ADDITIONAL SPECIMEN
ASSESSMENT MATERIAL

A-level
PHYSICAL EDUCATION
7582/2

PAPER 2 – FACTORS AFFECTING OPTIMAL PERFORMANCE IN PHYSICAL ACTIVITY AND SPORT

Mark scheme

Additional specimen

Version 1.0

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from aqa.org.uk

Level of response marking instructions

Level of response mark schemes are broken down into levels, each of which has a descriptor. The descriptor for the level shows the average performance for the level. There are marks in each level.

Before you apply the mark scheme to a student's answer read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme.

Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptor for that level. The descriptor for the level indicates the different qualities that might be seen in the student's answer for that level. If it meets the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptor and the answer. With practice and familiarity you will find that for better answers you will be able to quickly skip through the lower levels of the mark scheme.

When assigning a level, you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as in the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the response to help decide the mark within the level, ie if the response is predominantly level 3 with a small amount of level 4 material it would be placed in level 3 but be awarded a mark near the top of the level because of the level 4 content.

Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this. The exemplar materials used during standardisation will help. There will be an answer in the standardising materials which will correspond with each level of the mark scheme. This answer will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the example to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do not have to cover all of the points mentioned in the Indicative content to reach the highest level of the mark scheme.

An answer which contains nothing of relevance to the question must be awarded no marks.

Section A

Exercise physiology and biomechanics

01 Which **one** of these equations is used to calculate momentum?

[1 mark]

Marks for this question: AO1 = 1

D

Maximum 1 mark

02 **Figure 1** shows the forces affecting a shot put during flight.

Identify forces **X** and **Y** in **Figure 1**.

[1 mark]

Marks for this question: AO1 = 1

C

Maximum 1 mark

03 **Figure 2** shows a gymnast holding a headstand.

State **two** factors that affect the stability of a gymnast holding a headstand.

[2 marks]

Marks for this question: AO1 = 2

Award **one** mark for each of the following points.

- Height of centre of mass of the gymnast (1).
- Area of base of support for the headstand (1).
- Position of line of gravity and body mass (1).

Accept any other relevant factors that affect the stability of a gymnast holding a headstand.

Maximum 2 marks

04.1 During a training programme to prepare for a marathon, endurance athletes will often supplement their diets to optimise performance.

Explain why a marathon runner may 'glycogen load' in the days leading up to a race.

[3 marks]

Marks for this question: AO1 = 1, AO2 = 2

Award **one** mark for each of the following points.

AO1 (sub-max 1 mark)

- Reduce glycogen levels by endurance training / exercise / explanation of tapering down of exercise and tapering up of carbohydrate (1).
- Day before competition complete three minutes of high intensity exercise / high carbohydrate diet to make use of opening of 'carbo window' (1).
- Non-depletion protocol / reduce training intensity the week before competition / three days before competition follow high carbohydrate diet / light training (1).

AO2 (sub-max 2 marks)

- Used to 'supercompensate' for high glycogen demand (1).
- Potential to run out of carbohydrate / hit the wall / reduced performance (1).
- Glyco-loading delays the onset of fatigue / delays hitting the wall (1).
- Depletion of carbohydrate / glycogen would result in an inability to maintain intensity / affects muscle function, etc (1).

Accept any other suitable explanation of why a marathon runner may glycogen load in the days leading up to a race. Answers must relate to the performance of a runner in a marathon in order to access AO2.

Maximum 3 marks

04.2 Evaluate the appropriateness of a marathon runner using an ice bath as a recovery method during their training programme.

[4 marks]

Marks for this question: AO1 = 1, AO3 = 3

Award **one** mark for each of the following points.

AO1 (sub-max 1 mark)

- Involves sitting in ice cold water for between 5–20 minutes / physiological explanation regarding vasoconstriction to extremities / limbs / vasodilation occurs after leaving the ice bath / flush of oxygen rich blood (1).

AO3 (sub-max 3 marks)

- Long arduous training for a marathon can result in a build-up of lactic acid which can be removed as a result of ice bath use (1).
- Strong belief in the physiological benefits for such athletes / the general theory behind this cold therapy is that the exposure to cold helps to combat the microtrauma (small tears) in muscle fibres and resultant soreness caused by intense or repetitive exercise / reduce swelling (1).
- Fairly easy to incorporate into training routine – simply needs some preparation of large water container and ice, eg wheelie bin (1).
- Not completely proven to aid recovery / some evidence suggests that cold water is effective rather than ice cold (1).
- Other recovery methods may be better / easier / less extreme, eg cool down and massage / cool down and foam rolling, etc (1).

Accept any other relevant evaluative point about the appropriateness of marathon runners using ice baths as a recovery method. Answers must relate to the runner's training programme.

Maximum 4 marks

05 **Figure 3** shows a rugby player throwing the ball into play during a lineout.

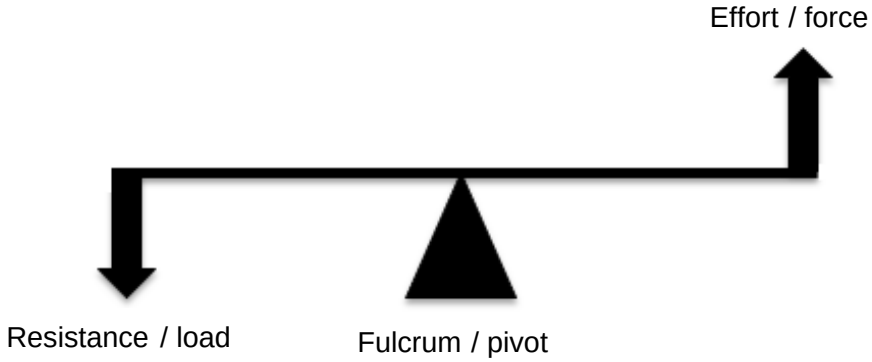
Name, sketch and label the lever system operating at the elbow as the player in **Figure 3** moves from position **A** to position **B**.

[1 mark]

Marks for this question: AO1 = 1

Award **one** mark for naming the correct lever system (1st class) **and** for labelling the resistance/load, fulcrum/pivot and effort/force in the correct order.

- 1st class (lever system)



Accept the lever system being drawn the other way round. Fulcrum / pivot must be in the middle.

Maximum 1 mark

06 Evaluate the appropriateness of fartlek training **and** weight training for a games player in a named sport of your choice.

[8 marks]

Marks for this question: AO1 = 2, AO2 = 3, AO3 = 3

Students are expected to answer in continuous prose, use good English, organise information clearly and use specialist vocabulary where appropriate.

Level	Marks	Description
4	7–8	Knowledge is consistently accurate and well detailed. Application of breadth or depth of knowledge is clearly evident. Analysis and/or evaluation is coherently and consistently made between different relevant factors and their impact. Relevant terminology is consistently used. The answer almost always demonstrates substantiated reasoning, clarity, structure and focus.
3	5–6	Knowledge is usually accurate and detailed. Application of breadth or depth of knowledge is often evident. Analysis and/or evaluation is often made between different relevant factors and their impact, and is usually coherent. Relevant terminology is often used. The answer usually demonstrates substantiated reasoning, clarity, structure and focus.
2	3–4	Knowledge is sometimes accurate with some detail. Application of breadth or depth of knowledge is sometimes evident. Analysis and/or evaluation is sometimes made between different relevant factors and their impact, but may lack coherence. Relevant terminology is sometimes used. The answer occasionally demonstrates substantiated reasoning, but may lack clarity, structure and focus.
1	1–2	Knowledge may be limited. Application of breadth or depth of knowledge may be limited or not evident. There may be little or no analysis and/or evaluation between different relevant factors and their impact. Relevant terminology is occasionally used. The answer may lack substantiated reasoning, clarity, structure and focus.
	0	No relevant content.

Possible content may include:

AO1 – Knowledge and understanding of Fartlek training and weight training
Eg Fartlek training is known as speed play. It is a combination of different training types (continuous/interval)/intensities of exercise. It can be relatively unstructured with periods of fast and slow running. The intention is to match varying intensity demands of a sport. It can include variation in terrain.

Weight training is the use of resistance machines/free weights/kettle bells, etc. It utilises the force of gravity and the weight being held or lifted. It is commonly for strength gains/anaerobic power/ muscular endurance, etc.

AO2 – Application to a games player, eg football

Eg Fartlek training would be good for football players to help them cope with the changing conditions/pace of the game. For example, a striker will have to sprint to chase a ball played in behind the opposition's defence, which is high intensity. They will also experience periods of play that are less intensive, for example tracking back when the opposition have the ball. Throughout the game, they'll use different energy systems.

Weight training would be good for footballers to build up strength to better cope with the demands of the game. For example, players could become stronger so they're not getting knocked off the ball so easily. Doing light weights and high reps will build up a player's muscular endurance and thus help them cope with 90 minutes of football.

AO3 – Evaluation of appropriateness of weight training and Fartlek training to a games player, eg football

Eg How beneficial Fartlek training might be to a football player could vary depending on their position. Although it would most likely be beneficial to outfield players, it might not be as beneficial for a goalkeeper. They don't run as much and are more static, and so they might not see the benefit from this type of training. They may benefit from other types of training, for example plyometric training, which is good for improving agility and coordination. It could be argued that these are more important for goalkeepers than stamina.

It might also depend on the level of the performer. For example, if it is a beginner, and they don't train correctly, then they could end up getting cramps in the game, which would have a negative impact on the level of performance.

Weight training would be good to a certain point. For example, players could build strength up in their legs to make their shots/kicks be more powerful. Or goalkeepers could build up their arm strength to mean they can throw/distribute the ball further, which could facilitate a counter attack for their team more efficiently. However, if players do the wrong kind of training (eg heavy weights with low reps), they could become too big. This might reduce their stamina and they might have trouble performing at the required level for 90 minutes. They could slow down and commit more fouls as they struggle to keep up with play. It may also to them picking up more injuries because they're more slow and/or they are carrying more bulk.

Accept any other relevant evaluative point about the appropriateness of fartlek training and weight training for a games player.

Maximum 8 marks

07 **Figure 4** shows the speed of a sprinter completing a 100m race.

Analyse **Figure 4** and suggest what impulse would be produced by the sprinter when:

- they leave the blocks to start the race
- they are running (between 40m and 80m)
- they finish the race (between 100m and 110m).

Justify your answers.

[15 marks]

Marks for this question: AO1 = 4, AO2 = 5, AO3 = 6

Students are expected to answer in continuous prose, use good English, organise information clearly and use specialist vocabulary where appropriate.

Level	Marks	Description
5	13–15	Knowledge is consistently comprehensive, accurate and well detailed. Application of breadth or depth of knowledge is clearly evident. Analysis and/or evaluation is coherently and consistently made between different relevant factors and their impact. Relevant terminology is almost always used. The answer demonstrates a high level of substantiated reasoning, clarity, structure and focus.
4	10–12	Knowledge is usually comprehensive, accurate and detailed. Application of breadth or depth of knowledge is often evident. Analysis and/or evaluation is often made between different relevant factors and their impact, and is usually coherent. Relevant terminology is usually used. The answer usually demonstrates substantiated reasoning, clarity, structure and focus.
3	7–9	Knowledge is generally accurate and sometimes detailed. Application of breadth or depth of knowledge is sometimes evident. Some analysis and/or evaluation is made between different relevant factors and their impact but may sometimes lack coherence. Relevant terminology is used but may sometimes be missing. The answer sometimes demonstrates substantiated reasoning, clarity, structure and focus.
2	4–6	Knowledge is sometimes accurate but may lack detail. Application of breadth or depth of knowledge is occasionally evident. Some analysis and/or evaluation is attempted between different relevant factors and their impact, but is likely to lack coherence. Relevant terminology is occasionally used. The answer occasionally demonstrates substantiated reasoning, but may lack clarity, structure and/or focus at times.
1	1–3	Knowledge is limited and may lack accuracy and detail. Application of breadth or depth of knowledge is likely to be limited or not evident. There may be very little or no analysis and/or evaluation made between different relevant factors and their impact. Relevant terminology used only very occasionally. The answer often lacks substantiated reasoning, clarity, structure and/or focus.
	0	No relevant content.

Possible content may include:

AO1 – Knowledge of impulses

Eg an impulse is the change of momentum of an object when the object is acted upon by a force for an interval of time. It is caused by a force during a specific time interval. Impulse = force × time and is sometimes referred to as force vs time graphs.

- X axis – (time)/milliseconds/seconds
- Y axis – (force)/Newton's
- shape of impulse graphs – negative and positive components of force shown with negative first.

AO2 – Application to a sprinter completing a 100m race

General points:

- axes should be appropriately labelled
- differentiation between negative and positive impulse should be obvious
- mass of the runner would remain constant
- net impulse is combination of negative and positive impulses.

Leaving the blocks:

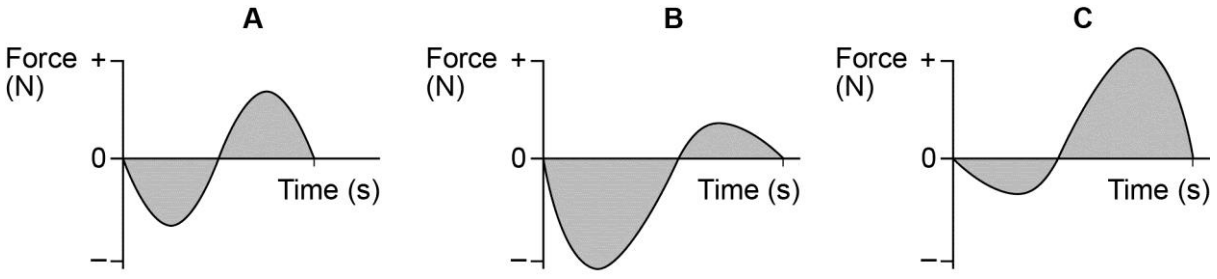
- net impulse is positive
- the performer is accelerating.

Between 40–80m:

- positive and negative impulses relatively equal
- net impulse of zero / negligible.

After crossing the line:

- net impulse is negative
- deceleration.



A Between 40–80 m **B** After the finish line **C** Leaving the blocks

AO3 – Justification of answers

Eg Leaving the blocks – The positive aspect of the graph is bigger than the negative. When leaving the blocks the runner would hope to gain a positive impulse to accelerate. The greatest proportion of the graph is above the line and therefore shows the positive force in Newton's law. The take-off / drive toe / ball of foot would create force for a relatively short amount of time as quick feet movement would be key to gain the acceleration. The breaking impulse (negative) is less than propulsive impulse (positive) / movement / contact with ground to limit breaking impulse. There must be appropriate ground reaction force to generate acceleration.

Between 40–80m – There is a relatively stable nature of the middle of the race necessitates a relatively equal impulse. The proportions of the graph are fairly equal and there is a balancing of breaking impulse (negative) with propulsive impulse (positive) to maintain speed being generated. The importance of the middle section is to maintain position or to ensure speed is maintained to match or better opposition. There is no acceleration / deceleration / running at constant velocity / speed.

After the finish line – The negative aspect of the graph is bigger than the positive. After crossing the line, the runner would hope to gain a negative impulse to decelerate. The greatest proportion of the graph is below the line and therefore shows the negative force in Newton's law. The landing foot is accentuated onto the ground for a longer time than during the race. The breaking impulse (negative) is more than the propulsive impulse (positive) / movement / contact with ground to increase breaking impulse. The importance of appropriate ground reaction force is to generate deceleration.

Accept any other relevant justification of the impulses that would be produced at the various stages of the 100m race.

Maximum 15 marks

Section B

Sports psychology

08 Which **one** of these is **not** a characteristic of a democratic leader?

[1 mark]

Marks for this question: AO1 = 1

A

09 Which **one** of these could act as extrinsic motivation for a long jumper?

[1 mark]

Marks for this question: AO2 = 1

B

10 During a basketball training session, a coach hears one of the performers saying:

"I just can't do lay-up shots anymore".

Suggest how the basketball player is likely to respond to the rest of the training session. Refer to learned helplessness in your answer.

[3 marks]

Marks for this question: AO1 = 1, AO2 = 2

Award **one** mark for each of the following points.

AO1 (sub-max 1 mark)

- Performer appears to have situation specific learned helplessness (1).

AO2 (sub-max 2 marks)

- Performer appears to perceive that failure is inevitable/only option/will always miss (1).
- Performer believes that they have no control over their ability to lay-up/shoot (1).
- May cause 'avoidance behaviour'/refuse to do lay-ups/shots/reduced task persistence/giving up is the only option/lack of effort when shooting (1).
- Potentially caused by attributing failure to ability/internal stable factors, eg 'I can't shoot because of my ability' (1).

Accept any other suggestion of how a basketball player is likely to respond to the rest of the training session. Answers must refer to learned helplessness.

Maximum 3 marks

11 Describe how the 'frustration-aggression hypothesis' can be used to explain an aggressive act in sport. Use an example in your answer.

[4 marks]

Marks for this question: AO1 = 3, AO2 = 1

Award **one** mark for each of the following points.

AO1 (sub-max 3 marks)

- Blocked goal causes frustration (1).
- Frustration causes aggression (1).
- Release of aggression has cathartic effect/catharsis (1).

AO2 (sub-max 1 mark)

- Opponent in football consistently blocks your path, resultant frustration leads to aggressive act, eg pushing the opponent (1).

Accept any other relevant description of how the frustration-aggression hypothesis can be used to explain an aggressive act in sport. The use of an example can only be credited once.

Maximum 4 marks

12 A trampoline performer is suffering a drop in self-efficacy, having lost situation specific confidence in his/her ability to perform a somersault effectively.

Evaluate how appropriate it would be for a coach to concentrate on past performance accomplishments by designing tasks to ensure the performer can successfully complete a somersault.

[3 marks]

Marks for this question: AO1 = 1, AO3 = 2

Award **one** mark for each of the following points.

AO1 (sub-max 1 mark)

- Past performance accomplishments' are one of the four factors which affect self-efficacy (1).

AO3 (sub-max 2 marks)

- No definitive proof that this factor is more appropriate than the others (emotional arousal/verbal persuasion/vicarious experiences) (1).
- May need to be used in conjunction with the other 'factors' to be effective (1).
- Past performance accomplishments may need to be used in conjunction with appropriate goals/ attribution retraining/stress management techniques/avoidance of social comparison, etc to prove successful in increasing self-efficacy (1).
- Practice design to ensure success may be artificial and counterproductive, eg use of a trampoline harness/false success (1).

Accept any other relevant evaluative points about the appropriateness of a trampoline coach concentrating on past performance accomplishments. Answers must relate to tasks designed to ensure that the performer successfully completes a somersault.

Maximum 3 marks

13 Olympic athletes have to compete in front of large audiences.

Discuss the effect that the presence of spectators can have on performers. Suggest strategies that can be used to limit any potential negative effects.

[8 marks]

Marks for this question: AO1 = 2, AO2 = 3, AO3 = 3

Students are expected to answer in continuous prose, use good English, organise information clearly and use specialist vocabulary where appropriate.

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1	1–2	Knowledge may be limited. Application of breadth or depth of knowledge may be limited or not evident. There may be little or no analysis and/or evaluation between different relevant factors and their impact. Relevant terminology is occasionally used. The answer may lack substantiated reasoning, clarity, structure and focus.
	0	No relevant content.

Possible content may include:

AO1 – Knowledge of effects of an audience

Eg social facilitation is the influence of the presence of others on performance / presence of others increases arousal. Social inhibition is the negative effect of an audience on performance. There are links to the drive theory. As arousal increases so does likelihood of dominant response / habit occurring.

AO2 – Application to performance

Eg Positive effect is classified as being **socially facilitated** by the social presence of others. The positive response may enhance well-learned task / skill responses. When well learned / autonomous stage of learning / dominant response tends to be correct. Well learned skills are often unaffected by an audience / consistently well performed. Often occurs with simple skills.

Negative effect is classified as being **socially inhibited** by the social presence of others. The negative response may well impair early learning. When in the cognitive stage, dominant response tends to be incorrect / full of errors. Complex skills are often performed poorly in front of an audience. However, not all performers are affected by the presence of an audience. It depends on the degree of evaluation taking place evaluation apprehension. Baron's Distraction Conflict Theory suggests performers must focus on task and ignore audience.

AO3 – Strategies to reduce the potential for a negative impact

Eg use of stress management/relaxation techniques can be used to control the initial increase in arousal when placed in front of others. Specific techniques can be used, eg mental rehearsal / imagery / visualization. For example, mental rehearsal can be done before the event to picture the perfect performance, hence reducing arousal prior to seeing 'others'.

Performers could train in front of others and gradually increase the numbers, so as to develop experience and try out strategies to control arousal.

Selective attention can be improved, eg practice with distractions / increase the intensity of the desired stimulus, so that performers can cut out the effect of the audience.

Coaches and/or performers can reduce the importance of the event as they will place less pressure on themselves and will be less likely to 'choke' whilst in front of others

They could set suitable goals to reduce the importance, eg smarter goals which are easily accomplishable, even in front of an audience.

They could avoid social comparison with others / teach / coach in a non-evaluative environment initially. This could include verbal encouragement from coaches or team mates to increase confidence / self-efficacy in the situation.

Accept any other relevant discursive point about the effect that the presence of spectators can have on performers and the strategies that can be used to limit potential negative effects.

Maximum 8 marks

14 A game of football ends in a draw. A penalty shoot-out is required to decide the winner. Two players respond differently when asked to take a penalty. One player agrees and the other refuses.

Analyse why the two players might have responded differently. Refer to achievement motivation theory and commercialisation in your answer.

[15 marks]

Marks for this question: AO1 = 4, AO2 = 5, AO3 = 6

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1	1–3	Knowledge is limited and may lack accuracy and detail. Application of breadth or depth of knowledge is likely to be limited or not evident. There may be very little or no analysis and/or evaluation made between different relevant factors and their impact. Relevant terminology used only very occasionally. The answer often lacks substantiated reasoning, clarity, structure and/or focus.
	0	No relevant content.

Possible content may include:

AO1 – knowledge

Achievement motivation – eg is the desire to succeed/fear of failure. The level of achievement motivation can depend on the personality and the situation. The Personality of the performer can be either Need to Achieve (nAch) or Need to Avoid Failure (nAf). The situation effects achievement motivation depending upon the probability of success and the incentive value of success.

Commercialisation – eg the process of attempting to gain money from an activity, such as sport. An aspect of this is sponsorship, where a company pays for their products to be publicly displayed or advertised, usually as an attempt to increase the sales of their goods.

AO2 – application

Player who decides to take the penalty appears to be nAch. Their personality and perception of the situation appears to be positive to the probability of success. Player responds positively to the challenge of taking a penalty. Player responds positively to the 50/50 scenario. Player responds positively to the incentive value of the situation.

Player who decides not to take the penalty appears to be nAf. Their personality and perception of the situation appears to be negative to the probability of success. Player responds negatively to the challenge of taking a penalty. Player responds negatively to the 50/50 scenario. Player responds negatively to the incentive value of the situation.

AO3 – Analysis

Player who says yes:

Perhaps perceives the goalkeeper as an appropriate challenge to their ability levels and is motivated to meet the challenge. Acknowledges the potential to score/miss (50%) and comes to the conclusion that they have the ability to score. Values the evaluation that will result from the 1 v 1 scenario whilst others watch. They will welcome evaluation and feedback. Values the opportunity to achieve and the incentive value, eg 'to win the game/to be the hero/to win the cup/ prize, etc'. Potentially has other factors which affect their choice, eg extrinsic motivation has affected their choice (eg cup to be won), intrinsic value, etc. If scores, will be seen as a hero. Could lead to lucrative sponsorship deals and lead to wealth/public exposure, eg Jessica Ennis-Hill doing Vodaphone adverts, Brownlee brothers doing Aldi adverts after winning gold medals. Become a hero and receive more publicity and raise profile, eg on chat shows. Exposure could lead to move to a bigger club as could mean shirt sales for them, which means more money for the player.

The player who says no:

Predominantly demotivated by the evaluation within the situation – being watched by others Does not welcome the resultant feedback (most probably negative) which could arise as a result of missing the penalty. Perceives the goalkeeper of the other team as too big a challenge to score against – failure is more likely than not. Perceives their own ability as being ineffective in such situations. Perceives that the 50/50 (%) chance of success is not a suitable gamble to take – would prefer better odds of success. Potentially has other factors which affect their choice, eg carrying an injury, extrinsic motivation is ineffective, poor decision which were made during the game, etc. The player might be worried about a loss of income from sponsorship deals that he has with companies. They might perceive him as a failure if he misses and they don't want to be associated with a 'loser'. Eg Tiger Woods losing sponsors after extra-marital affairs became public. Might worry about being a laughing stock in the media, eg Graham Taylor being compared to a turnip when he was England manager, Gareth Southgate featuring in a Pizza Hut

advert with a paper bag over his head after missing a penalty at Euro 96. Football so high profile and if he misses, the media may portray him as a villain and this could lead to even more personal intrusion, eg David Beckham being sent bullets after being sent off for England in 98 World Cup/being blamed for exit.

Accept any other relevant analytical point about why the two players may have responded differently. Answers must refer to achievement motivation and commercialisation.

Maximum 15 marks

Section C

Sport and society and technology in sport

15 Satellite based navigation is often carried out using GPS.

What does GPS stand for?

[1 mark]

Marks for this question: AO1 = 1

D

16 Which **one** of these shows the characteristics of both sport and physical recreation?

[1 mark]

Marks for this question: AO1 = 1

B

17 Explain **two** reasons why a rugby player may become violent during a competitive match.

[2 marks]

Marks for this question: AO2 = 2

Award **one** mark for each of the following points.

Answers must relate to Rugby

- Win ethic – there may be high rewards for winning the game and thus the player sees violence as the only way to achieve their goal (1).
- Importance – the rugby match may be of such a high importance that violence is deemed necessary, eg playing local rivals (1).
- Nature of the sport – rugby is contact sport that involves strong and prolonged physical contact and violence may be used to over-power an opponent, etc (1).
- Over arousal – a player may be over aroused by the situation, eg having to tackle an opponent and lose control of technique (1).
- Frustration – eg frustration-aggression hypothesis and frustrated by referee's decisions in the match (or equiv) (1).

Accept any other relevant explanations of why a player might become violent during a competitive match. Answers must relate to rugby.

Maximum 2 marks

18 Explain **two** ways in which analytics may be beneficial for a performer. Used a named game of your choice (eg netball) in your answer.

[2 marks]

Marks for this question: AO2 = 2

Award **one** mark for each of the following points.

Answer for netball (other game activities can be used).

- Can monitor the amount of court covered during a game to ascertain if position is played effectively (1).
- Real-time technical feedback can be given by coach to improve awareness and improve technique (1).
- Small GPS receivers can monitor distance covered, acceleration, speed to provide physiological data for analysis / training plans (1).
- Tactics can be monitored and evaluated, eg possession area of the court that results in the most goals being scored (1).

Accept any other explanation of ways in which analytics may be beneficial for a performer. Answers must relate to an example of a game.

Maximum 2 marks

19 Discuss how technological advancements, such as Hawkeye at Wimbledon, have increased the viewing experience for the audience.

[5 marks]

Marks for this question: AO1 = 2, AO3 = 3

Award **one** mark for each of the following points.

AO1 (sub-max 2 marks)

Effects of technology on the audience present:

- playback of decision on large screen (1)
- involvement in decisions (1)
- information given from officials (1)
- nature of the event has changed (1)
- more **accurate** decisions (1).

AO3 (sub-max 3 marks)

Positive viewing experience:

- increase in excitement waiting for decisions (1)
- less controversy, decisions tend to be fair / fairer outcome (1)
- rule changes to incorporate technology can improve the viewing experience (1)
- play of a higher standard / players cannot hide behind gamesmanship / cheating (1).

Negative viewing experience:

- traditionalist will find the changing nature of sport against their liking (1)
- it can prove to be boring / time consuming waiting on decisions (1)
- less controversy over decisions may reduce the atmosphere of the event (1)
- frustration can rise as players use technology for their own gain (1).

Accept any other relevant discursive points about how technological advancements have increased the viewing experience for the audience.

Maximum 5 marks

20 Justify **one** method by which National Governing Bodies promote 'equality of opportunity'.

[1 mark]

Marks for this question: AO3 = 1

Award **one** mark for each of the following points.

- Use of positive role models – for targeted groups to aspire to be like (1).
- Accessible facilities for groups with specific needs – more likely to use facilities if they feel they are appropriate (1).
- Meet government requirements – eg through Whole Sport Plans (1).
- Incorporate specific targeted policies at under-represented groups – so that groups feel they are catered for and will potentially take part (1).
- Use of sport-specific development officers – such officers can target underrepresented groups and liaise with members of the community (1).
- Allocate resources to targeted groups or areas – eg inner cities to encourage urban opportunities for those in built up areas (1).

Accept any other justification of a method by which National Governing Bodies promote equality of opportunity.

Maximum 1 mark

21 In 2012, eight badminton players were charged with not using their best efforts to win a match at the Olympic Games.

Discuss the extent to which the Olympic Oath is irrelevant at the modern Olympic Games.

[8 marks]

Marks for this question: AO1 = 2, AO2 = 3 AO3 = 3

Students are expected to answer in continuous prose, use good English, organise information clearly and use specialist vocabulary where appropriate.

Level	Marks	Description
4	7–8	Knowledge is consistently accurate and well detailed. Application of breadth or depth of knowledge is clearly evident. Analysis and/or evaluation is coherently and consistently made between different relevant factors and their impact. Relevant terminology is consistently used. The answer almost always demonstrates substantiated reasoning, clarity, structure and focus.
3	5–6	Knowledge is usually accurate and detailed. Application of breadth or depth of knowledge is often evident. Analysis and/or evaluation is often made between different relevant factors and their impact, and is usually coherent. Relevant terminology is often used. The answer usually demonstrates substantiated reasoning, clarity, structure and focus.
2	3–4	Knowledge is sometimes accurate with some detail. Application of breadth or depth of knowledge is sometimes evident. Analysis and/or evaluation is sometimes made between different relevant factors and their impact, but may lack coherence. Relevant terminology is sometimes used. The answer occasionally demonstrates substantiated reasoning, but may lack clarity, structure and focus.
1	1–2	Knowledge may be limited. Application of breadth or depth of knowledge may be limited or not evident. There may be little or no analysis and/or evaluation between different relevant factors and their impact. Relevant terminology is occasionally used. The answer may lack substantiated reasoning, clarity, structure and focus.
	0	No relevant content.

Possible content may include:

AO1 – Knowledge and understanding of the Olympic Oath

Eg It is a pledge read by one member of each country on behalf of all athletes. It is a compulsory element of Olympic participation. It is a traditional element that was introduced by Baron de Coubertin. It was first used at the 1920 modern Olympic Games.

AO2 – Application to the modern Olympic Games

Eg The Olympic Oath is still read by athletes, coaches and officials at the opening ceremony of the Olympic Games, summer and winter. Each oath taker is from the host nation, who recites the oath whilst holding a corner of the Olympic flag. The oath has evolved over the years to keep it relevant. For example, the oath was just for athletes and then in 1972, an oath for officials was introduced to acknowledge their part in the event. In 1999, the IOC created WADA and the oath was amended to include references to doping and drugs, thus recognising their potential impact today. With effect from the 2018 Winter Olympics in Pyeongchang, the three oaths (athlete, coach, official) will be combined into one and read out by an athlete. This could perhaps be in recognition of how interlinked the three roles are.

AO3 – Discussion about the relevance of the Olympic Oath

Eg The Oath is **still relevant**. The underlying principles of the Games haven't changed, with it being a celebration of sport, showcasing the best athletes in each event battling to be number one / the winner(s). Where athletes have been found to have cheated at the Games, for example the badminton players in 2012, they have been disqualified. Where athletes have subsequently been found to have cheated, they have had medals removed, for example Marion Jones had her medals taken away from her that she won at the 2000 Games because she was a drugs cheat. This shows that the ideals of the Games and the Oath can be upheld.

The ideals are upheld by the audience as well, who don't appreciate cheats. It has been known for the audience to boo athletes who have previously been banned for taking PEDs, for example Justin Gatlin.

The oath is **no longer relevant** because these are different times. There is more exposure to the Games now than there has ever been with TV and online media. There is more on the line that just winning, which is more likely to lead to deviant behaviour / ignoring the Oath. Winning/being the best could lead to individual athletes getting lucrative sponsorship deals, for example Mo Farah advertising Quorn.

There are instances where athletes have previously been banned for testing positive for PEDs, but are allowed to compete once their bans have been served, eg Justin Gatlin. This leads to doubts over level playing fields and then athletes might take PEDs in order to simply be able to compete. This is an example of how times have changed since the oath was created, thus rendering it obsolete.

The oath could be considered irrelevant now because pressure may come from more than just at an individual level. Governments have used sport as a means to showcase their country. For example, East Germany had a decades long program of doping/making athletes use PEDs to bolster the state's image with the prestige of winning medals. There are recent allegations of Russia having a state-sponsored doping program too, which makes the oath redundant.

Accept any other relevant discursive point about the extent to which the Olympic Oath is irrelevant at the modern Olympic Games.

Maximum 8 marks

22 Some athletes choose to take illegal performance enhancing drugs, such as erythropoietin (EPO), beta-blockers or anabolic steroids.

Evaluate why a sprinter and a marathon runner may choose to take performance enhancing drugs for physiological benefits.

[15 marks]

Marks for this question: AO1 = 4, AO2 = 5, AO3 = 6

Students are expected to answer in continuous prose, use good English, organise information clearly and use specialist vocabulary where appropriate.

Level	Marks	Description
5	13–15	Knowledge is consistently comprehensive, accurate and well detailed. Application of breadth or depth of knowledge is clearly evident. Analysis and/or evaluation is coherently and consistently made between different relevant factors and their impact. Relevant terminology is almost always used. The answer demonstrates a high level of substantiated reasoning, clarity, structure and focus.
4	10–12	Knowledge is usually comprehensive, accurate and detailed. Application of breadth or depth of knowledge is often evident. Analysis and/or evaluation is often made between different relevant factors and their impact, and is usually coherent. Relevant terminology is usually used. The answer usually demonstrates substantiated reasoning, clarity, structure and focus.
3	7–9	Knowledge is generally accurate and sometimes detailed. Application of breadth or depth of knowledge is sometimes evident. Some analysis and/or evaluation is made between different relevant factors and their impact but may sometimes lack coherence. Relevant terminology is used but may sometimes be missing. The answer sometimes demonstrates substantiated reasoning, clarity, structure and focus.
2	4–6	Knowledge is sometimes accurate but may lack detail. Application of breadth or depth of knowledge is occasionally evident. Some analysis and/or evaluation is attempted between different relevant factors and their impact, but is likely to lack coherence. Relevant terminology is occasionally used. The answer occasionally demonstrates substantiated reasoning, but may lack clarity, structure and/or focus at times.
1	1–3	Knowledge is limited and may lack accuracy and detail. Application of breadth or depth of knowledge is likely to be limited or not evident. There may be very little or no analysis and/or evaluation made between different relevant factors and their impact. Relevant terminology used only very occasionally. The answer often lacks substantiated reasoning, clarity, structure and/or focus.
	0	No relevant content.

Possible content may include:

AO1 – knowledge of drugs

Erythropoietin (EPO) – naturally produced in kidney but artificially produced to increase red blood cell count. Artificially produced to increase haemoglobin levels

Beta blockers – block the effects of epinephrine/counteracts adrenaline. Helps to slow heart down.
Anabolic steroids – eg THG – artificially produced hormones. Synthetic steroid hormone; resembles testosterone in promoting the growth of muscle.

AO2 – Application to a sprinter and a marathon runner

Sprinter more likely to take anabolic steroids. Sprinters may wish to increase strength and power. They may wish to remain lean and prohibit body fat. Sprinters unlikely to use beta blockers or EPO as the effects do not match the needs of a sprinter.

Marathon runners are unlikely to use anabolic steroids or beta blockers and more likely to use EPO. Marathon is long duration and therefore anaerobic power is not the main fitness component required (therefore don't use anabolic steroids). EPO promotes red blood cell increase, which carries oxygen. Marathon is an event that makes use of the Aerobic energy system.

Beta blockers perhaps not relevant as precision is not vital to marathon running.

AO3 – Evaluation (physiologically)

Sprinters who would choose to take anabolic steroids do so to increase anaerobic power – power is needed to get out of the blocks and to maintain speed over the course of the race. Aids the storage of protein and promotes muscle growth – hence increasing strength and anaerobic power. Leaner body weight can improve sprint performance and ability to train at higher intensity for longer.

Marathon runners need more oxygen to be carried around their bodies over the course of a race, which requires stamina. The more red blood cells, the more oxygen that can be carried around the body. This additional oxygen reduces the fatigue felt in the muscles over the long distance. If they can do this, then they have an advantage over rivals who may tire quicker as the race goes on.

Beta blockers reduce the effects of adrenaline on the body. Sprinters may take these so that they are less likely to commit a false start. However, the benefits probably aren't as much as steroids. They aren't much use for marathon runners as they don't rely on precision or fine motor skills in the same way, eg they don't start from blocks.

Accept any other evaluative point about why a sprinter may use performance enhancing drugs. Answers must relate to the physiological benefits to a sprinter and/or a marathon runner.

Maximum 8 marks