lead to greater employment opportunities and income. This can provide young people with the education and income to choose a healthy diet and engage in physical activity through such things as community sporting initiatives. This would reduce the risk of associated health issues and mortality rates caused by obesity.
- The data reflecting 'no activity' could be reversed by implementing SDG 4 which highlights the importance of equal access to tertiary education and vocational training which may lead to secure employment and sustainable incomes. Increased and stable incomes support healthy eating and physical activity. This can be linked to an increased ability to both access and afford healthcare services. Secure employment and stable incomes can reduce stress and promote mental health and wellbeing outcomes. There is evidence that those who are well educated feel a greater sense of control over their lives and have better access to social support.
- The data also reflects a high proportion of unsafe recreational activity. SDG 3 supports safe recreational activities by preventing substance abuse and smoking which negatively affect the health and wellbeing of young people. Here SDG 3 and SDG 4 are connected through improved education opportunities which may increase family incomes and reduce family and individual mental health stress and reliance on harmful use of drugs and unsafe recreational activities.
- Increasing the number of young people moving into tertiary education shows how SDG 3 and SDG 4 are connected through increasing a person's health literacy and knowledge and their ability to effectively use this information to lead to better health outcomes. It can also increase the likelihood of a person engaging in positive health behaviour by mitigating risk behaviours and engaging in safe recreational activities.

Question 29

| Criteria | Marks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> • Demonstrates a comprehensive understanding of rehabilitation procedures • Provides clear and well-reasoned judgements about the advice given to the player • Provides detailed reasons in favour of a suitable rehabilitation program • Presents a logical and cohesive response • Communicates ideas and information using relevant examples, concepts and terms | 11–12 |
| <ul style="list-style-type: none"> • Demonstrates a sound understanding of rehabilitation procedures • Provides a clear judgement about the advice given to the player • Provides reasons in favour of suitable rehabilitation program • Presents a logical response • Communicates ideas and information using relevant example(s), concept(s) and term(s) | 8–10 |
| <ul style="list-style-type: none"> • Describes the characteristics of rehabilitation procedures and links them to advice given to the player • May use relevant examples AND/OR concepts AND/OR terms | 5–7 |
| <ul style="list-style-type: none"> • Outlines some characteristics of rehabilitation procedures | 3–4 |
| <ul style="list-style-type: none"> • Provides some relevant information | 1–2 |

Answers could include:

Coach advice includes inappropriate rehabilitation procedures:

- Immobilising the shoulder – as advised this wouldn't allow the athlete to receive the benefits of progressive mobilisation and stretching. This would dramatically decrease range of motion, increase joint stiffness and could allow for muscle atrophy to occur. As a result, this could increase the risk of re-injury and restrict performance outcomes when the player returns to play in four weeks.
- Completely resting for the next four weeks before playing in the grand final – as advised this would not allow for total body fitness to be maintained especially cardio-respiratory endurance needed for successful performance. The body's VO₂ max, haemoglobin production and lactate threshold will decrease thus resulting in player fatigue. This means that the athlete will no longer be able to meet the demands of the match for example their tackling technique could decrease as the match progresses.

Rehabilitation procedures that could be appropriate in this scenario are:

- Progressive mobilisation – gradually increasing range of motion for the injured shoulder.
- Graduated exercise – includes stretching the injured shoulder allowing for increased muscle length and elasticity. Conditioning ensures that the injured shoulder has maintained its strength so that muscle atrophy doesn't occur. Total body fitness that is sport specific should be maintained to avoid reversibility.
- Training – ensuring that the athlete is at appropriate sport-specific fitness capacity to compete in the grand final. This can be achieved by playing in modified game situations during training sessions or playing in a reserve game as well as ensuring that the athlete's timing, speed and coordination are all at pre-injury state.
- Use of heat and cold – cold can assist in the reduction of inflammation as required.

HSC

Health and Movement Science

Sample Mapping Grid

Section I

| Question | Marks | Content | Syllabus outcomes | Targeted performance bands |
|----------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------|
| 1 | 1 | How does Australia's healthcare system work towards achieving better health for all Australians? – complementary healthcare approaches | 12-1 | 2–3 |
| 2 | 1 | What impact do sleep, nutrition and supplementation have on movement and performance? – post-performance needs | 12-4 | 2–3 |
| 3 | 1 | How can exercise assessment and prescription be personalised? – importance of using a pre-exercise questionnaire | 12-4 | 2–3 |
| 4 | 1 | How do individuals train for sustained movement and performance? – recovery strategies for sustained movement and performance | 12-4 | 2–3 |
| 5 | 1 | What actions are needed to promote and improve the health of Australians? – Sustainable Development Goal (SDG) 11 | 12-3 | 3–4 |
| 6 | 1 | How does training influence movement and performance? – anaerobic training | 12-4 | 3–4 |
| 7 | 1 | How does training differ for individual and group sports? – skill instruction | 12-5 | 3–4 |
| 8 | 1 | How does training differ for individual and group sports? – psychological strategies to improve participation and performance | 12-5 | 3–4 |
| 9 | 1 | How are the growing and changing uses of technology and data impacting Australia's healthcare system? – digital health | 12-2 | 3–4 |
| 10 | 1 | How does training differ for individual and group sports? – design of training session – coach evaluation | 12-5 | 3–4 |
| 11 | 1 | How do individuals train for sustained movement and performance? – recording and monitoring training and performance | 12-4 | 4–5 |
| 12 | 1 | What impact do sleep, nutrition and supplementation have on movement and performance? – sleep | 12-4 | 4–5 |
| 13 | 1 | How healthy are Australians? – current health status of Australians | 12-1 | 4–5 |
| 14 | 1 | How does training influence movement and performance? – physiological adaptations | 12-4 | 4–5 |
| 15 | 1 | How are the growing and changing uses of technology and data impacting Australia's healthcare system? – big data and reduced healthcare spending | 12-2 | 4–5 |

| Question | Marks | Content | Syllabus outcomes | Targeted performance bands |
|----------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------|
| 16 | 1 | How does training differ for individual and group sports? – yearly training program | 12-5 | 5–6 |
| 17 | 1 | How does Australia's healthcare system work towards achieving better health for all Australians? – health expenditure and impact on current and future populations | 12-1 | 5–6 |
| 18 | 1 | What actions are needed to promote and improve the health of Australians? – Sustainable Development Goal (SDG) 10 | 12-3 | 5–6 |
| 19 | 1 | How does Australia's healthcare system work towards achieving better health for all Australians? – Medicare, private health insurance and related Commonwealth-funded programs – federal, state and territory and local government | 12-1 | 5–6 |
| 20 | 1 | How does Australia's healthcare system work towards achieving better health for all Australians? – government and non-government shared responsibility | 12-1 | 5–6 |

Section II

| Question | Marks | Content | Syllabus outcomes | Targeted performance bands |
|----------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------|
| 21 | 3 | What impact do sleep, nutrition and supplementation have on movement and performance? – the use of supplements for improved performance – micronutrients | 12-4 | 2–4 |
| 22 (a) | 2 | How does training influence movement and performance? – Proprioceptive Neuromuscular Facilitation | 12-4 | 2–3 |
| 22 (b) | 4 | How can exercise assessment and prescription be personalised? – pre-exercise assessment in developing training programs | 12-4, 12-6 | 2–5 |
| 23 (a) | 3 | How healthy are Australians? – the impact of an ageing population on Australia's health | 12-1 | 2–4 |
| 23 (b) | 4 | How healthy are Australians? – the impact of an ageing population on Australia's health – current and future strategies to support healthy aging | 12-1, 12-6 | 2–5 |
| 24 (a) | 4 | How is the growing and changing use of technology and data impacting Australia's healthcare system? – challenges of digital health | 12-2, 12-6 | 2–5 |
| 24 (b) | 6 | How is the growing and changing use of technology and data impacting Australia's healthcare system? – technologies in the healthcare system | 12-2, 12-7 | 2–6 |
| 25 | 8 | How does training influence movement and performance? – progressive overload, training thresholds – physiological adaptations | 12-5, 12-7 | 2–6 |
| 26 (a) | 4 | How healthy are Australians? – groups experiencing inequities – causes that underpin the inequities | 12-1, 12-6 | 2–5 |
| 26 (b) | 8 | How healthy are Australians? – What can we learn from other countries that may be applied to the Australian context? | 12-7, 12-9 | 2–6 |

| Question | Marks | Content | Syllabus outcomes | Targeted performance bands |
|----------|-------|--------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------|
| 27 (a) | 4 | How do individuals train for sustained movement and performance? – use of biomechanics for improved performance | 12-4, 12-6 | 3–6 |
| 27 (b) | 6 | How do individuals train for sustained movement and performance? – recovery strategies – psychological | 12-5, 12-9 | 2–6 |

Section III

| Question | Marks | Content | Syllabus outcomes | Targeted performance bands |
|----------|-------|---------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------|
| 28 | 12 | What actions are needed to promote and improve the health of Australians? – application of SDGs 3 and 4 to inform strategies | 12-3, 12-8, 12-10 | 2–6 |
| 29 | 12 | How do individuals train for sustained movement and performance? – management and prevention of sporting injuries | 12-4, 12-8, 12-9 | 2–6 |