



Rewarding Learning

ADVANCED
General Certificate of Education
2022

**Sports Science and the
Active Leisure Industry**

Unit A2 2

assessing

The Application of Science
to Sports Performance

[AAL21]

FRIDAY 27 MAY, AFTERNOON

**MARK
SCHEME**

General Marking Instructions

Introduction

Mark schemes are intended to ensure that the GCE examinations are marked consistently and fairly. The mark schemes provide markers with an indication of the nature and range of candidates' responses likely to be worthy of credit. They also set out the criteria which they should apply in allocating marks to candidates' responses.

Assessment objectives

Below are the assessment objectives for GCE Sports Science and the Active Leisure Industry.

Candidates must:

- AO1** Demonstrate knowledge and understanding of sports science and the active leisure industry;
- AO2** Apply knowledge, understanding and skills through different contexts appropriate to the sports science and the active leisure industry; and
- AO3** Analyse and evaluate evidence to make reasoned and valid judgements about sports science and the active leisure industry.

Quality of candidates' responses

In marking the examination papers, examiners should be looking for a quality of response reflecting the level of maturity which may reasonably be expected of a 17-year-old or 18-year-old which is the age at which the majority of candidates sit their GCE examinations.

Flexibility in marking

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which candidates may produce. In the event of unanticipated answers, examiners are expected to use their professional judgement to assess the validity of answers. If an answer is particularly problematic, then examiners should seek the guidance of the Supervising Examiner.

Positive marking

Examiners are encouraged to be positive in their marking, giving appropriate credit for what candidates know, understand and can do rather than penalising candidates for errors or omissions. Examiners should make use of the whole of the available mark range for any particular question and be prepared to award full marks for a response which is as good as might reasonably be expected of a 17-year-old or 18-year-old GCE candidate.

Awarding zero marks

Marks should only be awarded for valid responses and no marks should be awarded for an answer which is completely incorrect or inappropriate.

Types of mark schemes

Mark schemes for tasks or questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication.

Other questions which require only short answers are marked on a point for point basis with marks awarded for each valid piece of information provided.

Levels of response

Tasks and questions requiring candidates to respond in extended writing are marked in terms of levels of response. In deciding which level of response to award, examiners should look for 'best fit' bearing in mind that weakness in one area may be compensated by strength in another. In deciding which mark within a particular level to award to any response, examiners are expected to use their professional judgement.

Quality of written communication

Quality of written communication is taken into account in assessing candidates' responses to all tasks and questions that require them to respond in extended written form. These tasks and questions are marked on the basis of levels of response. The description for each level of response includes reference to the quality of written communication.

For conciseness, quality of written communication is distinguished within levels of response. An example follows:

Level 1: Quality of written communication is basic.

Level 2: Quality of written communication is good.

Level 3: Quality of written communication is excellent.

In interpreting these level descriptions, an example is provided below. Examiners should refer to the specific guidance given within the mark scheme for each question:

Band 1 (Basic): The candidate makes only a limited selection and use of an appropriate form and style of writing. The organisation of material will lack clarity and coherence. There is little use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Band 2 (Good): The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with clarity and coherence. There is some use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning clear.

Band 3 (Excellent): The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is widespread and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a sufficiently high standard to make meaning clear.

COVID-19 Context

Given the unprecedented circumstances presented by the COVID-19 public health crisis, senior examiners, under the instruction of CCEA awarding organisation, are required to train assistant examiners to apply the mark scheme in case of disrupted learning and lost teaching time. The interpretation and intended application of the mark scheme for this examination series will be communicated through the standardising meeting by the Chief or Principal Examiner and will be monitored through the supervision period. This paragraph will apply to examination series in 2021-2022 only.

- 1 (a) (i)** Some examples of suitable points to be explained by the candidate:
- Minute ventilation (VE) is the quantity of air moved into and out of the lungs in one minute.
 - Minute ventilation is the tidal volume times the respiratory rate.
 - $VE = TV \times BR$
 - At rest approximately $6L/min = 500mls \times 12$ breaths/min
- Award [1] for basic definition and up to [2] for a full explanation.
All other valid points will be given credit.
(1 × [2])
(AO1) [2]
- (ii)** Some examples of suitable points to be explained by the candidate:
- Exercise will cause an increase in depth and rate of breathing therefore, minute ventilation will increase.
 - Increased respiratory rate will increase minute ventilation.
 - Increased tidal volume will increase minute ventilation.
 - This has the effect of taking more oxygen into the body and removing more carbon dioxide.
 - $90L/min = 3L \times 30$ breaths/min.
- Award [1] for the key phrase of the effect and up to [2] for full description.
All other valid points will be given credit.
(1 × [2])
(AO2) [2]
- (b)** Some examples of suitable points to be identified by the candidate:
- Gaseous exchange in the lungs is known as external respiration.
 - Oxygen and carbon dioxide exchange between the alveoli in the lungs and the blood capillaries that surround the alveoli. Gaseous exchange increases in the lungs during exercise.
 - Gaseous exchange occurs between areas of high partial pressure and low partial pressure. The difference between these pressures creates a diffusion gradient.
 - The partial pressure of oxygen is higher in the alveolar air compared to the partial pressure in the blood capillaries therefore oxygen diffuses into blood capillaries at a faster rate than at rest.
 - The partial pressure of carbon dioxide is higher in the blood capillaries than in the alveoli
- Award [1] for the key phrase and up to [3] for full explanation.
All other valid points will be given credit.
(1 × [4])
(AO2) [4]
- (c)** Some examples of suitable points to be identified by the candidate:
- (i)** Haemoglobin:
- Red blood cells contain an iron rich protein called Haemoglobin (Hb).
 - Haemoglobin carries oxygen in the red blood cells around the body.
 - Carbaminohemoglobin accepted due to carbon dioxide and haemoglobin combining.
- Award [1] for the key phrase and up to [2] for the full explanation.
All other valid points will be given credit.
(1 × [2])
(AO2) [2]

- (ii) Myoglobin:
- Myoglobin (Mb) is an oxygen-binding protein located primarily in the muscles.
 - It functions as an oxygen-storage unit, providing oxygen to the working muscles.

Award [1] for the key phrase and up to [2] for the full explanation.
All other valid points will be given credit.

(1 × [2])

(AO2)

[2]

12

- 2 (a) Some examples of suitable points to be identified by the candidate:

Positive transfer

- Positive transfer occurs when the knowledge and performance of one skill will help the learning of a new skill.
- Positive transfer tends to occur when the skills have a similar shape or form, e.g. overarm throwing technique for javelin and shoulder pass in Netball.
- There must be similarity in the structure of the skill components.
- Positive transfer can be enhanced if these similar elements are shown to learners.

Bilateral transfer

- Bilateral transfer occurs when learning and performance is transferred from one side of the body to the other.
- Bilateral transfer will enhance performance as it makes performers more versatile, e.g. a soccer player learns to strike with their right and then their left foot.

Retroactive transfer

- Retroactive transfer occurs when a newly learned skill influences a previously learned skill.
- This can be positive as skills overlap in many sports e.g. jump to catch in Gaelic Football enhances rebound skills in Basketball.
- Negative transfer and zero transfer accepted.

Award [1] for identification of transfer of learning method and up to [2] for the full description of methods.

All other valid points will be given credit.

(2 × [3])

(AO1, AO2)

[6]

- (b) Some examples of suitable points to be identified by the candidate:

(i) Discrete:

- A discrete skill has a clear beginning and an end.
- To repeat a performer must start from the beginning.
- For, e.g. a tennis serve, a basketball free throw

(ii) Serial:

- A serial skill has a series of specific movements chained together in a sequence.
- The first movement in the series triggers the next.
- For, e.g. triple jump, gymnastics floor sequence

(iii) Continuous:

- A continuous skill has no clear beginning and end.
- The end of one cycle leads to the beginning of the next. Movement is ongoing.
- For, e.g. swimming, cycling

Award [1] for the key phrase and [1] for full description.

All other valid points will be given credit.

(3 × [2])

(AO2)

[6]

12

3 (a) Some examples of suitable points to be identified by the candidate:

- Ability is part of our genetic make-up that we inherit from our parents. Abilities are innate; we are born with our abilities.
- Abilities underpin skills in sport, e.g. extent flexibility underpins a walkover in gymnastics.
- Abilities can be classed as motor, perceptual or psychomotor.
- Types of abilities accepted, e.g. dynamic flexibility, static strength.

Award [1] for each characteristic identified.

All other valid points will be given credit.

(3 × [1])

(AO1)

[3]

(b) Some examples of suitable points to be identified by the candidate:

Command style is a didactic style where the teacher makes all the decisions. It can be described as an autocratic style. Students respond to the stimulus or model provided by the teacher.

Positive

- Instructions and objectives are clear.
- Control and discipline are maintained.
- Information can be given quickly if time is limited.
- Large groups can be catered for easily.
- Allows the teacher to adequately monitor key safety issues and therefore appropriate to use during high risk activities, e.g. javelin.

Negative

- No decision making or input from the learner.
- Limited social interaction with teacher or other learners.
- Limited individual feedback given so possible lack of understanding.
- Little allowance for individual creativity and responsibility.
- Tedious/boring

Award [1] for definition of style and up to [4] for evaluation of style.

All other valid points will be given credit.

(1 × [5])

(AO1, AO3)

[5]

(c) The quality of written communication is assessed in this question.

Indicative content:

- Motivation may be defined as the biological, emotional, cognitive or social factors that activate and direct behaviour.
- Motivation is an internal state that arouses and directs behaviour. It is the power and drive behind a person's behaviour.
- Motivation is the direction and intensity of one's effort. Motivation can be

intrinsic (coming from sources within the individual) or extrinsic (coming from sources outside the individual).

- A coach can aim to intrinsically motivate a teenage performer by developing stimulating, fun, enjoyable practice sessions to encourage an intrinsic love of sport.
- A coach can aim to extrinsically motivate a teenage performer by giving tangible rewards such as trophies, medals and certificates.
- A coach can aim to extrinsically motivate a teenage performer by giving intangible rewards such as praise, recognition and approval of effort.
- Goal setting is a key strategy a coach can use to motivate a teenage performer. Using SMARTER targets a coach can set short term and long term goals to maintain motivation throughout the season.
- Winning provides a positive motive for further participation, this may last through the post-season and help the teenage athlete prepare for the next season. Coaches can create opportunities for success through challenge/friendly games to create a winning mentality that can boost confidence and enhance motivation.
- The coach must place winning in perspective. It must not be seen as the only motivating factor. Success must also be attributed to reaching personal goals or targets.
- Team selection and levels of performance may vary as the season progresses which will have an impact on the athlete's motivation. Coaches must communicate clearly with players to continue their level of effort despite not being selected.
- As a coach it is important to engage the athletes in strategies that steer them towards success and to avoid a tendency to failure. Feedback is a central feature of this process and self-esteem is enhanced through positive reinforcement.
- Motivation through use of fear or punishment is not a method that will work long term with teenage performers.
- Drive reduction theory – A coach must continue to provide new opportunities for learning in order to motivate performers.
- Inverted U theory – A coach must ensure the performer has reached their optimal level of arousal to produce their maximal performance.
- A coach must recognise that each performer is unique and requires different levels of motivation. Personality factors can influence motivation, this may have shaped the performer's choice of sport and links to achievement motivation.
- The specific situation an athlete performs in will affect their decision to accept a challenge. Two determining factors are probability of success versus probability of failure.
- A coach can encourage teamwork. By encouraging athletes to get to know one another will help build strong relationships within a team. This will help team mates motivate one another.
- A coach may encourage a teenage performer to use music or video clips of successful performances to enhance motivation.

All other valid points will be given credit.

Level 1 ([1]–[3])

Overall impression: Basic

- Basic knowledge and understanding of the different motivational strategies a coach can use to improve teenage performance in sport. The candidate may provide basic examples.
- Demonstrates a basic ability to discuss the different motivational strategies a coach can use to improve teenage performance in sport. Candidates will provide basic explanations of the advantages and disadvantages.
- Quality of written communication is basic. The candidates make a

limited selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Level 2 ([4]–[6])

Overall impression: Good

- Good knowledge and understanding of the different of the different motivational strategies a coach can use to improve teenage performance in sport. The candidates will give some relevant examples.
- Demonstrates a good ability to discuss the different motivational strategies a coach can use to improve teenage performance in sport. Candidates will provide some explanations of the motivational strategies a coach could adopt.
- Quality of written communication is good. The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is appropriate use of specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning evident.

Level 3 ([7]–[8])

Overall impression: Excellent

- Excellent knowledge and understanding of the different motivational strategies a coach can use to improve teenage performance in sport. The candidate will provide fully developed examples and show excellent understanding of each one.
- Demonstrates an excellent ability to discuss the different motivational strategies a coach can use to improve teenage performance in sport. Candidates will be able to discuss to an excellent level and elaborate with thorough explanation.
- Quality of written communication is excellent. The candidate successfully selects and uses an appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is an extensive and accurate use of specialist vocabulary. Presentation, spelling, punctuation and grammar are of a high standard and ensure that the meaning is clear.

[0] is awarded for a response not worthy of credit.
(AO1, AO3)

[8]

16

4 (a) Some examples of suitable points to be identified by the candidate:

Slow twitch/type I/slow oxidative fibre

- Red in colour.
- Small fibre diameter.
- Small number of fibres per motor unit (10–180).
- High capillary density.
- High myoglobin content.
- High mitochondrial density.
- High triglyceride stores.
- Low phosphocreatine content.
- Slow twitch structural characteristics support sub-maximal contractions. Aerobic in nature. Resistant to fatigue. Utilised by endurance based athletes.

Fast twitch type IIa/type IIa/fast oxidative glycolytic

- Red-pink/pinkish in colour.
- Medium fibre diameter.
- Medium number of fibres per motor unit (300–800).
- Medium capillary density.
- Medium myoglobin content.
- High mitochondrial density.
- Medium triglyceride stores.
- High phosphocreatine content.
- Fast twitch type IIa structural characteristics support near maximal contractions. Anaerobic/aerobic in nature. Intermediate rate of fatigue. Utilised by middle distance athletes/games players.

Fast twitch type IIb/type IIb/Fast Glycolytic

- White in colour.
- Large fibre diameter.
- Large number of fibres per motor unit (300–800).
- Low capillary density.
- Low myoglobin content.
- Low mitochondrial density.
- Low triglyceride stores.
- High phosphocreatine content.
- Fast twitch type IIb structural characteristics support high intensity rapid contractions. Anaerobic in nature. High rate of fatigue. Utilised by powerful athletes – sprinters/weight lifters.

Award [1] for identification of muscle fibre type and award up to [3] for a description of the structural characteristics of each muscle fibre.

All other valid points will be given credit.

(3 × [4])

(AO1, AO2)

[12]

- (b) (i) Some examples of suitable points to be explained by the candidate:
- A response is a change that occurs quickly and is temporary.
 - An adaptation takes longer to occur and is more permanent.

Award [1] for a basic definition and up to [2] for full explanation.

All other valid points will be given credit.

(1 × [2])

(AO1)

[2]

(ii) **The quality of written communication is assessed in this question.**

Indicative content:

Structural

- With exercise the heart becomes stronger and bigger, cardiac hypertrophy.
- Increase in red blood cells – red blood cell volume and haemoglobin content is higher in the trained athlete, which facilitates the transport of oxygen around the body.
- The arteries retain or increase their elasticity, increased thickness of the ventricular myocardium.
- Body parts where oxygen is required may experience growth of new capillaries. Increased vascularisation.

Functional

- Increase in stroke volume, increased volume of blood ejected from the left ventricle per beat/more oxygenated blood and nutrients

- supplied to working muscles.
- Increase in venous return/increased amount of blood returning to heart in veins/facilitated by muscle pump/increased strength in muscles causes venous return to increase.
- Vasodilation and vasoconstriction of arteries ensure that blood is directed to areas that need it such as muscles and away from inactive organs.
- Vascular shunting occurs where oxygenated blood is diverted to skeletal muscle tissue where it is needed.
- Increase strength of ventricular contraction.
- Increase in end diastolic volume and decrease in end systolic volume. Greater diastolic filing of the ventricle so more blood available to be ejected from the left ventricle to the body or from the right ventricle to the lungs.
- Increase in cardiac output, increase in blood volume ejected from left ventricle per minute/more oxygenated blood and nutrients supplied to working muscles.
- Lower resting heart rate/bradycardia.
- Increase in blood pressure, therefore increasing flow rate and speed of delivery of oxygen and nutrients to the working muscles during exercise.
- Increase in red blood cell and haemoglobin levels. This facilitates a more efficient transport of oxygen around the body.
- Lowering of blood pressure.

All other valid points will be given credit.

Level 1 ([1]–[4])

Overall impression: Basic

- Basic knowledge and understanding of the effects of exercise on an endurance athlete's cardiovascular system; may be structural and functional. The candidate may provide basic examples.
- Demonstrates a basic ability to examine the effects of exercise on an endurance athlete's cardiovascular system; may be structural and functional. The candidate will provide basic examples but does not discuss the effects in detail.
- Quality of written communication is basic. The candidate makes a limited selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Level 2 ([5]–[7])

Overall impression: Good

- Good knowledge and understanding of the effects of exercise on an endurance athlete's cardiovascular system; may be structural and functional, using specific examples.
- Demonstrates a good ability to discuss the effects of exercise on an endurance athlete's cardiovascular system; may be structural and functional. The candidate will provide some examples and does discuss some effects of exercise related to an endurance athlete's cardiovascular system.
- Quality of written communication is good. The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is an appropriate use of specialised vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning evident.

Level 3 ([8]–([10])

Overall impression: Excellent

- Excellent knowledge and understanding of the effects of exercise on an endurance athlete's cardiovascular system; may be structural and functional. The candidate will provide fully developed examples and shows excellent understanding of the effects of exercise on the cardiovascular system of an endurance athlete.
- Demonstrates an excellent ability to discuss the effects of exercise on an endurance athlete's cardiovascular system; may be structural and functional. The candidate will provide thorough explanation and will use a variety of relevant examples.
- Quality of written communication is excellent. The candidate successfully selects and uses an appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is an extensive and accurate use of specialist vocabulary. Presentation, spelling, punctuation and grammar are of a high standard and ensure that the meaning is clear.

[0] is awarded for a response not worthy of credit.
(AO1, AO3)

[10]

24

5 (a) Some examples of suitable points to be identified by the candidate:

Equipment design

- Equipment design has developed from a greater understanding of the biomechanics of sporting movement and advances in material science.
- New materials have contributed to advances in sport equipment. Lighter materials used in equipment have improved performance, e.g. carbon fibre bikes, graphite tennis racquets and golf clubs.
- Aerodynamic design of equipment has aided performance. Cycle helmets, Formula 1 cars, skis have attributed to faster times.
- Technological improvements in equipment have made some sports safer. More robust landing mats used in pole vaulting, high jump and gymnastics.
- Headgear in boxing was adopted to provide protection from head injuries.
- Helmets in cycling are now lighter but designed to a higher safety specification.
- Advances in technology have enabled Paralympic athletes to wear carbon fibre prosthetics specifically designed for their event.
- Hypoxic chambers/tents.
- Timing gates.
- VAR.
- Ice baths.
- Anti-gravity treadmill.

Sports Clothing

- Clothing can now be designed to reduce friction (air, water). Tech swimsuits/running suits use a range of technologies to help cut down on drag and improve oxygen efficiency.
- Compression clothing encourages blood circulation and can also aid recovery after injury.
- Research into fabrics has created sports clothing that is breathable, waterproof and can either prevent heat loss or prevent overheating.
- Footwear is constantly being developed to suit specific sports often lighter, cushioned reducing impact and adding support.

Award [1] for key phrase and up to [3] for full description.
All other valid points will be given credit.

(2 × [4])
(AO2)

[8]

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MARKS

(b) The quality of written communication is assessed in this question.

AVAILABLE
MARKS

Indicative content:

Anabolic steroids

- The anabolic steroids used by athletes are often synthetic modifications of testosterone.
- Anabolic steroids help to repair muscle damage after intense training.
- Taking anabolic steroids will help the athlete build muscle mass/muscle hypertrophy for explosive events.
- Anabolic steroids enable the athlete to train harder and recover quicker from high intensity sessions, allowing the athlete to train harder and more frequently.
- The recovery rate after injury is increased.

Human growth hormone (HGH)

- Humans naturally produce HGH. The growth hormone is released from the pituitary gland mainly during childhood but at lower levels in adulthood. This artificially produced hormone can be injected in adulthood to stimulate the growth of bones, muscles and other tissues.
- HGH can reduce body fat.
- Increase muscle mass, strength and power.
- Enhance muscle tissue repair/recovery of the musculo-skeletal system.

Stimulants accepted.

Diuretics accepted.

Narcotic analgesics accepted.

Health risks

- Increased aggression, mood swings, 'roid rage'.
- Depression.
- Male athletes who take steroids regularly can suffer testicular atrophy, reduced sperm count, infertility and breast development.
- Female athletes who take steroids can suffer from growth of facial hair, unpredictable menstruation and deepening of the voice.
- Hypertension.
- High risk of getting Hepatitis B and C and HIV from infected needles.
- Risk of kidney disease, liver diseases and cancer is also increased.
- Anabolic steroids may lead to increased blood clot formation, even when taken only short-term.
- Irritation of injection site.
- Increased blood pressure.
- Damage to retina and vision.
- Hypothyroidism.
- Pancreatitis.
- Long term the use of HGH may cause the body to stop producing its own.
- Increased likelihood of cardiovascular disease.
- Muscle, joint and bone pain.
- Death.
- Blindness.
- Abnormal growth of organs.
- Accelerated osteoarthritis.
- CHD/Heart attack.

Career risks

- Damage reputation of individual.

- Disqualification of results of an event, including loss of medals/prize money.
- A ban from all sport (competing, training or coaching) for up to four years/life ban.
- Financial penalties (loss of sponsorship, wages and fines)

Valid discussion points:

- Win at all costs.
- Pressures to succeed – self/coach/state.

All other valid points will be given credit.

Level 1 ([1]–[4])

Overall impression: Basic

- Basic knowledge and understanding of the illegal performance enhancing drugs used by some power athletes to succeed in sport. The candidate may provide basic examples.
- Demonstrates a basic ability to assess the risks involved in taking performance enhancing drugs. The candidate may provide basic explanations but does not examine in detail.
- Quality of written communication is basic. The candidate makes a limited selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Level 2 ([5]–[8])

Overall impression: Good

- Good knowledge and understanding of the illegal performance enhancing drugs used by some power athletes to succeed in sport. The candidate will give some relevant examples.
- Demonstrates a good ability to assess the risks involved in taking performance enhancing drugs. The candidate will provide some explanations of the risks involved.
- Quality of written communication is good. The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is appropriate use of specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning evident.

Level 3 ([9]–[12])

Overall impression: Excellent

- Excellent knowledge and understanding of the illegal performance enhancing drugs used by some power athletes to succeed in sport. The candidate will provide fully developed examples and shows excellent understanding.
- Demonstrates an excellent ability to assess the risks involved in taking performance enhancing drugs. The candidate will provide thorough explanations and will use a variety of relevant examples.
- Quality of written communication is excellent. The candidate successfully selects and uses an appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is an extensive and accurate use of specialist vocabulary. Presentation, spelling, punctuation and grammar are of a high standard and ensure that the meaning is clear.

[0] is awarded for a response not worthy of credit.

(AO1, AO3)

[12]

(c) The quality of written communication is assessed in this question.

AVAILABLE
MARKS

Indicative content:

- WADA (World Anti-Doping Agency) was established in 1999 in an attempt to bring together the various international and national governing bodies to address the drug problem in sport.
- IOC (International Olympic Committee) established a medical control system responsible for drug testing since the 1968 Games.
- IOC Medical Commission involves establishing all routines and the practical aspects of testing, collecting, transporting and analysis of samples in accredited laboratories and imposing bans.
- The IOC can legislate against what is on their banned list. The IOC have a lead role, their list is adopted by most other sports.
- The IOC publish up to date lists for athletes, coaches and governing bodies. There are over 150 banned substances on the IOC's list.
- Governing bodies run education programmes for coaches and athletes about the risks of using drugs as well as providing information on the rules, regulations, policies and punishments.
- UK Anti-doping – 100% ME programme is an education programme for coaches and athletes which develops their knowledge and understanding of the dangers associated with the use of drugs, information regarding regulations, specific rules, policies and punishments.
- Regular urine testing, following set protocols in trustworthy establishments.
- Regular blood testing following set protocols.
- Rigorous testing in and out of competition/season.
- WADA has developed the 'whereabouts rule'. Athletes must provide the necessary information regarding access arrangements for testing officials.
- Under WADA's 'whereabouts rule', all athletes must make themselves available to drug testers for one hour a day, between 6am and 11pm, ninety days in advance, for out of competition testing. Failure to present on three occasions within a 12 month period may result in a ban from sport.
- WADA has introduced the use of biological passports in some sports. The 'Athlete Passport' is an on-going collection of an individual's urine and blood profile which has so far been collected and tested during the international performance of an athlete's lifespan. Samples are stored and then made available for re-testing when appropriate.
- Use of both positive and negative role models.
- Loss of medals for athletes who use performance enhancing drugs.
- New drugs are being developed and are being used illegally by athletes before they appear on the banned list.
- Issues with validity of testing and test procedures.
- Sample manipulation, sample adulteration and masking methods are used by athletes to beat the tests.
- There are issues with athletes being aware of which drugs/substances/medications are legal or illegal.
- With advances in technology, ethically challenged doctors and scientists continue to come up with more advanced ways of avoiding detection.
- Insufficient money has been invested to develop better technology for drug testing.
- There is a greater need for a unified approach across Governing Bodies.
- IOC list differs from some governing body lists.
- Punishments need to be consistent and a deterrent to athletes.
- Implementation of bans.
- Liaising with outside agencies, e.g. customs or police.

Discussion points:

- Corruption within governing bodies.
- State sponsored programmes, e.g. Russia.
- Lack of funding/direction of funding.

All other valid points will be given credit.

Level 1 ([1]–[5])

Overall impression: Basic

- Basic knowledge and understanding of the strategies that organisations use to counteract the use of illegal drugs in sport. The candidate may simply list basic examples.
- Demonstrates a basic ability to discuss the strategies implemented by organisations to combat the use of illegal drugs in sport. Candidates give limited explanations of the strategies used.
- Quality of written communication is basic. The candidate makes a limited selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Level 2 ([6]–[11])

Overall impression: Good

- Good knowledge and understanding of the strategies that organisations use to counteract the use of illegal drugs in sport. The candidate may include some relevant examples.
- Demonstrates a good ability to discuss the strategies implemented by organisations to combat the use of illegal drugs. The candidate will be able to discuss a variety of strategies used and elaborate with appropriate explanation.
- Quality of written communication is good. The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is appropriate use of specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning evident.

Level 3 ([12]–[16])

Overall impression: Excellent

- Excellent knowledge and understanding of the strategies that organisations use to counteract the use of illegal drugs in sport. The candidate will include fully developed examples and show excellent understanding of each one.
- Demonstrates an excellent ability to discuss the strategies implemented by organisations to combat the use of illegal drugs. The candidate will be able to discuss to an excellent level various strategies used and elaborate with thorough explanation.
- Quality of written communication is excellent. The candidate successfully selects and uses an appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is an extensive and accurate use of specialist vocabulary. Presentation, spelling, punctuation and grammar are of a high standard and ensure that the meaning is clear.

[0] is awarded for a response not worthy of credit.
(AO1, AO3)

[16]

36

Total

100

AVAILABLE
MARKS