2019 HSC
Personal Development, Health and Physical Education
Marking Guidelines

Section I, Part A

Multiple-choice Answer Key

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

Section I, Part B

Question 21

Criteria	Marks
• Indicates the main features about how goal setting can influence an athlete's motivation level • Provides examples	3
• Sketches in general terms how goal setting can influence an athlete's motivation level	2
• Provides some relevant information about goal setting and/or motivation	1

Sample answer:

Goal setting provides the athlete with focus, gives direction and helps them aim for success. This improves motivation levels, eg a short-term goal of getting six rebounds in the game today will motivate the athlete in the game to push for more rebounds. When an athlete is striving towards a long-term goal, eg representative team selection, they can use goal setting to establish and work towards a series of short-term goals specific to their training frequency and intensity, which will help improve their motivation level.

Question 22

Criteria	Marks
• Provides an argument to support why carbohydrate loading would not improve performance for an athlete competing in a 100-metre running race • Demonstrates an accurate understanding of the relationship between carbohydrate loading, fuel sources and energy system(s)	4
• Provides reasons why carbohydrate loading would not improve performance for an athlete competing in a 100-metre running race	3
• Sketches, in general terms, carbohydrate loading and/or energy systems	2
• Provides some relevant information about nutritional considerations for athletes	1

Sample answer:

A 100-metre runner uses the anaerobic (ATP-CP) system, due to the duration and very high intensity of the race. The fuel source for the athlete is creatine phosphate not carbohydrates and therefore carbohydrate loading would be ineffective. Carbohydrates are a fuel source for the lactic acid and aerobic energy systems. Carbohydrate loading involves a significant increase in high carbohydrate foods for several days before a high intensity endurance activity to increase glycogen stores in the body. Carbohydrate loading is most effective for improving performance when used for aerobic events of more than ninety minutes. As such carbohydrate loading would have no impact on improving the performance of a 100-metre runner in the race.

Question 23

Criteria	Marks
• Makes evident the relationship between environmental determinants and the health inequities experienced by Aboriginal and Torres Strait Islander peoples	5
• Provides features of environmental determinants and relates how they contribute to health inequities experienced by Aboriginal and Torres Strait Islander peoples	4
• Provides features of environmental determinant(s) and relates this to health inequity experienced by Aboriginal and Torres Strait Islander peoples	3
• Sketches, in general terms, environmental determinants and/or health inequity experienced by Aboriginal and Torres Strait Islander peoples	2
• Provides some relevant information about environmental determinants or health inequities experienced by Aboriginal and Torres Strait Islander peoples	1

Sample answer:

When Aboriginal and Torres Strait Islander peoples live outside of major cities, this limits access to primary health services, which can mean that treatment is received in the latter stages of a chronic condition like diabetes. This leads to higher mortality rates for Aboriginal and Torres Strait Islander peoples. Living in rural areas can limit employment opportunities, especially for young people, which leads to higher levels of unemployment, isolation and loneliness. When combined with inadequate support services for mental health issues, this increases morbidity for mental health issues like depression. A lack of access to health services for mental health can lead to increased substance use, eg alcohol use.

Answers could include:

Environmental determinants, eg geographical location, access to health services, access to technology and housing.

Question 24

Criteria	Marks
• Makes clearly evident how characteristics of the learner can influence skill acquisition • Provides specific examples	5
• Describes how characteristics of the learner can influence skill acquisition • Provides examples	4
• Sketches in general terms how a characteristic(s) of the learner can influence skill acquisition OR • Provides features of characteristics of the learner that influence skill acquisition	2–3
• Provides relevant information about a characteristic(s) of the learner or skill acquisition	1

Sample answer:

Prior experience can influence the rate of skill acquisition, eg if a netball player begins playing basketball, they will progress more quickly with passing and catching skills than a person who has never played. This allows them to move quickly through the cognitive stage to the associative stage, as they may make only small errors with passing and catching accuracy. If an athlete has a high level of self confidence, they are more likely to keep trying hard in the early stages of learning new skills, such as learning to dribble with the ball, enabling them to progress to the associative stage more quickly. Heredity, such as being tall and having long limbs, can be a factor that helps with increasing confidence when learning new skills in a sport like basketball, as having a height advantage over players can make intercepting passes easier, which boosts confidence which can speed up the rate of learning new skills for the game.

Question 25

Criteria	Marks
• Makes clearly evident the relationship between cancer and the factors used to identify priority health issues in Australia • Provides detailed reasons why cancer continues to be a priority health issue • Provides relevant examples	7
• Makes evident the relationship between cancer and the factors used to identify priority health issues in Australia • Provides reasons why cancer is a priority health issue • Provides relevant examples	5–6
• Provides reason(s) why cancer is a priority health issue in Australia • Provides examples	3–4
• Sketches, in general terms, cancer and/or how priority health issues are identified	2
• Provides some relevant information about cancer or identifying priority health issues	1

Sample answer:

Cancer continues to be a priority health issue, even though mortality improvements have occurred. Prevalence of cancer continues to be high, causing the greatest burden of disease in Australia. In 2018, approximately 380 people every day were diagnosed with cancer. Cancer remains a priority health issue due to the high morbidity and mortality rates in Australia. Cancer continues to have a large cost to the community through extended hospital stays, resulting in high absenteeism from the workforce. There is considerable cost to the individual for the continued health care to treat cancer. These large costs result in cancer continuing as a priority health issue. Through technological improvements and with continued research there is even greater potential for prevention and early intervention. With the improvements in cancer detection, eg 3D mammograms, breast cancer can be detected earlier which creates a greater chance of overall survival. With greater research about the risk factors like smoking, many cancers can be prevented, eg national tobacco control measures (plain packaging, smoking bans) have led to decreased smoking rates. However, lung cancer continues as the highest cause of cancer deaths. More work needs to be done to reduce smoking rates. It is for these reasons that cancer continues to be a priority health issue in Australia.

Answers could include:

- Identifying priority health issues
- Social justice principles
- Priority population groups
- Prevalence of condition
- Potential for prevention and early intervention
- Costs to the individual and community.

Question 26

Criteria	Marks
• Makes an accurate judgement about the degree to which the health of Australians has improved through the use of the Ottawa Charter in health promotion initiatives • Makes evident the relationship between the Ottawa Charter, health promotion initiatives and improved health for Australians • Provides relevant and specific examples	8
• Makes evident the relationship between the Ottawa Charter, health promotion initiatives and improved health for Australians • Provides relevant examples	6–7
• Provides characteristics and features of health promotion initiatives that use the Ottawa Charter • Sketches, in general terms, how the health of Australians has improved through health promotion initiatives • Provides examples	4–5
• Sketches, in general terms, health promotion initiative(s) and/or the Ottawa Charter	2–3
• Provides some relevant information about health promotion	1

Sample answer:

The health of Australians has been significantly improved as a result of health promotion initiatives that use the Ottawa Charter. There has been a favourable 10-year trend in life expectancy for males and females. The National Tobacco strategy has effectively used the Ottawa Charter action areas, eg *developing personal skills* by using a range of effective media campaigns to educate and promote awareness of the benefits of not smoking. This initiative also used *healthy public policy*, creating legislation which restricted the sale of tobacco as well as the areas where smoking is allowed. This helped to reduce smoking rates, and the number of people exposed to passive smoke. As a result it has contributed to the reduction in mortality rates from lung cancer. The reduction in mortality rates from lung cancer has contributed to the increase in life expectancy in Australia. The BreastScreen Australia health promotion initiative has effectively used *reorienting health services* by providing clinical services for a targeted priority group, eg breast screening checks. This initiative also used *creating supportive environments* by having support networks to provide education to women at risk and giving personal support to women with breast cancer. This initiative has significantly improved mortality rates from breast cancer. While breast cancer incidence has increased, the mortality rate has decreased due to early detection. Women can access treatment earlier, thereby increasing their survival rate.

Question 27

Criteria	Marks
• Draws out and relates the implications of using progressive overload and training thresholds in relation to the physiological adaptations for an athlete participating in a 12-week aerobic training program	8
• Makes evident how the use of progressive overload and training thresholds can result in physiological adaptations for an athlete in a 12-week aerobic training program	6–7
• Provides characteristics and features of progressive overload and training thresholds and links these to physiological adaptations for an athlete in a 12-week aerobic training program	4–5
• Sketches, in general terms, physiological adaptations resulting from an aerobic training program OR • Sketches, in general terms, progressive overload and/or training thresholds AND physiological adaptations	2–3
• Provides some relevant information about a principle of training or a physiological adaptation	1

Sample answer:

Progressive overload involves a gradual increase of frequency, duration and intensity of training, which should occur when an athlete adapts to the training, eg this athlete could run for 20 minutes, three times per week at 65% MHR for the first four weeks, and then increase to 30 minutes four times per week at 75% MHR for the next four weeks. Training thresholds will ensure the athlete exercises at an intensity above the aerobic threshold and below the anaerobic threshold (aerobic training zone), eg running continuously at 70–80% MHR. Using progressive overload and training thresholds in this way for 12 weeks will result in physiological adaptations including increasing oxygen uptake, stroke volume and cardiac output as well as reducing resting heart rate. This is due to the increased stress placed on the cardiovascular and respiratory systems, making them stronger and more efficient. This enables the athlete to train for a longer period of time. Stroke volume increases especially at maximal levels of intensity, as the left ventricle increases in size, enabling a greater volume of blood to be pumped from the heart when it contracts. This, combined with increased haemoglobin levels from aerobic training, enables working muscles to get more oxygen. Because the heart is working more efficiently, resting heart rate will decrease, as more blood is pumped from the heart with every contraction.

Section II

Question 28 (a) (i)

Criteria	Marks
• Provides characteristics and features of the nature and extent of a major health issue that affects young people • Provides relevant examples	4
• Sketches, in general terms, the nature and extent of a major health issue that affects young people • Provides examples	3
• Sketches, in general terms, the nature and/or extent of a major health issue that affects young people	2
• Provides some relevant information about a major health issue that affects young people	1

Sample answer:

Alcohol is the 4th major contributor to mortality rates for young people. Although young people are trying alcohol later in life for the first time, they are still consuming alcohol in large and dangerous quantities over short periods of time. This behaviour combined with the situation they are in (such as unsupervised parties) is greatly contributing to the increased morbidity and mortality rates. As young people gain greater access to alcohol, they tend to consume alcohol in risky quantities. Young people are highly influenced by their peers in relation to alcohol use and are more likely to drink harmful quantities in social situations, including parties or post sporting celebrations. Approximately 40% of young people drink alcohol at levels that put them at risk of harm; with this behaviour occurring at least once a month. Approximately one quarter of young people have never drunk alcohol, and choose to remain alcohol free, improving health status.

Question 28 (a) (ii)

Criteria	Marks
• Makes the relationship evident between risk factors and protective factors and the major health issue identified in part (i) • Provides relevant examples	4
• Provides characteristics and features of risk factors and protective factors related to a major health issue affecting young people	3
• Sketches, in general terms, risk factors and/or protective factors related to a major health issue affecting young people	2
• Provides some relevant information about risk factors and/or protective factors	1

Sample answer:

Some risk factors are modifiable, which means they can be changed for example, having early exposure to alcohol consumption, either through home, work or social surroundings such as sporting clubs may increase the likelihood of a person consuming alcohol at a younger age or by binge drinking, if that has been regularly modelled. However, if the young person has regularly seen alcohol used in a responsible way, they are more likely to model that behaviour. Non-modifiable risk factors including gender have an impact on alcohol consumption. Males are more likely to consume alcohol at a younger age, placing them at greater risk of alcohol-related injuries. Protective factors aim to reduce the potential harm of the health issue, alcohol consumption. Education is a strong protective factor, accompanied with laws and health promotion to reduce the potential for harm. People with higher levels of education are less likely to abuse alcohol. Laws for the sale and supply of alcohol can reduce access, including the responsible service of alcohol.

Question 28 (b)

Criteria	Marks
• Makes the relationship evident between a range of factors and their adverse effect on the health of young people and strategies to overcome these factors • Uses relevant examples to support the response	11–12
• Makes the relationship evident between most of the factors and their adverse effect on the health of young people • Provides characteristics and features of strategies to overcome these factors • Uses relevant examples	8–10
• Provides characteristics and features of the factors that adversely affect the health of young people • Sketches in general terms a strategy to overcome a factor • Provides examples OR • Provides characteristics and features of some strategies to overcome the factors that adversely affect the health of young people • Provides examples	5–7
• Sketches, in general terms, factors adversely affecting the health of young people OR • Sketches, in general terms, strategies for improving the health of young people	3–4
• Provides some relevant information about factors adversely affecting the health of young people OR a strategy for improving the health of young people	1–2

Sample answer:

Individual factors relate to a young person's predetermined genetic make-up, sexual orientation and gender, as well as their personal skills, knowledge and attitudes. These can adversely affect a young person's health. For example, young males experience more injuries than young females. This can be attributed to their higher risk-taking attitudes and their nature to be easily influenced by others. Young males are more likely to be involved in a motor vehicle accident than any other age group, with contributing factors to these accidents including alcohol use and speeding in the aim to impress their peers. A strategy to overcome this includes the media 'little pinkie' campaign, which targeted young males, to encourage them to see that 'no one thinks big of them' when engaging in these behaviours, so they should 'slow down'.

Sociocultural factors relate to the influence of family, peers, media, religion and culture on a young person's health. Young people are highly influenced by their peers and media, especially social media, and will engage in poor health behaviours in an attempt to impress their peers. This can adversely affect their health. For example participating in unprotected sex when intoxicated, as young people feel pressure to conform to the expectations of their peers. This contributes to the increase of sexually transmitted infections like chlamydia. A strategy to overcome this includes sexual health clinics that are free to visit, to receive accurate information, free health checks from expert health professionals in sexual health, including STI testing and free preventative measures, eg condoms are also available.

Socioeconomic factors include the socioeconomic status, level of education and employment of a young person. These can adversely impact on a young person's health. A young person from a low socioeconomic background is more likely to leave school early, with a lower education and therefore find it difficult to get employment, perpetuating the cycle. A strategy to overcome this would be the government providing extra assistance to low income earners to encourage them to remain at school to gain higher education and better job prospects. This can be through Austudy. Many schools and universities also have scholarships available to assist students to continue their studies and improve their job prospects and health outcomes.

Environmental factors which can adversely impact on a young person's health include geographical location, access to health services and technology. A young person who lives in a rural or remote area has a higher potential for poor health than a young person from a metropolitan area. A rural and remote area exposes young people to harsher and isolated environments, as well as higher rates of depression and suicide. Additionally, there is less access to health services for preventative measures like seeing a counsellor if stressed and therefore not getting treatment and increasing their poor mental health. With increased access to technology across Australia, the ability to be connected is improved and has provided many strategies to overcome environmental factors. The YbBlue has a social media presence, aiming to engage young people who have difficulties being connected with anonymous free counselling, helping to overcome the lack of access to health services.

Question 29 (a) (i)

Criteria	Marks
• Provides characteristics and features of the impact of government funding on Australian sporting identity • Provides relevant examples	4
• Sketches, in general terms, the impact of government funding on Australian sporting identity • Provides an example	3
• Sketches, in general terms, government funding in Australian sport AND/OR Australian sporting identity	2
• Provides some relevant information about government funding in Australian sport	1

Sample answer:

The Commonwealth government contributes a considerable amount of the nation's budget to sport, allocating many millions of dollars to the Australian Sports Commission and AIS. This money is distributed to improve training programs, equipment, competition venues and facilities, camps, coaches, and sports medicine. This improves Australia's sporting identity through success for athletes representing at national, state, regional and local levels.

With increased financial support from the government, athletes can achieve greater success at international level. This creates local, regional and national pride across the Australian population.

The more government funding for athletes in Australia, the better the training opportunities available, eg AIS, NSWIS, leading to greater participation in various competitions and more coaching to improve performances and gain success at national and international competitions such as Commonwealth Games, Olympic Games and World Championships. Success in these competitions enhances Australia's sporting identity, both nationally and internationally. The AIS allocates financial government support and resources to develop sport at all levels and in all states/territories. This includes athletes who compete in Paralympic and Olympic competitions. With more funding, athletes at an elite level can dedicate more time to their chosen sport; state and community level athletes can train to reach their potential. More government funding enables greater research to improve knowledge and information exchanged between coaches.

Question 29 (a) (ii)

Criteria	Marks
• Makes evident how politics has influenced the participation of Australian athletes in sport • Provides relevant examples	4
• Provides characteristics and features of how politics has influenced the participation of Australian athletes in sport • Provides example(s)	3
• Sketches, in general terms, how politics has influenced participation in sport	2
• Provides some relevant information about politics in sport	1

Sample answer:

The 1980 Moscow Olympics were boycotted by numerous countries due to political opinions about the Soviet Union's handling of political and humanitarian issues during the 1970s. The Australian Olympic Committee was split on whether Australian athletes were allowed to compete at all. Australia only entered a team of 100 athletes, as many were pressured to boycott by individual sporting bodies. Australia won two gold medals at the Moscow Games, and 13 Australian athletes competed under the Olympic flag, not as part of the Australian team. This had huge implications for many of the leading Australian athletes who were pressured not to compete, and ultimately this ended many elite athletes' careers by not competing.

Peter Norman participated in the 1968 Olympic Games. He stood on the dais and was involved in 'the black salute' which was a protest against the USA government for failing in humanitarian rights of African Americans. Norman was banned from representing Australia ever again even though he did meet qualifying times on numerous occasions. The Australian Olympic Committee acknowledged his achievements in 2012, with the Australian House of Representatives issuing a posthumous apology to Norman and his family.

Athletes have used sporting events to demonstrate their beliefs throughout history, including Cathy Freeman at the 2000 Olympics and 1994 Commonwealth Games in which she carried both the Aboriginal and Australian flags after success in the 400 m. In these events Cathy represented Aboriginal peoples, their cultures and histories, as well as Australia as a nation.

Question 29 (b)

Criteria	Marks
• Draws out and relates the implications of the contribution of advertising and sponsorship to the development of sport as a commodity in Australia • Provides relevant and accurate examples	11–12
• Makes evident the contribution of advertising and sponsorship to the development of sport as a commodity in Australia • Provides relevant examples	8–10
• Describes the contribution of advertising and sponsorship to the development of sport as a commodity in Australia • Provides examples	5–7
• Sketches in general terms how sponsorship and/or advertising have contributed to the development of sport as a commodity in Australia	3–4
• Provides relevant information about sport as a commodity OR advertising OR sponsorship in Australian sport	1–2

Sample answer:

Many athletes and teams in Australia are able to achieve success through various sponsors covering part of or all costs they incur. Often the amount of sponsorship and publicity are equal to the profile of the player or team.

Sports with a high profile can attract more advertising, publicity and sponsorship, such as AFL, NRL and cricket in Australia. This enables individuals and teams to participate in the highest level of competition interstate and overseas, improving their skills through training. Lower profile sports such as rowing, water polo and badminton do not attract as much sponsorship or advertising, resulting in sports administrators, coaches and trainers having to work harder and longer to get the financial support to cover training, accommodation, travel and competition required to achieve success.

Sporting merchandise with sponsors' names attracts a lot of money and coverage for sponsoring businesses. This can include club jerseys, T-shirts, towels, blankets and cups. This actively promotes the business team and sport. Other benefits of advertising and sponsorship include the profiles of athletes being increased, especially if they are successful. However, if the athlete is involved in negative behaviour (eg Ben Barba was deregistered from the NRL for violence against his partner in 2019 before playing a game for North Queensland) this can have a negative impact on the sport as a business and as a product for companies to invest in through advertising.

Advertising and sponsorship are usually greater for male sports or athletes compared to females. For example, Sam Kerr is the leading female soccer player in Australia. She is sponsored by Nike, but receives much less money than her male counterparts. A negative aspect of advertising and sponsorship in Australian sport has been the loss of identity of suburban grounds, eg Manly Sea-Eagles home ground is now called Lotto Stadium. Breaks in coverage occur so sponsors can get their advertising into the coverage to increase profits, including when a goal is scored in AFL or a try is scored in NRL. Having these breaks during televised or live-streamed sporting events provides increased opportunities for businesses to advertise their company or products. This raises the advertising revenue for the sport or event, further increasing sport as a commodity.

Question 30 (a) (i)

Criteria	Marks
• Makes evident how the assessment procedures (TOTAPS) are used to determine the nature and extent of this injury • Provides relevant examples	4
• Provides features of the assessment procedures (TOTAPS) used to determine the nature and extent of this injury • Provides examples	3
• Sketches, in general terms, assessment procedures used to determine the nature and/or extent of injury	2
• Provides some relevant information about assessment procedures	1

Sample answer:

The loud crack may indicate that the touch football player could have dislocated or fractured their shoulder which is a hard tissue injury. The assessment procedures to determine the nature and extent of this shoulder injury would be TOTAPS, which stands for talk, observe, touch, active movement, passive movement and skills test. Talk to the athlete to gather as much information about the injury as possible, including symptoms of the injury, eg pain, grating or cracking. Ask questions such as, where does it hurt? How painful is it out of 10? If the athlete reports that they have immense pain or loss of function the TOTAPS procedure is stopped immediately as medical attention is required. Observe the injured shoulder by comparing to the other shoulder in order to determine if there is an obvious abnormality, eg swelling, redness, blood. If there is an abnormality or the area is already inflammed, then the TOTAPS procedure is stopped and medical attention sought. Touch the casualty, to see where the pain begins moving around the shoulder and arm. Feel for abnormalities, heat and swelling. If an abnormality or excessive pain exists during touch, then the TOTAPS assessment procedure is stopped. If the shoulder injury is classified as a hard tissue injury the TOTAPS assessment procedure would stop here as the touch player would not be able to participate in the remaining steps of the TOTAPS (active movement, passive movement and skills test) procedure as these steps would cause further injury to the shoulder.

Question 30 (a) (ii)

Criteria	Marks
• Provides characteristics and features of the management of fractures and dislocations • Provides relevant examples	4
• Sketches, in general terms, the management of fractures and dislocations • Provides examples	3
• Sketches, in general terms, the management of fractures OR dislocations	2
• Provides some relevant information about managing hard tissue injuries	1

Sample answer:

Fractures and dislocations are classified as a hard tissue injury and will both require medical intervention.

To manage a fracture it is essential to immobilise the injured limb or area, eg using a sling for a fractured forearm, or clavicle. If the fracture has pierced the skin, it is essential to reduce and control any external bleeding, using pressure, provided it does not cause further pain or injury. The athlete should be monitored for shock. The athlete should then be taken to a medical facility for treatment by a doctor, eg X-ray and plaster cast or splint if required. A dislocation is an injury to a joint where a bone has been displaced from the joint structure. To manage this, do not move the joint. The injured joint should be supported in a comfortable position and if possible a sling should be applied. The athlete or first aider should not attempt to relocate the joint, this must be done by a medical professional after an X-ray has been taken. Applying ice may help to reduce the swelling and pain for a dislocation.

Question 30 (b)

Criteria	Marks
• Draws out and relates the implications of climatic conditions affecting the safe participation of athletes in sport • Provides relevant and accurate examples	11–12
• Makes the relationship evident between climatic conditions and the safe participation of athletes in sport • Provides relevant examples	8–10
• Provides characteristics and features of climatic conditions and how they affect the safe participation of athletes in sport • Provides examples	5–7
• Sketches in general terms how climatic conditions affect safe sports participation	3–4
• Provides some relevant information about climatic conditions and/or safe participation of athletes in sport	1–2

Sample answer:

Climatic conditions refer to the environmental temperature, humidity, wind, rain, altitude and pollution levels. Each of these conditions affects athlete safety and needs to be considered in order to enhance the wellbeing of the athlete. Environmental temperature can be dangerous to an athlete's wellbeing. Hot weather can be dangerous to the athlete as heat needs to be removed from the body for safety. Hot climatic conditions add heat to the athlete particularly through radiation. This places the athlete at higher risk of hyperthermia and heat stroke. Hot conditions make it more difficult for the athlete to maintain their body temperature, and force the athlete to sweat more, which can lead to dehydration. It is therefore vital that the athlete has strategies to help the body lose heat safely through temperature regulation mechanisms, eg drinking more fluid and participating in sport during cooler times of the day.

Cold conditions may result in the athlete losing too much heat and the body temperature dropping to unsafe levels. Athletes will sweat and send blood supply to the skin in order to lose heat when exercising. But, if this occurs when the weather is cold, they can lose too much heat. Therefore, the athlete should ensure they wear appropriate clothing to manage heat loss effectively and ensuring they do not stand in the cold waiting to participate.

Humidity refers to the water concentration in the atmosphere. The more humid the climatic conditions are the less effective sweat and evaporation are at removing heat. Hot humid conditions greatly increase the likelihood of hyperthermia because the body's temperature regulation mechanisms are hindered and heat loss is minimal. If the athlete is producing heat by participating in sport this heat will not be lost and the athlete may suffer hyperthermia. An ice vest could be worn as this would assist the athlete to maintain their body temperature at a safe level.

Windy climatic conditions greatly increase the loss of heat through convection, though a warm wind will add heat to the athlete rather than removing it. Wind will also affect the movement of equipment such as balls, which can make play more dangerous as the ball can move unexpectedly and injury a player. Cold windy climatic conditions increase likelihood of hypothermia. Cold conditions cause greater heat to be lost through radiation, conduction and convection. Wind further increases the heat loss through convection and places the athlete at greater risk of hypothermia.

Rain increases the heat lost through convection as water moves across the surface of the skin. Rainy conditions also make surfaces slippery, therefore increasing the risk of injury to a

player. Many sports such as netball will be cancelled if the courts get wet, as play becomes too dangerous to the athlete.

The altitude at which a sport is conducted will influence player safety. This is because there are different oxygen concentrations in the air at varying altitudes. The higher the altitude the lower the oxygen concentration, the lower the altitude the greater the concentration. The result of the varying altitude levels is that if an athlete is participation in sport at a low altitude and is then required to perform at a high altitude, their performance will decrease because they have less oxygen moving into their blood and being transported to the muscles. Therefore an athlete needs to arrive earlier when travelling to different countries so that they have time to acclimatise adequately.

Pollution is a climatic condition that refers to the presence of contaminants either in the air or the greater environment. The one of most concern for the athlete is air pollution, since they are breathing deeply and frequently as they exercise. To enhance safety within these conditions an athlete should stop or minimise participation.

Question 31 (a) (i)

Criteria	Marks
• Provides characteristics and features of TWO different types of training methods that are best suited to the performance requirements of an athlete in a particular sport • Provides relevant examples	4
• Sketches in general terms TWO different types of training methods best suited to the performance requirements of an athlete in a particular sport • Provides examples	3
• Sketches in general terms a training method suited to the performance needs of an athlete	2
• Identifies some relevant information about training methods of an athlete in a particular sport	1

Sample answer:

A 50 m or 100 m butterfly swimmer would need to participate in flexibility training and strength training to meet their performance needs as they require strength and flexibility to execute the stroke consistently in a race. Dynamic flexibility training methods would be most beneficial for increasing shoulder and hip flexibility. Dynamic flexibility training methods are suited to a butterfly swimmer as it involves continuous movements of a joint, eg shoulder, in a sustained way. This training method takes the shoulder through the full range of movement possible, and using all muscles of the shoulder ensures that flexibility is maximised. Strength training methods such as weight training would be most suited to the butterfly swimmer. Weight training involves the use of dumbbells and plates and this would be suited to a butterfly swimmer as it allows a range of different exercises to be completed with ease of adding additional load by using heavier weights when the muscles increase in strength, eg adding a 10 kg plate to the lat pull down. The use of plates allows for progressive overload to be applied easily. The butterfly swimmer would be focusing on both strength and power, so would need to ensure that the load, sets, speed of lift, rest and number of repetitions are appropriate, eg 85% 1RM, 3–6 sets, 1–6 reps, 2–5 minutes rest between sets and slow speed of repetitions. When adjusting the exercise to focus on power, the swimmer would need to reduce the load and increase the speed of the repetition.

Question 31 (a) (ii)

Criteria	Marks
• Makes evident how the training adaptations for this athlete can be measured and monitored • Provides relevant examples	4
• Provides characteristics and features of the ways training adaptations for this athlete can be measured and monitored • Provides examples	3
• Sketches in general terms how training adaptation(s) for this athlete can be measured and/or monitored	2
• Identifies some relevant information about measuring and/or monitoring training adaptations	1

Sample answer:

When the swimmer participates in dynamic flexibility training methods, adaptations will occur to the muscles which should increase flexibility and range of movement in joints. To measure and monitor the adaptations from this flexibility training, the athlete will need to have measured their flexibility prior to the training, so that there is a starting baseline that the athlete or coach can use to monitor progress with improving flexibility. Measuring and monitoring hamstring flexibility could be done using the sit and reach test. This should then be repeated throughout the training program, with the results of the test recorded each time, so that improvements to hamstring flexibility can be seen. The weight training methods as part of the strength training program can result in a number of adaptations including increased number of muscle fibres recruited and increased speed of recruitment of muscles. These adaptations can be measured and monitored by completing a three repetition maximum test for specific muscles or groups of muscles that have been trained, eg bench press, shoulder press, squats. The test should be completed before training commences and then repeated throughout the strength training program with the same tests and test conditions. Recording the results of these tests enables improvements in muscle strength to be monitored and then changes made to the weight training program, eg increased weight or repetitions or methods used, eg resistance or isometric training to ensure ongoing muscle adaptations are made from strength training.

Question 31 (b)

Criteria	Marks
• Demonstrates a detailed understanding of an athlete's fitness and skill-specific requirements in a particular sport • Draws out and relates the implications of an athlete's fitness and skill-specific requirements changing during each phase of competition in a periodisation chart • Provides relevant and accurate examples	11–12
• Demonstrates an understanding of an athlete's fitness and skill-specific requirements • Makes evident the reasons why an athlete's fitness and skill-specific requirements change during each phase of competition in a periodisation chart • Provides relevant and specific examples	8–10
• Describes why an athlete's fitness and skill-specific requirements change during each phase of competition in a periodisation chart • Provides examples OR • Provides features of an athlete's fitness and skill-specific requirements during the three phases of competition in a periodisation chart • Provides examples	5–7
• Sketches, in general terms, why fitness and/or skill-specific requirements change during the phases of competition OR • Sketches, in general terms, the fitness and skill-specific requirements during the phases of competition	3–4
• Provides relevant information about the phases of competition and/or fitness and skill-specific requirements	1–2

Sample answer:

The fitness and skill-specific requirements for an elite midfield soccer player in the A-League will be different in each phase of competition. This is essential to ensure that the player has the required skill level and physical conditioning so that they are physically ready for the competition, reduce the risk of injury and overtraining during the in-season and are ready to peak towards the end of the in-season in the finals of the competition.

Pre-season is up to three months and will include several macrocycles. A six-week macrocycle of general fitness conditioning would include endurance fitness such as continuous running and aerobic interval training, as well as strength and flexibility to ensure a soccer player being able to last the length of a game. This is followed by another six-week macrocycle of specific conditioning which would include farlek training and interval training such as short prints with active recovery sessions that closely mimic a midfielder's running pattern in a game. The core focus of the pre-season is for the athlete to regain his fitness that was lost in the off-season and to adequately prepare them for the demands of the in-season.

The pre-season will also include the practice of skill-specific requirements such as ball control, passing, dribbling and shooting because they may not have played with a ball in the off-season. Some team tactical training will also be included such as general formation such

as a 4, 4, 2 and defensive formations and where specifically the midfield soccer player needs to be when the opposition attacks from different positions.

The in-season has competition can be broken down into four macrocycles. The last macrocycle prepares the athlete to peak for the finals. Prior to peaking, the midfielder's team will taper their fitness session by reducing the workload, so that players can recover from injury and minimise the chance of overtraining. Anaerobic fitness needs to be maintained in the in-season phase so that the midfielder can meet the demands of the game and be in optimal position in defence and attack. Microcycles of fitness can be introduced if the coach believes a fitness aspect needs to be worked on such as speed and recovery.

The in-season requires a greater emphasis on skill and tactics. Rehearsal of these under pressure, for example short passes in tight areas, ensure that the midfielder can make the plays despite pressure and fatigue. Microcycles can be introduced (within macrocyles) to ensure the team is prepared specifically for opposition and new tactics can be developed and practiced; ie the midfielder's distribution to the forwards in a particular way and an introduction of longer passes.

In the post-season, a period of rest is important to allow the body and mind to recover from the demands of the season. The midfielder may maintain some fitness through cross-training or playing a similar sport like futsal. This will enable skill and fitness to be maintained without the pressure of competition. This macrocycle will focus on general fitness with less emphasis on skills.

Question 32 (a) (i)

Criteria	Marks
• Provides reasons why health promotion strategies are more effective when they focus on skills, education and prevention • Provides relevant examples	4
• Sketches in general terms why health promotion strategies are more effective when they focus on skills, education and prevention • Provides examples	3
• Sketches in general terms why health promotion strategies are effective when they focus on skills, education and prevention	2
• Provides some relevant information about skills, education and prevention and/or health promotion strategies	1

Sample answer:

For health promotion strategies to be effective it is necessary to have a focus on skills, education and prevention. Through the teaching of new skills, reading food labels and nutritional factors to make more informed decisions about food consumption, eg cooking healthy meals, individuals can be educated on how to reduce the chances of chronic diseases caused by poor nutrition such as cardiovascular disease and diabetes. When health promotion strategies focus on prevention, individuals and communities can address risk factors and protective factors for a specific health issue, eg diabetes in Aboriginal communities, by implementing strategies that focus on risk factors, like high alcohol consumption, to help to decrease the number of people with diabetes. When health promotion strategies focus on education, improving people's knowledge and understanding about factors affecting their health, they are able to make more informed decisions, eg understanding how participation in physical activity can help maintain bone density and improve strength and flexibility for the aged or people living with physical disability.

Question 32 (a) (ii)

Criteria	Marks
• Makes evident how intersectoral collaboration has increased the potential for success in one health promotion strategy for a population group experiencing inequity • Provides relevant examples	4
• Provides features of intersectoral collaboration in one health promotion strategy for a population group experiencing inequity • Provides examples	3
• Sketches, in general terms, intersectoral collaboration in one health promotion strategy for a population group experiencing inequity	2
• Provides some relevant information about health promotion for a population group experiencing inequity	1

Sample answer:

The National Tobacco Strategy uses intersectoral collaboration where Commonwealth, state and territory governments work together with non-government organisations, Aboriginal and Torres Strait Islander peoples' health and community organisations to reduce tobacco use. The Commonwealth government's introduction of legislation about plain packaging for tobacco products and increased tobacco prices through taxation supported the state and territory government programs by building the capacity of Aboriginal health workers to implement community-based projects, eg Quit for You, Quit for Two, a cessation program for pregnant women and their families. This intersectoral collaboration has been more effective than individual strategies by one group. These combined actions have led to reduced appeal of tobacco products, increased noticeability and effectiveness of mandated health warnings, decreased affordability of tobacco, along with increased knowledge about the harms of smoking for the unborn baby and of second-hand smoke for children in the family. These combined effects have led to a reduction of smoking in Aboriginal and Torres Strait Islander peoples including mothers and young people. Intersectoral collaboration in the National Tobacco Strategy has enabled mass media marketing campaigns to be implemented, specifically for Aboriginal and Torres Strait Islander peoples, eg Break the Chain. This strategy requires the support and encouragement of local role models, including Aboriginal health workers.

Question 32 (b)

Criteria	Marks
• Makes an accurate judgement about how the inequity gap for TWO population groups has changed as a result of government interventions • Provides specific and relevant examples	11–12
• Makes evident how the inequity gap for TWO population groups has changed as a result of government interventions • May provide a judgement • Provides relevant examples	8–10
• Describes how the inequity gap for TWO population groups has changed as a result of government interventions • Provides examples	5–7
• Sketches, in general terms, how the inequity gap for population group(s) has changed as a result of government interventions • Provides examples	3–4
• Provides some relevant information about how the inequity gap for population group(s) has changed and/or government interventions	1–2

Sample answer:

Aboriginal and Torres Strait Islander people have a significantly higher burden of disease compared to non-Aboriginal Australians. However with a combination of a range of government Aboriginal health services, improvements have been made. Overall in the last 10 years, the total burden of disease fell by 5%, with the death rate decreasing by 11%. The government provides many specific Aboriginal health services to support mainstream health services and target areas of health inequities in Aboriginal and Torres Strait Islander peoples. Examples of these Aboriginal health interventions are community support services, screening programs, social and emotional wellbeing services, transport services and accommodation. These can be found in all major cities, as well as in most regional areas.

Through government funding many specific local Aboriginal Medical Services have been set up. These bring a range of health professionals, many Aboriginal, together in one area to service the local Aboriginal population's health needs. The environment is less threatening and more trusted by the Aboriginal and Torres Strait Islander community, so they are more likely to use the service for their health needs, and follow up with treatment plans. This increases the access to services and reduces barriers to using a health service, main factors that can create inequities in health. This is mainly because the Aboriginal Medical Service is culturally sensitive and trusted. They also specialise in health issues most prevalent in the local community and provide screening and preventative treatments also as well as focusing on the social wellbeing of the Aboriginal population. This has greatly increased the number of Aboriginal and Torres Strait Islander people seeking health care, reducing especially the total disease burden and death rate.

The government provides a Puggy Hunter Memorial Scholarship Scheme which funds Aboriginal and Torres Strait Islander peoples who wish to take up health profession training. Having health professionals who are Aboriginal increases trust in the health service and increases the likelihood of greater participation in the health service from those in the community due to the increased engagement of communities in their health care.

People living in geographically remote populations have higher levels of health risk factors and suffer poorer health than those living in regional and metropolitan areas, resulting in higher mortality and morbidity rates and lower life expectancy. The impact of these inequities increases with remoteness. A high percentage of the people living in geographically remote

populations are Aboriginal. The government have many initiatives to potentially decrease the inequity gap in these areas. The Royal Flying Doctor service aims to increase the access to quality health care in an aim to reduce some of the inequity gap. They provide services for anyone living, working or travelling in geographically remote areas needing both primary and emergency health care. This increases the access to quality health services, decreases isolation and aims to reduce the large inequity gap in their health.

The National Rural and Remote Health Infrastructure Program aims to improve access to health services in rural and remote areas. The Rural eHealth Strategy is a NSW state government initiative to connect rural and remote patients electronically with services and clinicians. This can allow people to remain in or close to their home while being treated and monitoring for long-term conditions, eg diabetes and cardiovascular disease. This reduces added stress and promotes healing as the individual is close to home and family and does not have added costs of travelling to main regional areas or metropolitan hubs for regular monitoring. It can occur online, and allows regular monitoring of their condition and therefore improved access to services and decreased isolation.

2019 HSC
Personal Development, Health and Physical Education
Mapping Grid

Section I
Part A

Question	Marks	Content	Syllabus outcomes
1	1	High levels of preventable chronic disease	H1
2	1	Complementary and alternative health care approaches	H5
3	1	Personal versus prescribed judging criteria	H9
4	1	Recovery strategies, physiological	H10
5	1	Health care in Australia, impact of emerging new treatments and technologies on health care	H15
6	1	The learning environment, nature of skill	H9
7	1	Psychological strategies	H11
8	1	High levels of preventable chronic disease, cardiovascular Major causes of morbidity and mortality in Australia	H1, H2
9	1	Responsibility for health facilities and services	H5
10	1	The learning environment, feedback	H9
11	1	The learning environment, the performance elements	H8
12	1	Social justice principles	H14
13	1	A growing and ageing population	H15
14	1	Validity and reliability of tests	H9, H17
15	1	Responsibility for health facilities and services	H5
16	1	Types of training and training methods	H8
17	1	Energy systems, lactic acid system	H7
18	1	Measuring health status, epidemiology	H2
19	1	Major causes of mortality, risk factors, protective factors	H2
20	1	Anxiety and arousal, state anxiety, effects on performance	H16, H17

Section I
Part B

Question	Marks	Content	Syllabus outcomes
21	3	Motivation / psychological strategies to enhance motivation	H11
22	4	Pre-performance, including carbohydrate loading; alactacid (ATP/PC) system	H11
23	5	Groups experiencing health inequities	H3
24	5	Stages of skill acquisition, characteristics of the learner	H9, H17
25	7	Identifying priority health issues / high level preventable chronic diseases	H1
26	8	Health promotion based on the five action areas of the Ottawa Charter / measuring health status	H4, H15

Question	Marks	Content	Syllabus outcomes
27	8	Principles of training; physiological adaptations; types of training and training methods – aerobic training	H8, H10

Section II

Question	Marks	Content	Syllabus outcomes
28 (a) (i)	4	The major health issues that affect young people – nature and extent	H2
28 (a) (ii)	4	The major health issues that affect young people – risk and protective factors	H6
28 (b)	12	The effects of the determinants of health on young people	H6, H14, H15
29 (a) (i)	4	Government funding	H12
29 (a) (ii)	4	Politics and sport	H12
29 (b)	12	Sport as a commodity – sponsorship, advertising and sport	H12, H16
30 (a) (i)	4	Assessment procedures to determine the nature and extent of injuries	H13, H17
30 (a) (ii)	4	Hard tissue injuries; fractures, dislocation; manage hard tissue injuries	H13, H17
30 (b)	12	Environmental considerations; climatic conditions (temperature, humidity, wind, rain, altitude, pollution); impact of climatic conditions on safe sports participation	H16, H17
31 (a) (i)	4	Types of training methods	H8, H17
31 (a) (ii)	4	How training adaptations can be measured and monitored	H8, H17
31 (b)	12	Planning a training year; phases of competition	H8, H10, H17
32 (a) (i)	4	Characteristics of effective health promotion strategies, focusing on skills, education and prevention	H5, H14
32 (a) (ii)	4	Characteristics of effective health promotion strategies, intersectoral collaboration	H5, H14
32 (b)	12	Population experiencing health inequities; evaluating government interventions	H5, H15