OCR
RECOGNISING ACHIEVEMENT

# SPECIMEN

**Advanced GCE**

**PHYSICAL EDUCATION**

Unit G453: Principles and concepts across different areas of Physical Education

**Specimen Paper**

**G453**

Morning/Afternoon

Time: 2 hours 30 minutes

Additional Materials: Answer Booklet ( 8 pages)

**INSTRUCTIONS TO CANDIDATES**

- There are two Sections in this paper.
- Answer **three** questions, at least **one** of which must be from Section A.

**INFORMATION FOR CANDIDATES**

- The number of marks for each question is given in brackets [ ] at the end of each question or part of question.
- The total number of marks for this paper is **105**.

**ADVICE TO CANDIDATES**

- Read each question carefully and make sure you know what you have to do before starting your answer.

**QUALITY OF WRITTEN COMMUNICATION**

**The quality of your written communication will be assessed in questions that are indicated accordingly (*). Marks will be awarded for spelling, punctuation and grammar, use of appropriate form and style of writing, and for organising work clearly and coherently.**



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**[Turn Over**

## Section A

### Historical Studies (Option A1)

### Question 1

**a.** Throughout history, different Physical Education courses and syllabuses have impacted on the health of young people and their participation in physical activity. The Model Course of 1902 was unpopular and quickly replaced.

Identify **two** main differences between the Model Course of 1902 and Physical Education in State Schools today. **[4]**

**b.** Participation in sports and games was a key feature of nineteenth century public schools.

Describe **three** factors which led to increased participation in physical activity by young people in public schools in Stage Three of development (the 'cult' of athleticism). How do these factors continue to impact upon participation and performance in physical activity in schools today? **[5]**

**c.** Discuss factors which led to Lawn tennis increasing women's participation in physical activity in the late nineteenth century. Explain which of these factors continue to affect participation by women in tennis in contemporary society. **[6]**

**d.*** Discuss the impact of increased free time and transport links on participation in rationalised sport and pastimes from 1850 to today. **[20]**

**Total [35]**

## Section A

### Comparative Studies (Option A2)

### Question 2

**a.** Outline two initiatives in the UK and two initiatives in Australia which aim to promote Physical Education and school sport. **[4]**

**b.** Compare the popularity of association football in Australia and the UK. **[5]**

**c.** Give reasons for the low rate of participation in physical activity in the USA. How does this compare with participation rates in the UK? **[6]**

**d.*** International sporting success is pursued by many countries.

Discuss the extent to which cultural factors influence the promotion and achievement of sporting excellence in both the UK and the USA. **[20]**

**Total [35]**

## Section B

### Sports Psychology (Option B1)

### Question 3

**a.** Define the terms ‘aggression’ and ‘assertion’.

Describe **three** methods a coach might use to eliminate aggressive tendencies of performers and to encourage an active and healthy lifestyle. **[4]**

**b.** Identify the cognitive, affective and behavioural components of a positive attitude towards participation in sport and towards following an active and healthy lifestyle.

Identify the influences that might affect such an attitude? **[5]**

**c.** A cohesive group or team can affect an individual’s behaviour and the extent to which an individual follows an active and healthy lifestyle.

Using practical examples, describe the factors that affect the development of a cohesive team in sport. **[6]**

**d.*** Interpret Vealey’s model of sports confidence shown in Fig. 1 below by using an example from sport.

Drawing on your knowledge and understanding of sports psychology, examine the methods you might use to raise the levels of confidence of a sports performer. **[20]**

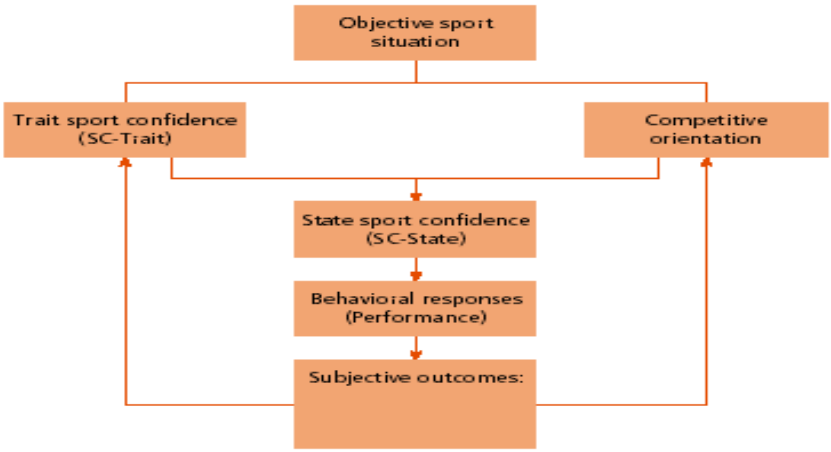


Fig. 1 Adapted from Vealey’s model of sports confidence

**Total [35]**

## Section B

### Biomechanics (Option B2)

### Question 4

**a.** Identify the **three** types of lever system giving examples from the human body.

Sketch **one** of these lever systems and identify the load arm and the effort arm on your diagram. **[5]**

**b.** Sketch a free body diagram to show the forces acting on a sprinter immediately after the start of a 100m race.

Comment on the respective sizes of the horizontal forces in relation to the resulting motion. **[4]**

**c.** Explain the Bernoulli principle and use your knowledge of this principle to analyse the flight path of a discus. **[6]**

**d.*** Using your knowledge of biomechanics, justify the reasons why the following factors (see Fig. 2) are important for an effective and efficient performance in sprinting:

- Wearing tight fitting clothing and running spikes;
- In the drive phase, pushing from a fully extended back leg;
- In the recovery phase, having a high knee lift. **[20]**

**Total [35]**

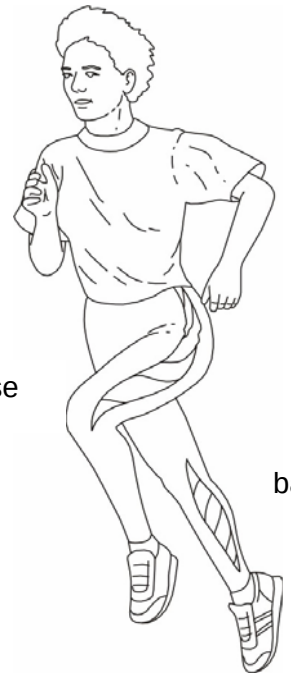


Fig. 2

## Section B

### Exercise and Sport Physiology (Option B3)

### Question 5

**a.** Describe the ATP/PC (alactic) energy system and give one reason why this system is used during high intensity physical activity such as sprinting. **[5]**

**b.** Many athletes turn to ergogenic aids to enhance their performance.

Identify the type of performer who would take RhEPO (recombinant erythropoietin).

Describe the effects that RhEPO has on the body and how it impacts on performance. **[4]**

**c.** Use Table 1 to identify the differences in values for $VO_2$ max with reference to both age and gender. Compare **two** physiological factors that account for the differences in $VO_2$ max values as age changes and **two** physiological factors that account for the difference between male and female $VO_2$ max values. **[6]**

**Table 1 Normative data for VO2max**

Female (values in ml/kg/min)

| Age | Very Poor | Poor | Fair | Good | Excellent |
|---|---|---|---|---|---|
| 20-29 | <31.6 | 31.6 - 35.4 | 35.5 - 39.4 | 39.5 - 43.9 | 44.0 - 50.1 |
| 30-39 | <29.9 | 29.9 - 33.7 | 33.8 - 36.7 | 36.8 - 40.9 | 41.0 - 46.8 |
| 40-49 | <28.0 | 28.0 - 31.5 | 31.6 - 35.0 | 35.1 - 38.8 | 38.9 - 45.1 |
| 50-59 | <25.5 | 25.5 - 28.6 | 28.7 - 31.3 | 31.4 - 35.1 | 35.2 - 39.8 |
| 60-69 | <23.7 | 23.7 - 26.5 | 26.6 - 29.0 | 29.1 - 32.2 | 32.3 - 36.8 |
| 70+ | <21.2 | 21.2 - 23.7 | 23.8 - 26.5 | 26.6 - 30.1 | 30.2 - 36.6 |

Male (values in ml/kg/min)

| Age | Very Poor | Poor | Fair | Good | Excellent |
|---|---|---|---|---|---|
| 20-29 | <38.1 | 38.1 - 42.1 | 42.2 - 45.6 | 45.7 - 51.0 | 51.1 - 56.1 |
| 30-39 | <36.7 | 36.7 - 40.9 | 41.0 - 44.3 | 44.4 - 48.8 | 48.9 - 54.2 |
| 40-49 | <34.6 | 34.6 - 38.3 | 38.4 - 42.3 | 42.4 - 46.7 | 46.8 - 52.8 |
| 50-59 | <31.1 | 31.1 - 35.1 | 35.2 - 38.2 | 38.3 - 43.2 | 43.3 - 49.6 |
| 60-69 | <27.4 | 27.4 - 31.3 | 31.4 - 34.9 | 35.0 - 39.4 | 39.5 - 46.0 |
| 70+ | <23.7 | 23.7 - 27.9 | 28.0 - 30.8 | 30.9 - 35.9 | 36.0 - 42.3 |

Table Reference: The Physical Fitness Specialist Certification Manual, The Cooper Institute, Dallas TX, revised 2002

**d.*** 'Extract from an article from the Daily Telegraph on 22.05.06 written by George Jones (Political Editor):

**Primary Schools to check for Obesity**

"Primary school children are to be weighed regularly and their parents told if they are too fat under a Government drive to reduce obesity…..parents of any obese 4 to 10 year old can expect a letter telling them that their child faces long-term health problems unless they live a healthier lifestyle"

*Primary Schools to check for Obesity*, George Jones, © Daily Telegraph, 22.05.06

Explain how the BMI (body mass index) of an individual is calculated and examine the long term health implications of childhood obesity.

To what extent would a thirty minute-a-day exercise programme help the children to lead a healthier lifestyle?

**[20]**

**Total [35]**

**Paper Total [105]**

*Copyright Acknowledgements:*

*Sources*

**Fig. 1** Adapted from Vealey's model of sports confidence

**Table 1:** Table Reference: The Physical Fitness Specialist Certification Manual, The Cooper Institute, Dallas TX, revised 1997 printed in Advance Fitness Assessment & Exercise Prescription, 3rd Edition, Vivian H. Heyward, 1998. p48 Fig 1

**Q5 d:** Primary Schools to check for Obesity, George Jones, © Daily Telegraph, 22.05.06

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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**

**Advanced GCE**

# PHYSICAL EDUCATION G453 MS

Unit G453: Principles and concepts across different areas of Physical Education

**Specimen Mark Scheme**

The maximum mark for this paper is **105**.

## QUALITY OF WRITTEN COMMUNICATION

**Quality of written communication is assessed in questions that are indicated accordingly (*). Marks should be awarded for spelling, punctuation and grammar, use of appropriate form and style of writing, and for organising work clearly and coherently.**



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**[Turn Over**

| Section A – Historical Studies (Option A1) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **1(a)** | **Identify two main differences between the Model Course of 1902 and Physical Education in State Schools today.**<br>2 marks for each direct comparison: 2 direct comparisons needed for max 4 marks. | **[4]** |

| **Model course of 1902** | **whereas** | **PE in State schools today** |
|---|---|---|
| 1. imposed by the War Office. | | regulated by the National Curriculum and Department for Education. |
| 2. preparation for war or military service. | | physical or personal or preparatory or qualitative benefits. |
| 3. for discipline. | | physical or personal or preparatory or qualitative benefits. |
| 4. command style / taught by army NCOs. | | taught by specialist Physical Education teachers. |
| 5. military drill / marching / weapons training/staves / deep breathing. | | different sporting activities from the national curriculum activity groupings: gymnastics / athletics / dance etc. |
| 6. delivered in a centralised way / in ranks /no individuality / command-response e.g. ‘attention’ | | decentralised and encompasses a variety of teaching styles |

| | | |
|---|---|---|
| 1(b) | **Describe three factors which led to increased participation in physical activity by young people in public schools in Stage Three of development (the 'cult' of athleticism). How do these factors continue to impact upon participation and performance in physical activity in schools today?** | |
| | 1 mark per point max 3.<br>**Participation increased due to:**<br>• improved quality of facilities eg games fields<br>• increased quantity of purpose built facilities eg squash courts<br>• money donated by old boys for games<br>• Specialist coaching from assistant masters and/or professional coaches<br>• compulsory games<br>• House participation<br>• Inter school fixtures<br>• Belief in character building value of games eg leadership, loyalty, teamwork<br>• Belief in health and fitness of participants/fresh air and healthy lifestyles<br>• Headmaster support<br>• Enthusiasm of young teachers who had 'been through the system'<br>• Games playing became an obsession<br>• Special festivals such as athletics sports day<br>• Role models from sixth form and society<br><br>1 mark per point max 2.<br>**Continued impact on participation and performance today:**<br>• Quality or quantity of facilities affects levels of participation and performance today.<br>• Availability of funding / finance / impact of fund raising affects quality of facilities.<br>• Specialist coaching affects standards.<br>• Extra-curricular opportunities / Inter school fixtures affect frequency of competitive participation and likely standards.<br>• Participation believed to develop character, health, fitness and lead with aim to encourage life long participation.<br>• Head teacher support still vital in terms of kudos of subject in school.<br>• Subject teachers who are prepared to help with extra-curricular activities effect regularity of practices and numbers of teams. | **[5]** |

| Section A – Historical Studies (Option A1) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **1(c)** | **Discuss factors which led to Lawn tennis increasing women's participation in physical activity in the late nineteenth century. Explain which of these factors continue to affect participation by women in tennis in contemporary society.** | |
| | **Factors which led to lawn tennis increasing women's participation in physical activity in late 19th century.**<br>1 mark per point sub max 4<br>• women could play in privacy of own garden / away from view<br>• adopted by girls' public schools<br>• tennis became a social as well as competitive game / mixed sex<br>• it was an opportunity to be energetic / to be athletic / to sweat<br>• did not need to be vigorous / could retain decorum / stay lady-like<br>• no special kit required initially<br>• acceptance of healthy lifestyle / exercise / fresh air as therapeutic<br>• tennis adopted and developed in middle class girls' schools<br>• Wimbledon champion became role models<br>• middle classes set up tennis clubs<br><br>**Factors will continue to affect participation by women in tennis in contemporary society:**<br>1 mark per explanation, sub-max 2<br>• popular summer sport in girls' independent schools.<br>• tennis still seen by many as a social game<br>• tennis club membership important for development | **[6]** |

| Section A – Historical Studies (Option A1) | | | |
|---|---|---|---|
| **Question Number** | **Answer** | | **Marks** |
| **1(d)*** | **Discuss the impact of increased free time and transport links on participation in rationalised sport and pastimes from 1850 to today.** | | |
| | **L4**<br><br>18-20 marks | • There is detailed knowledge and good understanding of the topic.<br>• The candidate demonstrates detailed knowledge and excellent understanding of factors that enabled young people to be physically active.<br>• The candidate demonstrates an excellent understanding of how young people maximised the opportunities to be involved in physical activity.<br>• The candidate demonstrates excellent critical analysis of the effects of products and consumer focused influences on young people's decisions about involvement in physical activity.<br>• The candidate demonstrates excellent critical evaluation of key influences affecting young people's involvement in physical activity.<br>• There is evidence of well-argued, independent opinion and judgements supported by sound examples.<br>• There is a high standard of written communication.<br>*Discriminators from L3 are likely to include:*<br>• *A logical and detailed discussion of relevant factors;*<br>• *An understanding of differences between the first and second halves of the century;*<br>• *An appreciation that improved transport was the most significant factor;*<br>• *Detailed reference to the effects on participation today.*<br>• Demonstration of an understanding of the inter-relationship between the socio-cultural factors affecting the emergence of sports and pastimes in post-Industrial Britain. | |
| | **L3**<br><br>13-17 marks | • There is good knowledge and clear understanding of the topic.<br>• The candidate demonstrates substantial knowledge and understanding of factors enabling / that enabled young people to be physically active.<br>• The candidate demonstrates a good understanding of how young people maximised the opportunities to be involved in physical activity.<br>• The candidate demonstrates good critical analysis of the effects of products and consumer focused influences on young people's decisions about involvement in physical activity.<br>• The candidate demonstrates good critical evaluation of key influences affecting young people's involvement in physical activity.<br>• Independent opinions and judgements will be present but towards the bottom of this level, not always supported by sound examples.<br>• Written communication is generally fluent with few errors.<br>*Discriminators from L2 are likely to include:*<br>• *A logical discussion of relevant factors;*<br>• *A good understanding of cause and effect*<br>• *Clear reference to the effects on participation today;*<br>• An understanding of factors other than time, transport and space. | |

| Section A – Historical Studies (Option A1) | | | |
|---|---|---|---|
| **Question Number** | **Answer** | | **Marks** |
| | **L2**<br><br>8-12 marks | • There is basic knowledge and limited understanding of the topic<br>• The candidate demonstrates knowledge and understanding of some factors enabling / that enabled young people to be physically active<br>• The candidate demonstrates some understanding of how young people maximised the opportunities to be involved in physical activity.<br>• The candidate demonstrates some critical analysis of the effects of products and consumer focused influences on young people's decisions about involvement in physical activity<br>• The candidate demonstrates some critical evaluation of key influences affecting young people's involvement in physical activity<br>• Opinion and judgement may be unsupported<br>• Written communication lacks fluency and there will be errors<br><br>*Discriminators from L1 are likely to include:*<br>• *An understanding of factors other than time and transport*<br>• *Limited reference to the effects on participation today.* | |
| | **L1**<br><br>0-7 marks | • There is limited knowledge and little understanding of the topic.<br>• The candidate demonstrates limited and superficial knowledge and understanding of some factors enabling young people to be physically active.<br>• The candidate demonstrates limited and superficial understanding of how young people maximised the opportunities to be involved in physical activity.<br>• The candidate demonstrates little relevant critical analysis of the effects of products and consumer focussed influences on young people's decisions about involvement in physical activity.<br>• The candidate demonstrates little relevant critical evaluation of key influences affecting young people's involvement in physical activity.<br>• Opinion and judgement are almost entirely absent.<br>Errors in written communication will be intrusive. | |
| | **Indicative Content:**<br>• explanation that increased free time and transport were just two examples of social change at this time.<br>• explanation that the first half of the century, (up to 1850), saw a decline in participation by the lower classes<br>**and:**<br>• migration of lower classes from rural to urban areas in search for regular work.<br>• loss of space to 'play' / lack of health / poverty / poor working and living conditions.<br>• a more structured lifestyle due to 'machine time.'<br>• 12 hour working days / no time to 'play.' | | |

| Section A – Historical Studies (Option A1) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| | **Impact of increased time:**<br>• 12 hour day reduced to 10 hour day so more time to play<br>• more energy after work<br>• annual week paid holiday - seaside 'culture' developed e.g. Brighton<br>• one-day excursion trips provided by factory owners<br>• opportunity for philanthropic factory owners to provide for workers e.g. Bourneville, Cadbury's, Cash's.<br>• lead to increased loyalty of workforce<br>• attempt to increase health of workforce<br>• Saturday half day – ideal 'slot' for development of football.<br>• early closing movement / campaign for 8 hour day (40 hour week)<br>• half day closure / Wednesday afternoon free for shop workers / Sheffield Wednesday FC<br>**Impact of increased transport links:**<br>• greater distances travelled by players<br>• greater distances travelled by spectators<br>• less time needed to get to venues<br>• establishment of leagues / cups / competitions<br>• impact on regularity<br>• impact on spectarorism<br>• impact on horse racing (horses could now be transported to venues so less exhausted / able to race more)<br>**More recently:**<br>• in contemporary society many are money 'rich' yet time 'poor.' / high demands of work.<br>• issues related to unemployment and redundancy<br>• impact of flexibility in free time through flexitime at work<br>• impact of Sunday trading upon opportunities for some.<br>• railways decreased in last 40 years leading to congestion on roads.<br>• ….influencing 'out of town' stadia (eg Reading) / closure of some inner city venues / impact of congestion charge/s<br>• variety / flexibility of transport options today / cheap internal and European flights /inter-city coach travel / special trains or flights or coaches for big matches.<br>• some high earning players living distant from club use helicopter | **[20]** |
| | **Section A Total** | **[35]** |

| Section A – Comparative Studies (Option A2) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **2(a)** | **Outline two initiatives in the UK and two initiatives in Australia which aim to promote Physical Education and school sport.**<br>Australia - 1 mark per point max 2:<br>• exemplary schools;<br>• fundamental skills programmes;<br>• sports leader programmes;<br>• state award schemes/De Coubertin award;<br>• school club links;<br>• sports linkage schemes;<br>• sports person in schools project;<br>• sports search;<br>• teacher games;<br>• Pacific Games.<br><br>UK - 1 mark per point max 2:<br>• Sports colleges<br>• PESSCL<br>• TOPS programme<br>• Sportsmark<br>• Activemark<br>• (Any suitable named programme) | **[4]** |

| Section A – Comparative Studies (Option A2) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **2(b)** | **Compare the popularity of association football in Australia and the UK**<br>1 mark per point sub max 4:<br><br>**Australia:**<br>**Initial limited popularity:**<br>• Adopted by few British immigrants / adopted by minority groups in deprived areas.<br>• Associated with 'ghetto' culture / associated with nationalistic team names.<br>• Called the 'Pommie Game' / negative views of game.<br>• Associated with crowd violence or community disruption.<br>• 'sport space' / three other styles of football played / not enough people to play four different styles of football.<br><br>**Recent growth / contemporary popularity:**<br>• Team names changed / team names no longer include ethnic origins of social groups / associated ethnic problems solved.<br>• Success in World Cup / success in international competitions.<br>• AIS supporting elite players.<br>• Increase in sponsorship and media interest.<br>• Increased popularity in or adoption by schools.<br>• More community provision / local teams established.<br>1 mark per point Sub max 1:<br>UK<br>• historical popularity.<br>• popular playground game / winter game for boys in state schools.<br>• increasingly popular for girls.<br>• impact of league football and role models on young people.<br>• any other relevant point. | **[6]** |

| Section A – Comparative Studies (Option A2) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **2(c)** | **Give reasons for the low rate of participation in physical activity in the USA. How does this compare with participation rates in the UK?**<br>1 mark per point, sub-max 4:<br>• watching high level sport is the norm/spectatorism dominates;<br>• no tradition of local sporting clubs in USA;<br>• sporting activity is for entertainment rather than participation/sport is dominated by the media and big business;<br>• sport has elitist image/sport seen as only for the skilful or best;<br>• sporting activity has image of sensationalism or violence or is male dominated;<br>• Lombardian ethic dominates/winning more important than taking part/ winning the only thing that matters/win at all costs;<br>• two of the 'big four' sports are technologically advanced and therefore very expensive;<br>• in High Schools, high level sport has much higher kudos than Physical Education and inter-mural sport.<br>2 marks for comparative points which might include:<br>• Mass participation rates higher in the UK than the USA.<br><br>In the UK:<br>• Local and / or national campaigns in place to increase participation.<br>• Credit any named campaign (current or past).<br>• Organisations eg. Sport England (and other Home Country councils) promote mass participation.<br>• Participation and healthy lifestyles part of national curriculum for PE in schools.<br><br>Other suitable examples should be accepted. | **[6]** |

| Section A – Comparative Studies (Option A2) | | | |
|---|---|---|---|
| **Question Number** | **Answer** | | **Marks** |
| **2(d)*** | **International sporting success is pursued by many countries. Discuss the extent to which cultural factors influence the promotion and achievement of sporting excellence in both the UK and the USA.** | | |
| | **L4**<br><br>**18-20 marks** | • There is detailed knowledge and good understanding of the topic<br>• The candidate demonstrates detailed knowledge and excellent understanding of factors that enable young people to be physically active.<br>• The candidate demonstrates an excellent understanding of how young people maximise the opportunities to be involved in physical activity.<br>• The candidate demonstrates excellent critical analysis of the effects of contemporary products and consumer focused influences on young people's decisions about involvement in physical activity.<br>• The candidate demonstrates excellent critical evaluation of current key influences affecting young people's involvement in physical activity.<br>• There is evidence of well-argued, independent opinion and judgements supported by sound examples.<br>• There is a high standard of written communication.<br>*Discriminators from L3 are likely to include:*<br>• *Clear, relevant and regular comparisons of the cultural factors that influence the promotion and achievement of sporting excellence*<br>*Detailed, balanced discussion of factors from a broad spectrum of the mark scheme.* | |
| | **L3**<br><br>**13-17 marks** | • There is good knowledge and clear understanding of the topic.<br>• The candidate demonstrates substantial knowledge and understanding of factors enabling young people to be physically active.<br>• The candidate demonstrates a good understanding of how young people maximise the opportunities to be involved in physical activity.<br>• The candidate demonstrates good critical analysis of the effects of contemporary products and consumer focused influences on young people's decisions about involvement in physical activity.<br>• The candidate demonstrates good critical evaluation of current key influences affecting young people's involvement in physical activity.<br>• Independent opinions and judgements may be present but towards the bottom of this level, not always supported by sound examples.<br>• Written communication is generally fluent with few errors.<br>*Discriminators from L2 are likely to include:*<br>• *Regular attempts at comparison of the cultural factors that influence the promotion and achievement of sporting excellence*<br>• *Good discussion of factors from different sections of the mark scheme.* | |

| Section A – Comparative Studies (Option A2) | | | |
|---|---|---|---|
| **Question Number** | **Answer** | | **Marks** |
| | **L2**<br><br>**8-12 marks** | • There is basic knowledge and limited understanding of the topic<br>• The candidate demonstrates knowledge and understanding of some factors enabling young people to be physically active<br>• The candidate demonstrates some understanding of how young people maximise the opportunities to be involved in physical activity<br>• The candidate demonstrates some critical analysis of the effects of contemporary products and consumer focused influences on young people's decisions about involvement in physical activity<br>• The candidate demonstrates some critical evaluation of current key influences affecting young people's involvement in physical activity<br>• Opinion and judgement may be unsupported<br>• Written communication lacks fluency and there will be errors<br><br>*Discriminators from L1 are likely to include:*<br>• *Some comparisons attempted of the cultural factors that influence the promotion and achievement of sporting excellence – but may be vague or tenuous*<br>• *Some discussion of factors – but perhaps from a narrow spectrum of the mark scheme* | |
| | **L1**<br><br>**0-7 marks** | • There is limited knowledge and little understanding of the topic<br>• The candidate demonstrates limited and superficial knowledge and understanding of some factors enabling young people to be physically active<br>• The candidate demonstrates limited and superficial understanding of how young people maximise the opportunities to be involved in physical activity<br>• The candidate demonstrates little relevant critical analysis of the effects of contemporary products and consumer focused influences on young people's decisions about involvement in physical activity<br>• The candidate demonstrates little relevant critical evaluation of current key influences affecting young people's involvement in physical activity<br>• Opinion and judgement are almost entirely absent<br>• Errors in written communication will be intrusive | |

| Section A – Comparative Studies (Option A2) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |

**Indicative content:**

| Cultural Factors | UK | USA |
|---|---|---|
| **Historical determinants** | Taking part traditionally more important than winning/legacy of nineteenth century public school attitudes on contemporary attitudes/tradition of amateurism and professionalism as mutually exclusive/fair play traditionally of ultimate importance/value of teamwork | Lombardian or win at all costs ethic/counter culture and radical ethics limited/value of winning |
| | Most sports invented in Britain/resultant view by some that there is therefore no need to excel/contentment with former glories | UK sports marginalised/own sports promoted/big four sports dominant/isolationism/ competitive sports part of image of new or young society |
| | Frontierism and/or pioneering spirit not relevant in UK | Frontierism and/or pioneering spirit reflected in competitiveness of high level sport/players as gladiators |
| **Geographical Determinants** | Population of approx. 60 million | Population of approx. 300 million |
| | Concept of small country aiming low | Concept of huge country aiming high |
| **Policy** | The nature of sport organisation and administration/ decentralised system of administration/several autonomous bodies | Clear structure of governing body control |
| | Limited Government funding of high level sport/national lottery | Limited direct government funding of high level sport/commercialism/ |

**Section A – Comparative Studies (Option A2)**

| Question Number | Answer | Marks |
|---|---|---|

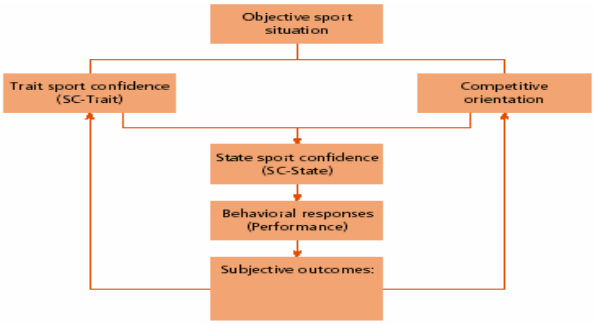
**2(d)* cont'd**

| | UK | USA |
|---|---|---|
| **Commercial-isation of sport** | A mixed economy where relationship between sport and big business continues to strengthen/mixed economy not exclusively driven by competition | Capitalism drives sport/capitalism driven by competition which is mirrored in sport of USA |
| | Commercialisation of sport/sport and multi-national companies/the 'golden triangle' or relationship between high level sport, sponsorship and media | Commercialisation of sport/sport and multi-national companies/the 'golden triangle' or relationship between high level sport, sponsorship and media |
| | Fame and fortune available via very few sports or male dominated sports or limited to Association Football | Winners achieve fame and fortune in all professional sports and/or some university sports |
| **Social determinants** | Comparatively widespread mass participation | Limited mass participation |
| | Discrimination/lack of opportunity provision and esteem/class divisions/ limited participation by minority groups | USA as 'land of opportunity' or ' land of the free'/everyone theoretically equal/the claim of cultural pluralism/sport a vehicle for achieving the 'American Dream'/upward social mobility/'rags to riches'. |
| | | Social discrimination/limited participation by minority groups/constraints on opportunity, provision and esteem/stacking and centrality in sport |
| **Values** | Elitism not a traditional value/mass participation dominant | Elitist system/elitism dominant |
| | Junior sport or community sport for participation as well as performance | Little league/junior sport highly competitive or a microcosm of professional sport |

| | | |
|---|---|---|
| | **Total** | **[35]** |

| Section B - Sports Psychology (Option B1) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **3(a)** | **Define the terms 'aggression' and 'assertion'.**<br>**Describe <u>three</u> methods a coach might use to eliminate aggressive tendencies of performers and to encourage an active and healthy lifestyle.**<br>1 mark per point max 4:<br>1 mark for:<br>• (Definition) aggression is the attempt to harm outside the rules of the game **and** assertion is forceful behaviour within the rules.<br>1 mark for 3 of:<br>• lower arousal/calm down/relax/count to 10/meditate/imagery/mental rehearsal/practice/selective attention;<br>• use of punishment/remove from situation/negative feedback/educate about outcomes;<br>• positively reinforce non-aggression assertion/use positive role models/teach assertive techniques. | **[4]** |
| **3(b)** | **Identify the cognitive, affective and behavioural components of a positive attitude towards participation in sport and towards following an active and healthy lifestyle.**<br>**Identify the influences that might affect such an attitude?**<br>1 mark per point max 5:<br>1 mark for 3 of:<br>• (cognitive) Belief that participation is beneficial/will lead to greater fitness/skills;<br>• (affective) Positive emotional response/will enjoy participating;<br>• (behavioural) Will participate regularly/active participant.<br>1 mark for 2 of:<br>• socialisation/cultural/upbringing/influences of parents/carers;<br>• other significant role models/coaches/teachers Eq/to want to improve/want to fit into group;<br>• media influences;<br>• religious influences;<br>• past experiences/perceived ability/attributions. | **[5]** |

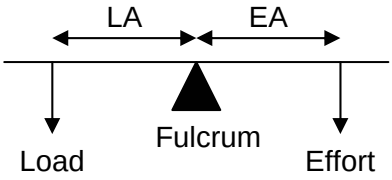
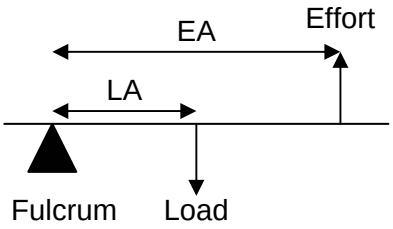
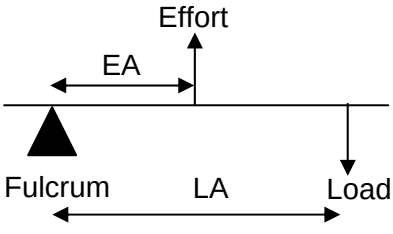
| Section B - Sports Psychology (Option B1) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **3(c)** | **A cohesive group or team can affect an individual's behaviour and the extent to which an individual follows an active and healthy lifestyle.**<br>**Using practical examples, describe the factors that affect the development of a cohesive team in sport.**<br>1 mark per point max 6:<br>• group members sharing the same goals;<br>• group members sharing norms and values/similar outlooks (rather than specific goals as above);<br>• level of team identity;<br>• amount/quality of social interaction/whether they are friends;<br>• effective leadership/quality of leadership;<br>• appropriate styles of leadership;<br>• level of success/past experiences;<br>• group/individuals in group attributions;<br>• environmental/situational aspects/hostility of environment;<br>• the event importance/the expected outcomes. | **[6]** |

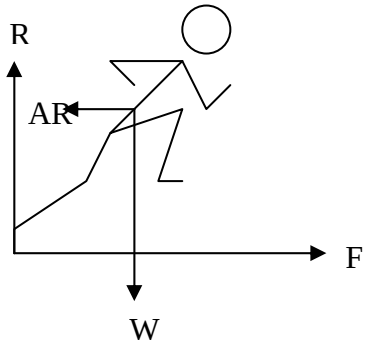
| Section B - Sports Psychology (Option B1) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **3(d)*** | **Interpret Vealey's model of sports confidence shown in Fig. 1 below by using an example from sport.**<br>**Drawing on your knowledge and understanding of sports psychology, examine the methods you might use to raise the levels of confidence of a sports performer.**<br>  <br><br>Fig 1 Adapted from Vealey's model of sports confidence | |

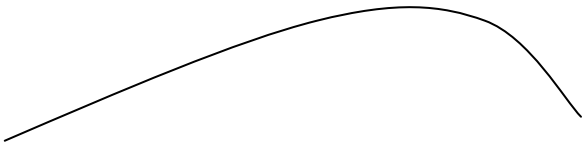
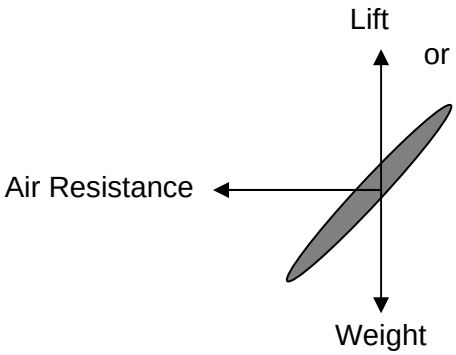
| | |
|---|---|
| **L4**<br><br>**18-20 marks** | • There is detailed knowledge and good understanding of the topic.<br>• The candidate demonstrates detailed knowledge and excellent understanding of factors that enable young people to be physically active.<br>• The candidate demonstrates detailed knowledge and excellent understanding of the relationship between skill, strategy/composition and body and mind readiness.<br>• Excellent critical evaluation of current key influences affecting young people's involvement in physical activity.<br>• There is evidence of well-argued, independent opinion and judgements supported by sound examples.<br>• Accurate technical and specialist vocabulary is used throughout.<br>• There is a high standard of written communication.<br><br>*Discriminators from L3 are likely to include:*<br>• *Reference to trait and state sports confidence;*<br>• *Knowledge that outcomes can affect future confidence.* |

| Section B - Sports Psychology (Option B1) | | | |
|---|---|---|---|
| **Question Number** | **Answer** | | **Marks** |
| | **L3**<br><br>**13-17 marks** | • There is good knowledge and clear understanding of the topic<br>• The candidate demonstrates substantial knowledge and understanding of factors enabling young people to be physically active<br>• The candidate demonstrates substantial knowledge and understanding of the relationship between skill, strategy/composition and body and mind readiness<br>• The candidate demonstrates good critical evaluation of current key influences affecting young people's involvement in physical activity<br>• Independent opinions and judgements will be present but towards the bottom of this level, not always supported by sound examples<br>• Technical and specialist vocabulary is used with some accuracy<br>• Written communication is generally fluent with few errors<br><br>*Discriminators from L2 are likely to include:*<br>• *All parts of the model attempted in explanation*<br>• *Methods to raise confidence has theoretical basis* | |
| | **L2**<br><br>**8-12 marks** | • There is basic knowledge and limited understanding of the topic.<br>• The candidate demonstrates knowledge and understanding of some factors enabling young people to be physically active.<br>• The candidate demonstrates some knowledge and understanding of the relationship between skill, strategy/composition and body and mind readiness.<br>• The candidate demonstrates some critical evaluation of current key influences affecting young people's involvement in physical activity.<br>• Opinion and judgement may be unsupported.<br>• Technical and specialist vocabulary is used with limited success.<br>Written communication lacks fluency and there will be errors.<br><br>*Discriminators from L1 are likely to include:*<br>• *Practical examples relevant;*<br>• *Both aspects of the question attempted.* | |

<table>
<tr><th colspan="4">Section B - Sports Psychology (Option B1)</th></tr>
<tr><th>Question Number</th><th colspan="2">Answer</th><th>Marks</th></tr>
<tr><td></td><td>L1<br><br>0-7 marks</td><td>• There is limited knowledge and little understanding of the topic.<br>• The candidate demonstrates limited and superficial knowledge and understanding of some factors enabling young people to be physically active.<br>• The candidate demonstrates limited and superficial knowledge and understanding of the relationship between skill, strategy/composition and body and mind readiness.<br>• The candidate demonstrates little relevant critical evaluation of current key influences affecting young people’s involvement in physical activity.<br>• Opinion and judgement are almost entirely absent.<br>• Little or no attempt is made to use technical and specialist vocabulary.<br>Errors written communication will be intrusive.</td><td></td></tr>
<tr><td></td><td colspan="2">Indicative content:<br>• (Trait confidence ) is innate/born with it/underlying potential;<br>• (competitive orientation) the level of competitiveness that the performer may have;<br>• (S-C State) the actual/specific situation e.g. a penalty kick;<br>• (behavioural responses) actions/performance outcomes;<br>• (subjective outcomes) how the performer judges/interprets the outcomes/performance;<br>• examples of raising confidence are given;<br>• with relevant practical examples throughout;<br>• some attempt at explaining the links between each aspect of Vealey’s model;<br>• examples of raising confidence given with some underlying theory e.g. some relevance to Bandura’s self efficacy theory;<br>• examples successful throughout;<br>• links of model explained well with implications stated;<br>• examples of raising confidence with thorough explanation of related theories e.g. Bandura’s self efficacy theory.</td><td>[20]</td></tr>
<tr><td colspan="3">Section D Total</td><td>[35]</td></tr>
</table>

| Section B – Biomechanics (Option B2) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **4(a)** | **Identify the <u>three</u> types of lever system giving examples from the human body.**<br>**Sketch <u>one</u> of these lever systems and identify the load arm and the effort arm on your diagram.**<br>1 mark per point max 5:<br>3 marks for:<br>• 1st class e.g. extension of neck/extension of elbow in over arm throw or eq.<br>• 2nd class e.g. plantarflexion of ankle/standing on tip toe or eq.<br>• 3rd class e.g. flexion of elbow/flexion of knee etc, etc. (any movement except those given above).<br><br>2 marks for:<br>• Correct sketch with type of level system identified and fulcrum, load and effort in correct the positions;<br>• load arm/LA and effort arm/EA correctly identified.<br><br>i.e. 1st class lever system (fulcrum shown in middle)<br>  <br><br>or mirror image<br><br>2nd class lever system (load shown in middle)<br>  <br><br>or mirror image<br><br>3rd class lever system (effort in middle)<br>  <br><br>or mirror image | **[4]** |

| Section C – Biomechanics (Option B2) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **4(b)** | **Sketch a free body diagram to show the forces acting on a sprinter immediately after the start of a 100m race. Comment on the respective sizes of the horizontal forces in relation to the resulting motion.**<br>1 mark per point max 4:<br>1 mark for free body diagram:<br>  <br><br>3 marks for 3 of:<br>• friction force/F is greater than the air resistance/F > AR;<br>• friction force/F is large due to the large force being exerted on the ground by the sprinter/running spikes;<br>• air resistance/AR is relatively small due to small cross sectional area/relatively low velocity/tight fitting clothing;<br>• net/resultant force acts in the same direction as friction/forward direction causing acceleration;<br>• link with Newton's 1st Law;<br>• the greater the friction force the greater the acceleration in the early stages of the race;<br>• link with Newton's 2nd Law. | **[4]** |

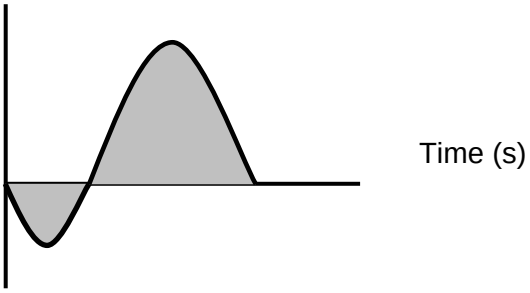
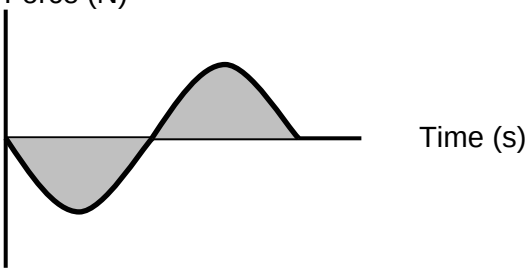
| Section C – Biomechanics (Option B2) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **4(c)** | **Explain the Bernoulli principle and use your knowledge of this principle to analyse the flight path of a discus.**<br>1 mark per point max 6:<br>2 marks for 2 of:<br>(Bernoulli principle states)<br>• air molecules exert less pressure the faster they travel and more pressure the slower they travel/where flow is fast, pressure is low, where flow is slow, pressure is high;<br>• this creates a pressure differential either side of a projectile;<br>• which pushes the projectile toward the low pressure area as the air molecules try to move from a high pressure area to a low one;<br><br>4 marks for 4 of:<br>(flight path)<br>• is asymmetrical/non parabolic/suitable diagram;<br>  <br>• at the correct angle of attack;<br>• air molecules travel further over the top;<br>• these molecules travel faster than those below;<br>• pressure above the discus is lower than pressure below/pressure differential;<br>• creates a lift force;<br>• which keeps discus in the air for longer/increases the distance travelled.<br><br>or relevant diagram showing points above<br><br>i.e.<br>  <br> | **[6]** |

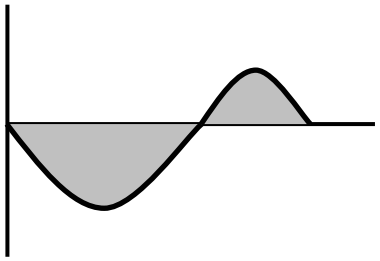
<table>
<tr><th colspan="4">Section C – Biomechanics (Option B2)</th></tr>
<tr><th>Question Number</th><th colspan="2">Answer</th><th>Marks</th></tr>
<tr><td rowspan="2">4(d)*</td><td colspan="2">Using your knowledge of biomechanics, justify the reasons why the following factors are important for an effective and efficient performance in sprinting.<br><br>front leg in recovery phase<br>  <br>back leg in drive phase</td><td></td></tr>
<tr><td>L4<br><br>18-20 marks</td><td>• There is detailed knowledge and good understanding of the topic.<br>• Knowledge is consistently and clearly linked with its effect on performance throughout the answer.<br>• The candidate demonstrates detailed knowledge and excellent understanding of the relationship between skill and strategy / composition.<br>• There is evidence of well-argued, independent opinion and judgements supported by sound examples.<br>• Accurate technical and specialist vocabulary is used throughout.<br>• There is a high standard of written communication.<br><br>Discriminators from L3 are likely to include:<br>• A more logical and detailed explanation of the theoretical factors behind each of the three coaching point;<br>• Each coaching point is discussed in similar detail<br>• A detailed account of impulse with one or more graphs possibly included;<br>• A full understanding of moment of inertia linked with sprinting leg action;<br>• Regular links within the topic area are made in relation to Newton’s Laws.</td><td></td></tr>
</table>

| Section C – Biomechanics (Option B2) | | | |
|---|---|---|---|
| **Question Number** | **Answer** | | **Marks** |
| | **L3**<br><br>13-17 marks | • There is good knowledge and clear understanding of the topic.<br>• Substantial knowledge is successfully linked with its effect on performance throughout the answer.<br>• The candidate demonstrates substantial knowledge and understanding of the relationship between skill and strategy / composition.<br>• Independent opinions and judgements will be present but towards the bottom of this level, not always supported by sound examples.<br>• Technical and specialist vocabulary is used with some accuracy.<br>• The quality of written communication is generally fluent with few errors.<br><br>*Discriminators from L2 are likely to include:*<br>• *A reasonably good explanation of the theoretical factors behind each of the three coaching points;*<br>• *There is evidence of understanding of impulse and an attempt at application has been made; The application of moment of inertia to leg action is relatively easy to follow;*<br>• *Some links are made within the topic area in relation to Newton's Laws.* | |
| | **L2**<br><br>**8-12 marks** | • There is basic knowledge and limited understanding of the topic.<br>• some knowledge is successfully linked with its effect on performance throughout the answer.<br>• The candidate demonstrates some knowledge and understanding of the relationship between skill and strategy / composition.<br>• Opinion and judgement may be unsupported.<br>• Technical and specialist vocabulary is used with limited success.<br>• The quality of written communication lacks fluency and there will be errors.<br><br>*Discriminators from L1 are likely to include:*<br>• *an attempt to explain the theoretical factors behind at least two of the three coaching points;*<br>• *although vocabulary may be simple there is an attempt to use the correct terminology in places.* | |

| Section C – Biomechanics (Option B2) | | | |
|---|---|---|---|
| **Question Number** | **Answer** | | **Marks** |
| | **L1**<br><br>**0-7 marks** | Limited knowledge and little understanding of the topic<br>• Some knowledge is linked with its effect on performance in some parts of the answer, but links may be tenuous.<br>• The candidate demonstrates limited and superficial knowledge and understanding of the relationship between skill and strategy / composition.<br>• Opinion and judgement are almost entirely absent.<br>• Little or no attempt is made to use technical and specialist vocabulary.<br>Errors in quality of written communication will be intrusive. | |
| | **Indicative content** (not intended to be exhaustive)<br>**wearing tight fitting clothing and running spikes**<br><br>**(clothing)**<br>• tight fitting clothing will minimise cross sectional area;<br>• air resistance/drag is dependent on cross sectional area;<br>• the smaller the cross sectional area, the less effect air resistance will have;<br>• air resistance acts opposite to the direction of motion/slows down the sprinter;<br>• for maximum acceleration the sprinter will want to keep air resistance to a minimum;<br>• the surface texture will also affect air resistance;<br>• a smooth surface such as lycra will minimise air resistance;<br>• smooth boundary layer;<br>• minimising surface drag.<br><br>**(spikes)**<br>• running spikes allow for greater friction;<br>• prevent any backward slipping movement;<br>• creating a larger forward force;<br>• causing maximum acceleration; | | |

| Section B – Biomechanics (Option B2) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **4(d)* cont'd** | **In the drive phase, pushing from a fully extended back leg**<br><br>**(Reaction forces)**<br>• powerful leg extension allows for optimal backward force to be exerted on the track;<br>• the track then applies an equal and opposite/forward force on the sprinter;<br>• if sprinter is running round a bend (200m/400m) they must push on the track towards the outside of the bend;<br>• the track then exerts an equal and opposite force directed towards the inside of the bend;<br>• Newton's 3rd Law;<br>• the runner can change direction;<br>• Newton's 1st Law.<br><br>**(impulse)**<br>• allows the foot to be in contact with the ground for a longer period of time;<br>• force applied for longer;<br>• generating a greater impulse;<br>• impulse = force x time;<br>• creating a greater change in momentum/acceleration;<br>• Newton's 1st Law;<br>• Newton's 2nd Law. | |

| Section C – Biomechanics (Option B2) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **4(d)* cont'd** | **(graphs)**<br>Graph: Force/time graph to show impulse acting on sprinter early in race.<br>Force (N)<br>  <br><br>• first part negative, as force produced by foot plant acts opposite the direction of motion;<br>• second part positive, as force produced by foot acts in the same direction as direction of motion;<br>• positive section > negative section;<br>• therefore overall net force in forward direction;<br>• causes acceleration in early part of race;<br>Graph: Force/time graph to show impulse acting on sprinter in middle stages of race.<br>Force (N)<br>  <br><br>• First part negative, as force produced by foot plant acts opposite the direction of motion;<br>• second part positive, as force produced by foot acts in the same direction as direction of motion;<br>• positive section = negative section;<br>• therefore no net force in forward direction;<br>• top speed reached in middle section of race; | |

| Section C – Biomechanics (Option B2) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **4(d)* cont'd** | Graph: Force/time graph to show impulse acting on sprinter in end stages of race.<br>Force (N)<br>  <br><br>• first part negative, as force produced by foot plant acts opposite the direction of motion;<br>• second part positive, as force produced by foot acts in the same direction as direction of motion;<br>• positive section < negative section;<br>• therefore overall net force in backward direction causing deceleration at end of race.<br><br>**In the recovery phase, having a high knee lift**<br><br>• to do with moment of inertia;<br>• the resistance of a rotating body to change its state of angular motion;<br>• influenced by the mass of the body;<br>• and the distribution of mass from the axis of rotation;<br>• the larger the mass the greater the moment of inertia;<br>• the further away the distribution of mass from the axis of rotation the greater the moment of inertia;<br>• in sprinting the leg rotates about the hip joint/horizontal axis;<br>• in the drive phase the leg is extended;<br>• the mass is a long way from the axis;<br>• it has a high moment of inertia;<br>• in the recovery phase, a high knee lift brings the distribution of mass closer to axis of rotation;<br>• reducing moment of inertia;<br>• making rotation faster/easier;<br>• producing a faster stride pattern. | **[20]** |
| | **Total** | **[35]** |

| Section B - Exercise and Sport Physiology (Option B3) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **5(a)** | **Describe the ATP/PC (alactic) energy system and give one reason why this system is used during high intensity physical activity such as sprinting.**<br>Description of system<br>1 mark per point max 4:<br>• an anaerobic reaction;<br>• takes place in the sarcoplasm;<br>• breakdown of phosphocreatine (high energy phosphate compound);<br>• exothermic reaction/energy released;<br>• energy used to resynthesize approximately one ADP to ATP (endothermic reaction);<br>• controlling enzyme, creatine kinase;<br>• speed of reaction.<br>1 mark per point max 1:<br>• short metabolic pathway/small compound;<br>• PC readily available in the cell;<br>• reaction does not require oxygen. | **[5]** |
| **5(b)** | **Identify the type of performer who would take RhEPO (recombinant erythropoietin).**<br>**Describe the effects that RhEPO has on the body and how it impacts on performance.**<br>1 mark per point max 1:<br>• identification of endurance athlete e.g. cycling, 10,000m runner.<br>1 mark per point max 3:<br>• Rh EPO (artificial hormone) stimulates the production of erythrocytes (red blood cells);<br>• this increases the athlete's haemoglobin levels;<br>• therefore increases the athlete's oxygen carrying capacity;<br>• more oxygen is delivered to the working muscles increasing their ability to take part in endurance events /increase in $VO_2$ max. | **[4]** |

| Section B - Exercise and Sport Physiology (Option B3) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| | | |
| **5(c)** | **Use Fig 1 to identify the differences in values for VO2 max with reference to both age and gender. Compare two physiological factors that account for the differences in VO2 max values as age changes and two physiological factors that account for the difference between male and female VO2 max values.** | |

Female (values in ml/kg/min)

| Age | Very Poor | Poor | Fair | Good | Excellent |
|---|---|---|---|---|---|
| 20-29 | <31.6 | 31.6 - 35.4 | 35.5 - 39.4 | 39.5 - 43.9 | 44.0 - 50.1 |
| 30-39 | <29.9 | 29.9 - 33.7 | 33.8 - 36.7 | 36.8 - 40.9 | 41.0 - 46.8 |
| 40-49 | <28.0 | 28.0 - 31.5 | 31.6 - 35.0 | 35.1 - 38.8 | 38.9 - 45.1 |
| 50-59 | <25.5 | 25.5 - 28.6 | 28.7 - 31.3 | 31.4 - 35.1 | 35.2 - 39.8 |
| 60-69 | <23.7 | 23.7 - 26.5 | 26.6 - 29.0 | 29.1 - 32.2 | 32.3 - 36.8 |
| 70+ | <21.2 | 21.2 - 23.7 | 23.8 - 26.5 | 26.6 - 30.1 | 30.2 - 36.6 |

Male (values in ml/kg/min)

| Age | Very Poor | Poor | Fair | Good | Excellent |
|---|---|---|---|---|---|
| 20-29 | <38.1 | 38.1 - 42.1 | 42.2 - 45.6 | 45.7 - 51.0 | 51.1 - 56.1 |
| 30-39 | <36.7 | 36.7 - 40.9 | 41.0 - 44.3 | 44.4 - 48.8 | 48.9 - 54.2 |
| 40-49 | <34.6 | 34.6 - 38.3 | 38.4 - 42.3 | 42.4 - 46.7 | 46.8 - 52.8 |
| 50-59 | <31.1 | 31.1 - 35.1 | 35.2 - 38.2 | 38.3 - 43.2 | 43.3 - 49.6 |
| 60-69 | <27.4 | 27.4 - 31.3 | 31.4 - 34.9 | 35.0 - 39.4 | 39.5 - 46.0 |
| 70+ | <23.7 | 23.7 - 27.9 | 28.0 - 30.8 | 30.9 - 35.9 | 36.0 - 42.3 |

Table Reference: The Physical Fitness Specialist Certification Manual, The Cooper Institute, Dallas TX, revised 2002

| Section B - Exercise and Sport Physiology (Option B3) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| | **Indicative content**<br>Identification of differences<br>• $VO_2$ max values for women are lower than $VO_2$ max;<br>• values for men of the same age;<br>• $VO_2$ max values for both men and women decrease with age;<br>• gender;<br>• women have lower max cardiac output than men;<br>• women have lower stroke volumes due to smaller left ventricle than men;<br>• women have lower blood volume than men;<br>• women have lower haemoglobin levels than men;<br>• tidal volumes and ventilatory volumes are smaller in women than men;<br>• women have higher percentage body fat than men. | |

<table>
<tr><th colspan="3">Section B - Exercise and Sport Physiology (Option B3)</th></tr>
<tr><th>Question Number</th><th>Answer</th><th>Marks</th></tr>
<tr><td>5(c) cont'd</td><td>• age;<br>• max heart rate drops by 5-7 beats per minute per decade;<br>• max stroke volume decreases due to an increase in peripheral resistance;<br>• reduced blood flow to active muscles;<br>• % of body fat increases;<br>• vital capacity/ FEV drops with age;<br>• residual volume increases, therefore there is less air that can be exchanged;<br>• deterioration in elastin makes muscle tissue less elastic.</td><td>[6]</td></tr>
<tr><td>5(d)</td><td colspan="2">Explain how the BMI (body mass index) of an individual is calculated and examine the long term health implications of childhood obesity. To what extent would a thirty minute a day exercise programme help the children to lead a healthier lifestyle?
<table>
<tr><td>L4<br><br>18-20 marks</td><td>• There is detailed knowledge and good understanding of the topic.<br>• The candidate demonstrates detailed knowledge and excellent understanding of factors that enable young people to be physically active.<br>• The candidate demonstrates excellent critical evaluation of current key influences affecting young people's involvement in physical activity.<br>• There is evidence of well-argued, independent opinion and judgements supported by sound examples.<br>• Accurate technical and specialist vocabulary is used throughout.<br>• There is a high standard of written communication.<br><br>Discriminators from L3 are likely to include:<br>• Accurate calculation of BMI;<br>• Identification and description of several health conditions as a result of being obese;<br>• A full understanding of the relationship between calorific intake and calorific output;<br>• Comprehensive explanation of the benefits of aerobic activity;<br>• Identification of and reasoned account as to why some activities e.g. high impact activities would not be suitable.</td></tr>
</table></td><td></td></tr>
</table>

| Section B - Exercise and Sport Physiology (Option B3) | | | |
|---|---|---|---|
| **Question Number** | **Answer** | | **Marks** |
| | **L3**<br><br>**13-17 marks** | • There is good knowledge and clear understanding of the topic.<br>• The candidate demonstrates substantial knowledge and understanding of factors enabling young people to be physically active.<br>• The candidate demonstrates good critical evaluation of current key influences affecting young people's involvement in physical activity.<br>• Independent opinions and judgements will be present but towards the bottom of this level, not always supported by sound examples.<br>• Technical and specialist vocabulary is used with some accuracy.<br>• Written communication is generally fluent with few errors.<br><br>*Discriminators from L2 are likely to include:*<br>• *Know the correct method of calculation of BMI;*<br>• *Identification of the main health conditions as a result of being obese;*<br>• *An understanding of the relationship between calorific intake and calorific output;*<br>• *An explanation of the benefits of aerobic activity;*<br>• *An example of an activity e.g. high impact activity, that would not be suitable for an obese child.* | |
| | **L2**<br><br>**8-12 marks** | • There is basic knowledge and limited understanding of the topic.<br>• The candidate demonstrates knowledge and understanding of some factors enabling young people to be physically active.<br>• The candidate demonstrates some critical evaluation of current key influences affecting young people's involvement in physical activity.<br>• Opinion and judgement will be unsupported.<br>• Technical and specialist vocabulary is used with limited success.<br>• Written communication lacks fluency and there will be errors.<br><br>*Discriminators from L1 are likely to include:*<br>• *An awareness of the height/weight ratio when calculating BMI (but not the precise calculation);*<br>• *Identification of a minimum of two health conditions as a result of being obese;*<br>• *Reference is made to the relationship between calorific intake and calorific output;*<br>• *Identification of aerobic activity as a means to lose weight.* | |

| Section B - Exercise and Sport Physiology (Option B3) | | | |
|---|---|---|---|
| **Question Number** | **Answer** | | **Marks** |
| | **L1**<br><br>**0-7 marks** | • There is limited knowledge and little understanding of the topic.<br>• The candidate demonstrates limited and superficial knowledge and understanding of some factors enabling young people to be physically active.<br>• The candidate demonstrates little relevant critical evaluation of current key influences affecting young people's involvement in physical activity.<br>• Opinion and judgement are almost entirely absent.<br>• Little or no attempt is made to use technical and specialist vocabulary.<br>• Errors in Written Communication will be intrusive. | |
| | **Indicative content**<br>• BMI is a measure of body fat based on height and weight that applies to both men and women;<br>• it is your weight in kilograms divided by the square of your height in metres;<br>• you are obese if your BMI is 30 or above.<br>Childhood obesity could lead to the following conditions<br>• high blood pressure (additional strain on the CVS);<br>• high LDL-cholesterol/atherosclerosis (linked to CHD);<br>• high blood glucose/diabetes;<br>• premature CHD(coronary heart disease)*; — *Caused by high fat/sugar diet*<br>• increase in number of fat cells;<br>• joint degeneration/osteoarthritis;<br>• lower back pain caused by additional weight and poor posture;<br>• obese children are less mobile and have reduced flexibility; — *Weight related*<br>• obese children are less active as they have to work harder to carry; the additional weight therefore problem gets worse;<br>• certain types of cancer. | | |

| Section B - Exercise and Sport Physiology (Option B3) | | |
|---|---|---|
| **Question Number** | **Answer** | **Marks** |
| **5(d) cont'd** | To what extent would exercise help:<br>• children will only lose weight when their calorific output is higher than their calorific intake;<br>• calorific output equals BMR (basal metabolic rate) plus additional energy used during activity so exercise can lead to weight reduction;<br>• exercise should be continuous, sub-maximal activity to result in adaptations to the CVR systems and improvement in $VO_2$ max;<br>• exercise reduces hypertension;<br>• high intensity, high impact activity might put too much stress on joints;<br>• children will only benefit from the exercise if they don't eat more to compensate for calorie output;<br>• activity should not initially be weight bearing because of stress on joints e.g. swim, cycle;<br>• gradually increase intensity of activity as fitness levels improve (aerobic capacity/strength/flexibility) and weight is reduced (less adipose tissue). | **[20]** |
| | **Section Exercise and Sport Physiology Total** | **[35]** |
| | **Paper Total** | **[105]** |

**Assessment Objectives Grid (includes QWC)**

| Question | AO1 | AO2 | AO3 | Total |
|---|---|---|---|---|
| 1(a) | 4 | 0 | 0 | 4 |
| 1(b) | 5 | 0 | 0 | 5 |
| 1(c) | 2 | 0 | 4 | 6 |
| 1(d) | 5 | 0 | 15 | 20 |
| 2(a) | 4 | 0 | 0 | 4 |
| 2(b) | 2 | 0 | 4 | 6 |
| 2(c) | 5 | 0 | 0 | 5 |
| 2(d) | 5 | 0 | 15 | 20 |
| 3(a) | 4 | 0 | 0 | 4 |
| 3(b) | 5 | 0 | 0 | 5 |
| 3(c) | 2 | 0 | 4 | 6 |
| 3(d) | 5 | 0 | 15 | 20 |
| 4(a) | 5 | 0 | 0 | 5 |
| 4(b) | 4 | 0 | 0 | 4 |
| 4(c) | 2 | 0 | 4 | 6 |
| 4(d) | 5 | 0 | 15 | 20 |
| 5(a) | 5 | 0 | 0 | 5 |
| 5(b) | 4 | 0 | 0 | 4 |
| 5(c) | 2 | 0 | 4 | 6 |
| 5(d) | 5 | 0 | 15 | 20 |
| Totals | 48 (80 x 3/5) | 0 | 57 (95 x 3/5) | 105 (175 x 3/5) |