

# Physical Education

Advanced GCE

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

## **Mark Scheme for January 2013**

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OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

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## Annotations

Annotation	Meaning
	= Correct response
	= Not answering the question
	= Benefit of the doubt
	= Repeat
	= Too Vague
	= Development (levels scheme)
	= Significant amount of material which does not answer the question
	= Noted but no credit given
	= Level 1 (levels scheme)
	= Level 2 (levels scheme)
	= Level 3 (levels scheme)
	= Level 4 (levels scheme)
	= Practical example (levels scheme)
	= Evaluative point (levels scheme)
	= Independent opinion (levels scheme)

**Subject-specific Marking Instructions****Marking responses 'a–c'; points marked questions**

An element of professional judgement is required in the marking of G453. Correct answers should always be rewarded irrespective of whether or not they appear on the mark scheme. If you are in doubt about the validity of any answer then consult your Team Leader (Supervisor) by phone or e-mail.

**Marking response 'd'; levels of response marked question**

It is quite possible for an excellent and valid answer to contain knowledge and arguments which do not appear in the indicative content on the mark scheme. Each answer must be assessed on its own merits according to the generic descriptors and discriminators.

The levels of response descriptors are cumulative, ie a description at one level builds on or improves the descriptions at lower levels. Not all qualities listed in a level must be demonstrated in an answer for it to fall in that level.

Candidates will take different approaches to achieve within the same level. Some will adopt a less focused approach but demonstrate a wide range of knowledge others may adopt a more focused approach using a narrower range of well-developed knowledge.

Approach to marking levels of response questions:

- read the candidate response in full;
- working from the top down and using a *best-fit* approach, refer to the generic descriptors and discriminators to determine the level;
- re-read the answer, highlighting credit worthy aspects of the response in relation to knowledge, understanding, development, examples, etc;
- confirm or revise initial decision re level;
- determine the mark within the level as per the guidance in 10 (above), with reference to the discriminators, and, again, using a *best-fit* approach.

## Section A Historical Studies (Option A1)

Question		Answer	Marks	Guidance																								
1	(a)	<p><b>5 marks for 5 of: nature &amp; development of pedestrianism</b>  <b>Sub max 4 marks for:</b></p> <table border="1"> <tr> <td>1. (footmen)</td> <td>footmen were used as messengers or footman raced each other</td> </tr> <tr> <td>2. (patronage/occupational)</td> <td>lower class runners were patronised or employed (by gentry)/occupational/get paid/sponsored</td> </tr> <tr> <td>3. (gentlemen)</td> <td>(some) upper class competed to test themselves or to enhance their social status or reputation</td> </tr> <tr> <td>4. (festivals)</td> <td>festival occasions/exciting contest/ linked with other activities such as bare fist fighting or horse racing</td> </tr> <tr> <td>5. (<b>named venues</b>)</td> <td>(developed at venues such as): Newmarket Racecourse or the Agricultural Hall, London.</td> </tr> <tr> <td>6. (crowds)</td> <td>attracted (large) crowds (of up to 10,000)/spectators/popular spectacle</td> </tr> <tr> <td>7. (wagering)</td> <td>(widespread/high levels of) wagering or gambling</td> </tr> <tr> <td>8. (Allardice/Deerfoot as inspiration )</td> <td>(Robert) Barclay / Allardice – walked 1000mils in 1000(consecutive) hours (for 1000 guineas)/Deerfoot – American Indian runner/Deerfoot toured England and helping to inspire early athletics both helped to inspire others or popularise activity</td> </tr> <tr> <td>9. (cheating/violence/ corruption)</td> <td>match fixing or cheating or violence in crowd common/pedestrianism fell into disrepute</td> </tr> <tr> <td>10. (rules)</td> <td>rules established (by organisers)/unusual because it had (established) rules</td> </tr> <tr> <td>11. (prizes)</td> <td>prize money or fame or survival (money for food) for winners / rags to riches</td> </tr> <tr> <td>12. (novelty races)</td> <td>novelty races held/eg walking backwards or hopping</td> </tr> </table>	1. (footmen)	footmen were used as messengers or footman raced each other	2. (patronage/occupational)	lower class runners were patronised or employed (by gentry)/occupational/get paid/sponsored	3. (gentlemen)	(some) upper class competed to test themselves or to enhance their social status or reputation	4. (festivals)	festival occasions/exciting contest/ linked with other activities such as bare fist fighting or horse racing	5. ( <b>named venues</b> )	(developed at venues such as): Newmarket Racecourse or the Agricultural Hall, London.	6. (crowds)	attracted (large) crowds (of up to 10,000)/spectators/popular spectacle	7. (wagering)	(widespread/high levels of) wagering or gambling	8. (Allardice/Deerfoot as inspiration )	(Robert) Barclay / Allardice – walked 1000mils in 1000(consecutive) hours (for 1000 guineas)/Deerfoot – American Indian runner/Deerfoot toured England and helping to inspire early athletics both helped to inspire others or popularise activity	9. (cheating/violence/ corruption)	match fixing or cheating or violence in crowd common/pedestrianism fell into disrepute	10. (rules)	rules established (by organisers)/unusual because it had (established) rules	11. (prizes)	prize money or fame or survival (money for food) for winners / rags to riches	12. (novelty races)	novelty races held/eg walking backwards or hopping	5	
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(b)	<p><b>5 marks for 5 of: Comparison of characteristics</b>  <b>sub max 3 for 3 from:</b></p> <table border="1" data-bbox="353 657 1420 1249"> <thead> <tr> <th data-bbox="353 657 734 695">Popular Recreation</th> <th data-bbox="734 657 1420 695">Rational Recreation</th> </tr> </thead> <tbody> <tr> <td data-bbox="353 695 734 730">1. local</td> <td data-bbox="734 695 1420 730">regional/national/international</td> </tr> <tr> <td data-bbox="353 730 734 799">2. simple or unwritten rules/few rules</td> <td data-bbox="734 730 1420 799">(written) rules/NGBs/codification/administration</td> </tr> <tr> <td data-bbox="353 799 734 834">3. occasional</td> <td data-bbox="734 799 1420 834">regular</td> </tr> <tr> <td data-bbox="353 834 734 903">4. cruel/violent</td> <td data-bbox="734 834 1420 903">refined/respectable/civilised/ non- violent / violence frowned upon</td> </tr> <tr> <td data-bbox="353 903 734 938">5. rural</td> <td data-bbox="734 903 1420 938">urban/sub-urban</td> </tr> <tr> <td data-bbox="353 938 734 1007">6. occupational</td> <td data-bbox="734 938 1420 1007">for leisure/ (opportunities for) professionalism</td> </tr> <tr> <td data-bbox="353 1007 734 1075">7. courtly and popular</td> <td data-bbox="734 1007 1420 1075">Exclusive or amateurism and professionalism / middle class emergence</td> </tr> <tr> <td data-bbox="353 1075 734 1144">8. wagering</td> <td data-bbox="734 1075 1420 1144">reduced wagering/ gambling controlled</td> </tr> <tr> <td data-bbox="353 1144 734 1249">9. natural/simple/cheap</td> <td data-bbox="734 1144 1420 1249">purpose built facilities/ (more) sophisticated or organised/technology used or involved</td> </tr> </tbody> </table>	Popular Recreation	Rational Recreation	1. local	regional/national/international	2. simple or unwritten rules/few rules	(written) rules/NGBs/codification/administration	3. occasional	regular	4. cruel/violent	refined/respectable/civilised/ non- violent / violence frowned upon	5. rural	urban/sub-urban	6. occupational	for leisure/ (opportunities for) professionalism	7. courtly and popular	Exclusive or amateurism and professionalism / middle class emergence	8. wagering	reduced wagering/ gambling controlled	9. natural/simple/cheap	purpose built facilities/ (more) sophisticated or organised/technology used or involved	5	<p><b>Sub max 3 for comparison</b></p> <p><b>Award 1 mark max for indirect comparisons (eg occasional v regional)</b></p> <p><b>Direct comparisons needed for next 2 marks (eg occasional v regular)</b>  <b>1 Do not accept 'not local' or any other negatives for other points.</b>  <b>2. Do not accept:</b> for Popular recreation – 'no rules'</p>
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	<p>Explain how <u>two</u> late nineteenth century socio-cultural factors continue to influence sport and recreation today</p> <p>sub max 2 for:</p> <table border="1" data-bbox="353 379 1391 1139"> <thead> <tr> <th data-bbox="353 379 656 448">Factor</th> <th data-bbox="656 379 1391 448">Explanation – accept any suitable explanations – (examples below)</th> </tr> </thead> <tbody> <tr> <td data-bbox="353 448 656 517">10. time</td> <td data-bbox="656 448 1391 517">eg some people are still money rich but time poor or people have more free time now</td> </tr> <tr> <td data-bbox="353 517 656 619">11. transport</td> <td data-bbox="656 517 1391 619">eg presence or absence of bus services today similar to limited transport in earlier days or more global transport today</td> </tr> <tr> <td data-bbox="353 619 656 756">12. literacy/admin /media.</td> <td data-bbox="656 619 1391 756">eg how improved organisation and administration of sport in the UK impacted on success of 2012 Olympic Games or newspaper influences now more multi-media influences</td> </tr> <tr> <td data-bbox="353 756 656 825">13. more civilised society</td> <td data-bbox="656 756 1391 825">eg continued outlawing of blood or baiting sports</td> </tr> <tr> <td data-bbox="353 825 656 927">14. class</td> <td data-bbox="656 825 1391 927">eg feelings of exclusion from or inclusion in certain sports such as polo similar to impact of class in earlier days</td> </tr> <tr> <td data-bbox="353 927 656 995">15. facilities</td> <td data-bbox="656 927 1391 995">eg presence or absence of (suitable) facilities still an issue today</td> </tr> <tr> <td data-bbox="353 995 656 1064">16. professional sport</td> <td data-bbox="656 995 1391 1064">eg increase in professional sport and/or win ethic and/or deviance</td> </tr> <tr> <td data-bbox="353 1064 656 1139">17. wagering</td> <td data-bbox="656 1064 1391 1139">eg increasing influence of gambling/wagering and more opportunities for gambling / wagering</td> </tr> </tbody> </table>	Factor	Explanation – accept any suitable explanations – (examples below)	10. time	eg some people are still money rich but time poor or people have more free time now	11. transport	eg presence or absence of bus services today similar to limited transport in earlier days or more global transport today	12. literacy/admin /media.	eg how improved organisation and administration of sport in the UK impacted on success of 2012 Olympic Games or newspaper influences now more multi-media influences	13. more civilised society	eg continued outlawing of blood or baiting sports	14. class	eg feelings of exclusion from or inclusion in certain sports such as polo similar to impact of class in earlier days	15. facilities	eg presence or absence of (suitable) facilities still an issue today	16. professional sport	eg increase in professional sport and/or win ethic and/or deviance	17. wagering	eg increasing influence of gambling/wagering and more opportunities for gambling / wagering		<p>Sub max 2 for post industrial factors that continue to impact today</p> <p>Both factor <u>and</u> explanation needed for each mark</p>
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(c)	<p><b>5 marks for 5 of:</b>  <b>Sub max 4 for development and impact</b></p> <p><b>Explain the development of public baths – sub sub max 3 for:</b></p> <table border="1" data-bbox="353 347 1420 762"> <tr> <td data-bbox="353 347 658 416">1. (overcrowding)</td> <td data-bbox="658 347 1420 416">overcrowding/ towns grew (as result of industrialisation)</td> </tr> <tr> <td data-bbox="353 416 658 485">2. (washing)</td> <td data-bbox="658 416 1420 485">lack of washing facilities/ only wealthy had 'bathrooms'</td> </tr> <tr> <td data-bbox="353 485 658 553">3. (pollution)</td> <td data-bbox="658 485 1420 553">rivers or natural water supplies polluted/ rivers no longer suitable for washing</td> </tr> <tr> <td data-bbox="353 553 658 622">4. (disease/cholera)</td> <td data-bbox="658 553 1420 622">problem of disease or cholera/ major cholera epidemics (1832 &amp; 1849)</td> </tr> <tr> <td data-bbox="353 622 658 762">5. (Wash Houses Act)</td> <td data-bbox="658 622 1420 762">Wash Houses Act/s or washing facilities built/ local authorities applied for grants/ plunge baths and/or public wash-houses with laundry and drying facilities</td> </tr> </table> <p><b>Impact of public baths – sub sub max 3</b></p> <table border="1" data-bbox="353 794 1420 1209"> <tr> <td data-bbox="353 794 658 895">6. (reform/improvement)</td> <td data-bbox="658 794 1420 895">social reform/part of civilising process/ prevention of disease/improved public health/improved hygiene</td> </tr> <tr> <td data-bbox="353 895 658 932">7. (absenteeism)</td> <td data-bbox="658 895 1420 932">absenteeism (from ill health) reduced</td> </tr> <tr> <td data-bbox="353 932 658 968">8. (safety)</td> <td data-bbox="658 932 1420 968">public baths safer than rivers</td> </tr> <tr> <td data-bbox="353 968 658 1069">9. (class/penny baths)</td> <td data-bbox="658 968 1420 1069">first and second class facilities/ cheap or affordable entrance fees/ 1 penny for 2<sup>nd</sup> class facilities/penny baths</td> </tr> <tr> <td data-bbox="353 1069 658 1137">10. (swimming)</td> <td data-bbox="658 1069 1420 1137">(plunge) baths for swimming or recreational use/ASA formed (1884)/clubs or galas or competitions developed</td> </tr> <tr> <td data-bbox="353 1137 658 1209">11. (local amenity)</td> <td data-bbox="658 1137 1420 1209">bath houses or public baths improved status of town/appeasement or most towns built a public bath</td> </tr> </table>	1. (overcrowding)	overcrowding/ towns grew (as result of industrialisation)	2. (washing)	lack of washing facilities/ only wealthy had 'bathrooms'	3. (pollution)	rivers or natural water supplies polluted/ rivers no longer suitable for washing	4. (disease/cholera)	problem of disease or cholera/ major cholera epidemics (1832 & 1849)	5. (Wash Houses Act)	Wash Houses Act/s or washing facilities built/ local authorities applied for grants/ plunge baths and/or public wash-houses with laundry and drying facilities	6. (reform/improvement)	social reform/part of civilising process/ prevention of disease/improved public health/improved hygiene	7. (absenteeism)	absenteeism (from ill health) reduced	8. (safety)	public baths safer than rivers	9. (class/penny baths)	first and second class facilities/ cheap or affordable entrance fees/ 1 penny for 2 <sup>nd</sup> class facilities/penny baths	10. (swimming)	(plunge) baths for swimming or recreational use/ASA formed (1884)/clubs or galas or competitions developed	11. (local amenity)	bath houses or public baths improved status of town/appeasement or most towns built a public bath	5	<p><b>Sub max 4 for development and impact of public baths</b></p>
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<b>1 (d)* Levels of Response</b>	
<p><b>Level 4 (18–20 marks)</b> A comprehensive answer:</p> <ul style="list-style-type: none"> <li>• detailed knowledge &amp; excellent understanding</li> <li>• detailed analysis and excellent critical evaluation</li> <li>• well–argued, independent opinion and judgements which are well supported by relevant practical examples</li> <li>• very accurate use of technical and specialist vocabulary</li> <li>• high standard of written communication throughout.</li> </ul>	<p><b>At Level 4 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• detailed knowledge and excellent understanding of the topic</li> <li>• successful discussion of opportunities for developing character and values</li> <li>• effective evaluation of the development of character and values in schools today</li> <li>• Sound structure and balance.</li> </ul>
<p><b>Level 3 (13–17 marks)</b> A competent answer:</p> <ul style="list-style-type: none"> <li>• good knowledge and clear understanding</li> <li>• good analysis and critical evaluation</li> <li>• independent opinions and judgements will be present but may not always be supported by relevant practical examples</li> <li>• generally accurate use of technical and specialist vocabulary</li> <li>• written communication is generally fluent with few errors.</li> </ul>	<p><b>At Level 3 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• good knowledge and understanding of the topic</li> <li>• some success at discussing opportunities for developing character and values</li> <li>• competent evaluation of the development of character and values in schools today</li> <li>• competent structure.</li> </ul>
<p><b>Level 2 (8–12 marks)</b> A limited answer:</p> <ul style="list-style-type: none"> <li>• limited knowledge and understanding</li> <li>• some evidence of analysis and critical evaluation</li> <li>• opinion and judgement given but often unsupported by relevant practical examples</li> <li>• technical and specialist vocabulary used with limited success</li> <li>• written communication lacks fluency and contains errors.</li> </ul>	<p><b>At Level 2 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• limited knowledge and understanding of the topic</li> <li>• an attempt at discussing opportunities for developing character and values</li> <li>• an attempt at evaluating the development of character and values in schools today</li> <li>• an attempt at structuring answer.</li> </ul>
<p><b>Level 1 (0–7 marks)</b> A basic answer:</p> <ul style="list-style-type: none"> <li>• basic knowledge and little understanding</li> <li>• little relevant analysis or critical evaluation</li> <li>• little or no attempt to give opinion or judgement</li> <li>• little or no attempt to use technical and specialist vocabulary</li> <li>• errors in written communication will be intrusive.</li> </ul>	<p><b>At Level 1 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• basic knowledge and understanding of the topic</li> <li>• basic discussion of opportunities for developing character or values</li> <li>• little or no attempt at evaluating of the development of character or values in schools today</li> <li>• basic or no structure.</li> </ul>

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	8. Team games and sports/living in houses/belonging to school Loyalty <ul style="list-style-type: none"> <li>• ...to team or house</li> <li>• ...to school</li> <li>• (and ultimately)... to country eg fighting for country in WW1.</li> </ul>		
	9. Team Games and sports/living conditions/boarding situation/bullying Chance to develop or show courage or manliness <ul style="list-style-type: none"> <li>• facing up to or coping with danger/need to face up to challenging situations eg bullying from older boys</li> <li>• harsh discipline or flogging or beatings from masters</li> <li>• Toughening up/preparation for realities of adulthood</li> <li>• facing up to physical challenges in sports and games eg facing up to fast bowler in cricket/coping with hard tackles in rugby or other suitable examples.</li> </ul>		
	10. Team games and sports/living in houses Trust <ul style="list-style-type: none"> <li>• trusting team-mates to protect you eg in a rugby scrum or other suitable example.</li> </ul>		
	11. Team games and sports Teamwork <ul style="list-style-type: none"> <li>• putting others' needs before own/selflessness</li> <li>• treating others as you would like to be treated/fairness to all eg passing ball so team mate scores or other suitable example.</li> </ul>		
	12. Team games/house situation/reform/coaching Respect <ul style="list-style-type: none"> <li>• for masters/for opponents/for professionals or coaches eg cricket professionals.</li> </ul>		
	13. Team games and sports/Spartan conditions Self-realisation/knowing your strengths and weaknesses.		
	14. Reform Games used as vehicle for social control or for improved behaviour <ul style="list-style-type: none"> <li>• discipline on 'pitch' helped to control behaviour off pitch</li> <li>• channelling aggression/ensuring boys went to bed exhausted.</li> </ul>		

Question		Answer	Marks	Guidance
	15. Sixth form	Role models or authority figures eg sports captain/older boys/assistant masters.		
	16. Boarding situation	Independence/self sufficiency <ul style="list-style-type: none"> <li>• living away from home (from young age)</li> <li>• having to cope with difficulties.</li> </ul>		
	17. Living conditions	Spartan conditions <ul style="list-style-type: none"> <li>• austere or basic environment/harsh or difficult circumstances eg cold dormitories/simple food</li> <li>• bullying and brutality eg fagging.</li> </ul>		
	18. Head Master influence	aims or Influence of Headmasters eg Dr Arnold of Rugby School <ul style="list-style-type: none"> <li>• Arnold used games (as a vehicle to achieve social control)</li> <li>• during stage two/1828–1842.</li> </ul>		
	19. Old boys	Influence of Old Boys <ul style="list-style-type: none"> <li>• (having had) opportunities to learn administrative skills</li> <li>• melting pot influence of universities</li> <li>• standardisation of rules/OBs established NGBs or rules of (many) sports and/or games eg FA or other suitable example</li> <li>• OBs established (many) clubs</li> <li>• community or factory teams eg Blackheath Rugby Club or other suitable example.</li> </ul>		
	20. (case studies)	Reference to case study activities – swimming/athletics/football or rugby/cricket/tennis <ul style="list-style-type: none"> <li>• Accept specific examples of how character can be developed and other values learned via case study sports and games.</li> </ul>		

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## Section A Comparative Studies (Option A2)

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	6. (school provision)	SEPEP/participation as well as officiating or/and coaching/after school clubs/modified games/fundamental motor skills programme/healthy lifestyle emphasis/	National Curriculum/participation as well as officiating or/and coaching/(some) equivalents to fundamental motor skills programme (eg by SSCOs in some areas)/healthy lifestyle emphasis/		
	7. (school opps)	Schools focus on participation for all (in a wide range of activities)/			
			Inter school sport eroded in some schools		
	8. (role models)	Sport person in School programme/role models into school	No specific comparative programme/Individual schools or partnerships arrange visits by elite performers or role models or coaches		
	9. (sharing)	Sharing of facilities eg schools with clubs/			
			state schools with independent schools		
	10. (equality)	Equality (of opportunity) encouraged/indigenous or disability or gender programmes or programmes for minority groups			

<b>2 (d)* Levels of Response</b>	
<p><b>Level 4 (18–20 marks)</b> A comprehensive answer:</p> <ul style="list-style-type: none"> <li>• detailed knowledge &amp; excellent understanding</li> <li>• detailed analysis and excellent critical evaluation</li> <li>• well–argued, independent opinion and judgements which are well supported by relevant practical examples</li> <li>• very accurate use of technical and specialist vocabulary</li> <li>• high standard of written communication throughout.</li> </ul>	<p><b>At Level 4 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Detailed knowledge and understanding of all aspects of the question</li> <li>• Direct comparisons successfully made of development and contemporary status of rugby union</li> <li>• Excellent range of evaluative comments about RWC influencing the game</li> <li>• Sound structure and balance between question parts.</li> </ul>
<p><b>Level 3 (13–17 marks)</b> A competent answer:</p> <ul style="list-style-type: none"> <li>• good knowledge and clear understanding</li> <li>• good analysis and critical evaluation</li> <li>• independent opinions and judgements will be present but may not always be supported by relevant practical examples</li> <li>• generally accurate use of technical and specialist vocabulary</li> <li>• written communication is generally fluent with few errors.</li> </ul>	<p><b>At Level 3 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Good knowledge and understanding of most aspects of the question</li> <li>• Direct comparisons made of development and contemporary status of rugby union made with some success</li> <li>• Good range of evaluative comments about RWC influencing the game</li> <li>• An attempt at structuring/answering question with balance between question parts.</li> </ul>
<p><b>Level 2 (8–12 marks)</b> A limited answer:</p> <ul style="list-style-type: none"> <li>• limited knowledge and understanding</li> <li>• some evidence of analysis and critical evaluation</li> <li>• opinion and judgement given but often unsupported by relevant practical examples</li> <li>• technical and specialist vocabulary used with limited success</li> <li>• written communication lacks fluency and contains errors.</li> </ul>	<p><b>At Level 2 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Limited knowledge and understanding of some aspects of the question</li> <li>• Direct comparisons made of development and contemporary status of rugby union made with limited success</li> <li>• Some evidence of evaluation of RWC on game</li> <li>• An attempt at structure but not necessarily with balance between question parts.</li> </ul>
<p><b>Level 1 (0–7 marks)</b> A basic answer:</p> <ul style="list-style-type: none"> <li>• basic knowledge and little understanding</li> <li>• little relevant analysis or critical evaluation</li> <li>• little or no attempt to give opinion or judgement</li> <li>• little or no attempt to use technical and specialist vocabulary</li> <li>• errors in written communication will be intrusive.</li> </ul>	<p><b>At Level 1 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Basic knowledge and understanding of some aspects of the question</li> <li>• Stand alone points about development and contemporary status of rugby union in the two countries dominate/comparisons basic or absent</li> <li>• Little or no attempt at evaluation of RWC on game</li> <li>• Little or no attempt at structuring answer or achieving balance between question parts.</li> </ul>

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	7. (friendly to league)	'friendly' matches dominated/traditional or long standing fixture lists <ul style="list-style-type: none"> <li>• Leagues from 1990s</li> <li>• Including a sponsored European League eg Heineken Cup</li> <li>• Super 15s in southern hemisphere.</li> </ul>			
	<b>Contemporary status / popularity</b>				
	8. (popularity)	Less 'popular' than other male team games eg less popular than Rugby League	More 'popular' overall than Rugby League <ul style="list-style-type: none"> <li>• In spite of RL growing in popularity in recent years.</li> <li>• Rugby League more popular in the North</li> </ul>		
	9. (geography)	A 'geographically selective' game/not popular throughout whole of Australia eg Popular in NSW	Played throughout the country		
	10. (national sides)	High status for wallabies (men's team) <ul style="list-style-type: none"> <li>• Less status for Wallaroos (women's team).</li> </ul>	High status of men's national side <ul style="list-style-type: none"> <li>• Less status for women's side.</li> </ul>		
	11. (media)	Intense media interest <ul style="list-style-type: none"> <li>• Media interest and investment has increased the popularity of the game in both countries</li> <li>• Part of the 'golden triangle'</li> <li>• Reliant on media revenue and corporate sponsorship.</li> </ul>			
	12. (laws)	Laws of game modified in recent years to make it more media friendly or more attractive to spectators <ul style="list-style-type: none"> <li>• game has been 'cleaned up' in recent years. <b>BUT</b> – incidences of foul or dangerous play still occur eg accept suitable example</li> </ul>			

Question	Answer	Marks	Guidance
	<p data-bbox="389 244 1187 312"><b>Evaluation of influence of Rugby World Cup on the game</b> (Webb Ellis trophy)</p> <p data-bbox="389 312 1653 453">13. (profile/ audience) Has brought about higher profile for rugby (due to media attention)/huge global audience / role models</p> <ul data-bbox="689 384 1420 453" style="list-style-type: none"> <li>• Over 3 billion people watch it on TV</li> <li>• An extended event/tournament lasts over a month.</li> </ul> <p data-bbox="389 453 1653 767">14. (economic/ funding) Economic potential/potential for profit/money to game</p> <ul data-bbox="689 491 1536 767" style="list-style-type: none"> <li>• For investors</li> <li>• For local businesses</li> <li>• eg networking opportunities</li> <li>• For sponsors</li> <li>eg accept suitable example such as O<sup>2</sup></li> <li>• ticket opportunities for sponsors or other corporate partners</li> <li>eg<sub>s</sub> of other spin offs such as books or replica kit etc</li> <li><b>BUT</b> – may be limited during recession or credit crunch.</li> </ul> <p data-bbox="389 767 1653 943">15. (participation) Increased participation</p> <ul data-bbox="689 807 1568 943" style="list-style-type: none"> <li>• Increased interest</li> <li>eg after England won (in 2003)</li> <li>• Increased opportunity or participation by women/growth of the women's game.</li> </ul> <p data-bbox="389 943 1653 1187">16. (opportunity) Chance for elite to represent country in global sporting event</p> <p data-bbox="689 983 752 1010"><b>BUT</b></p> <ul data-bbox="689 1018 1637 1187" style="list-style-type: none"> <li>• emphasis on elite (not participation) may not be good</li> <li>• arguably players can be pushed too hard</li> <li>eg encouraged to train or play when injured</li> <li>• Lombardian or win at all costs ethic may or may not be good for the game.</li> </ul> <p data-bbox="389 1187 1653 1257">17. (IRB/RFU) (arguably) Increased efficiency of the international Rugby Board (IRB) or Rugby Football Union (RFU)</p> <p data-bbox="389 1257 1653 1394">18. (scandals/ injuries) The game suffers if there are scandals at a World Cup</p> <ul data-bbox="734 1297 1308 1329" style="list-style-type: none"> <li>• Eg - behaviour of England players in 2011</li> </ul> <p data-bbox="689 1329 1527 1394"><b>BUT</b> – game benefits from showing incidences of sportsmanship</p> <p data-bbox="689 1361 1048 1394">eg accept suitable example</p>		

Question			Answer	Marks	Guidance
		19. (showpiece)	Influence as showpiece event <ul style="list-style-type: none"> <li>• significant growth since it started (in 1987).</li> </ul>		
		20. (org and admin)	Improve organisation or administration of the game eg to develop youth scheme		
		21. (facilities)	Upgraded facilities <b>BUT</b> – possibility of wasted facilities after the event		

## Section B Sports Psychology (Option B1)

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3	(a)	<p><b>4 marks for 4 of:</b></p> <p><b>Methods that might be used to eliminate aggressive tendencies in sports performers.</b></p> <table border="1"> <tr> <td>1. (lower arousal – cognitive)</td> <td>Lower arousal/calm down/mentally relax/ reduce importance eg you calm down when you feel angry (in tennis)</td> </tr> <tr> <td>2. (somatic/physical)</td> <td>Physically relax/progressive muscular relaxation/taking deep breaths or slowing down the breathing rate / biofeedback eg A player takes deep breaths when he feels angry (in cricket)</td> </tr> <tr> <td>3. (cognitive)</td> <td>Imagery/mental rehearsal or mental practice/meditate/visualisation eg A (football) player will think through their defensive position</td> </tr> <tr> <td>4. (attentional control)</td> <td>Selective attention/concentration/block out distractions. eg A rugby forward ignores verbal abuse from another player</td> </tr> <tr> <td>5. (punish)</td> <td>Use of punishment/negative feedback eg A player receiving a fine for hitting an opponent in (netball)</td> </tr> <tr> <td>6. (educate)</td> <td>Educate about outcomes/teach assertive techniques/make clear the consequences of aggression / channelled aggression. eg Show a player the consequences of hitting an opponent in (rugby)</td> </tr> <tr> <td>7. (removal)</td> <td>Remove from situation/cues or remove cues or change position eg To substitute an aggressive player (in hockey)</td> </tr> <tr> <td>8. (reinforce non-aggression)</td> <td>Positively reinforce non-aggression/assertion or praise/reward when they channel aggression/control themselves/use of negative reinforcement</td> </tr> </table>	1. (lower arousal – cognitive)	Lower arousal/calm down/mentally relax/ reduce importance eg you calm down when you feel angry (in tennis)	2. (somatic/physical)	Physically relax/progressive muscular relaxation/taking deep breaths or slowing down the breathing rate / biofeedback eg A player takes deep breaths when he feels angry (in cricket)	3. (cognitive)	Imagery/mental rehearsal or mental practice/meditate/visualisation eg A (football) player will think through their defensive position	4. (attentional control)	Selective attention/concentration/block out distractions. eg A rugby forward ignores verbal abuse from another player	5. (punish)	Use of punishment/negative feedback eg A player receiving a fine for hitting an opponent in (netball)	6. (educate)	Educate about outcomes/teach assertive techniques/make clear the consequences of aggression / channelled aggression. eg Show a player the consequences of hitting an opponent in (rugby)	7. (removal)	Remove from situation/cues or remove cues or change position eg To substitute an aggressive player (in hockey)	8. (reinforce non-aggression)	Positively reinforce non-aggression/assertion or praise/reward when they channel aggression/control themselves/use of negative reinforcement	4	<p><b>Pt1 does not require a practical example</b></p> <p><b>All others must show a practical example that helps to describe for marks to be awarded.</b></p> <p><b>Must be description rather than a list for marks to be awarded.</b></p>
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	<p>eg Praise given for walking away from trouble (in a rugby match)</p> <p>9. (role models) Use positive role models to show assertion eg The captain in your football team never shows aggression</p> <p>10. (goals) Use (SMART) goal/target setting to control aggression / give responsibility eg Give a player the target of not getting a yellow card in the next match or give the captaincy to an aggressive player</p> <p>11. (self-talk) Use positive self-talk or raise self esteem eg tell yourself to stay calm (in golf)</p>																
(b)	<p><b>5 marks for 5 of:</b></p> <p><b>Explanation of state anxiety (sub max 2)</b></p> <table border="1" data-bbox="376 826 1485 1209"> <tr> <td data-bbox="376 826 712 898">1. (situation)</td> <td data-bbox="712 826 1485 898">Anxiety arising from a specific situation/ incident/temporary situation/person/environment/cue.</td> </tr> <tr> <td data-bbox="376 898 712 1002">2. (fear of losing/trying to win)</td> <td data-bbox="712 898 1485 1002">Often due to fear of losing or failing/ competition/competitive state anxiety/pressure of trying to win.</td> </tr> <tr> <td data-bbox="376 1002 712 1074">3. (fear of injury)</td> <td data-bbox="712 1002 1485 1074">Fear of being threatened/or actually threatened/fear of injury/harm</td> </tr> <tr> <td data-bbox="376 1074 712 1145">4. (embarrassment)</td> <td data-bbox="712 1074 1485 1145">Fear of being embarrassed/self-esteem being harmed/ fear of pride being hurt.</td> </tr> <tr> <td data-bbox="376 1145 712 1209">5. (arousal)</td> <td data-bbox="712 1145 1485 1209">When arousal is high in any given moment then more likely to get anxious.</td> </tr> </table> <p><b>Explanation of trait anxiety (sub max 2)</b></p> <table border="1" data-bbox="376 1278 1485 1414"> <tr> <td data-bbox="376 1278 712 1382">6. (innate)</td> <td data-bbox="712 1278 1485 1382">Anxiety that is innate / in-built/genetically determined or born with it or natural anxiety/ a pre-disposition/ part of your personality.</td> </tr> <tr> <td data-bbox="376 1382 712 1414">7. (generalised)</td> <td data-bbox="712 1382 1485 1414">Generalised / expressed/felt in most/many/all</td> </tr> </table>	1. (situation)	Anxiety arising from a specific situation/ incident/temporary situation/person/environment/cue.	2. (fear of losing/trying to win)	Often due to fear of losing or failing/ competition/competitive state anxiety/pressure of trying to win.	3. (fear of injury)	Fear of being threatened/or actually threatened/fear of injury/harm	4. (embarrassment)	Fear of being embarrassed/self-esteem being harmed/ fear of pride being hurt.	5. (arousal)	When arousal is high in any given moment then more likely to get anxious.	6. (innate)	Anxiety that is innate / in-built/genetically determined or born with it or natural anxiety/ a pre-disposition/ part of your personality.	7. (generalised)	Generalised / expressed/felt in most/many/all	5	<p><b>Sub max 2 for explanation of state anxiety</b> <b>Sub max 2 for explanation of trait anxiety</b></p> <p><b>Sub-sub max 1 for the practical example of anxiety (state or trait) influences performance in sport</b></p>
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	<table border="1" data-bbox="383 209 1487 316"> <tr> <td data-bbox="383 209 712 240"></td> <td data-bbox="712 209 1487 240">situations/circumstances or is predictable</td> </tr> <tr> <td data-bbox="383 240 712 316">8. (enduring or stable)</td> <td data-bbox="712 240 1487 316">Enduring/lasting/more permanent or stable/unchanging.</td> </tr> </table> <p data-bbox="365 421 1167 485"><b>Practical example of how anxiety influences performance (sub-sub max 1)</b></p> <table border="1" data-bbox="383 520 1487 798"> <tr> <td data-bbox="383 520 551 587">9.</td> <td data-bbox="551 520 1487 587">Example showing de-motivation due to anxiety/giving up or avoidance behaviour eg giving up playing tennis</td> </tr> <tr> <td data-bbox="383 587 551 654">10.</td> <td data-bbox="551 587 1487 654">Example showing lack of concentration or missing important cues eg missing the ball in hockey</td> </tr> <tr> <td data-bbox="383 654 551 721">11.</td> <td data-bbox="551 654 1487 721">Example showing that it can lead to losing control or losing temper or being overly aggressive eg losing your temper in a game of football</td> </tr> <tr> <td data-bbox="383 721 551 798">12.</td> <td data-bbox="551 721 1487 798">Example showing that worrying can lead to mistakes/poor techniques or skill production eg putting technique fails in golf when anxious</td> </tr> </table>		situations/circumstances or is predictable	8. (enduring or stable)	Enduring/lasting/more permanent or stable/unchanging.	9.	Example showing de-motivation due to anxiety/giving up or avoidance behaviour eg giving up playing tennis	10.	Example showing lack of concentration or missing important cues eg missing the ball in hockey	11.	Example showing that it can lead to losing control or losing temper or being overly aggressive eg losing your temper in a game of football	12.	Example showing that worrying can lead to mistakes/poor techniques or skill production eg putting technique fails in golf when anxious		<p data-bbox="1630 416 2056 512"><b><i>Although negatives are shown as examples opposites can be true.</i></b></p> <p data-bbox="1630 517 2029 612"><b><i>Accept opposites as long as the example is realistic and appropriate.</i></b></p> <p data-bbox="1630 617 2069 954">Eg Example showing heightened state or readiness/can prepare you well/can psych you up which helps performance eg Getting psyched up just before a sprint race Or elite players performing well eg a top athlete running a PB due to high anxiety/arousal.</p> <p data-bbox="1630 991 2069 1225">Example showing higher levels of concentration/attentional narrowing/cue utilisation which helps performance eg making you concentrate on the area of the goal you are to shoot at during a penalty kick</p> <p data-bbox="1630 1262 2069 1394">Example showing that it can make you more assertive/(channelled) aggressive that helps performance</p>
	situations/circumstances or is predictable														
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Question			Answer	Marks	Guidance
					Accept any other relevant examples that show anxiety affecting performance.

Question	Answer	Marks	Guidance																				
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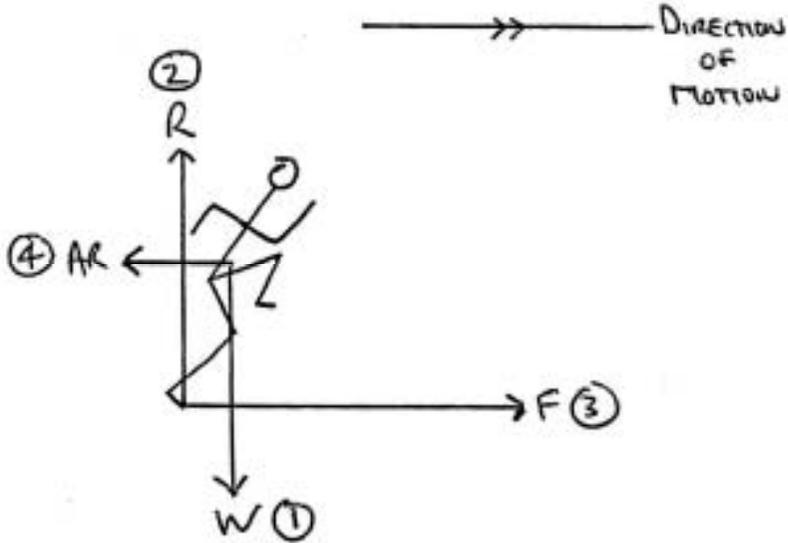
<b>(d)* Levels of Response</b>	
<p><b>Level 4 (18–20 marks)</b> A comprehensive answer:</p> <ul style="list-style-type: none"> <li>• detailed knowledge &amp; excellent understanding</li> <li>• detailed analysis and excellent critical evaluation</li> <li>• well–argued, independent opinion and judgements which are well supported by relevant practical examples</li> <li>• very accurate use of technical and specialist vocabulary</li> <li>• high standard of written communication throughout.</li> </ul>	<p><b>At Level 4 reponses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Explanation showing detailed knowledge and excellent understanding of factors affecting cohesion; linked to success</li> <li>• Explanation showing detailed knowledge and excellent understanding of negative group influences on dysfunctional behaviour</li> <li>• Excellent understanding of the characteristics of dysfunctional behaviour related to BAHL</li> <li>• Many practical examples include healthy lifestyles.</li> </ul>
<p><b>Level 3 (13–17 marks)</b> A competent answer:</p> <ul style="list-style-type: none"> <li>• good knowledge and clear understanding</li> <li>• good analysis and critical evaluation</li> <li>• independent opinions and judgements will be present but may not always be supported by relevant practical examples</li> <li>• generally accurate use of technical and specialist vocabulary</li> <li>• written communication is generally fluent with few errors.</li> </ul>	<p><b>At Level 3 reponses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Explanation showing good knowledge and clear understanding in cohesion; some links to success.</li> <li>• Explanation showing clear understanding of negative group influences on dysfunctional behaviour</li> <li>• Clear understanding of dysfunctional behaviour related to BAHL</li> <li>• Some practical examples that include health.</li> </ul>
<p><b>Level 2 (8–12 marks)</b> A limited answer:</p> <ul style="list-style-type: none"> <li>• limited knowledge and understanding</li> <li>• some evidence of analysis and critical evaluation</li> <li>• opinion and judgement given but often unsupported by relevant practical examples</li> <li>• technical and specialist vocabulary used with limited success</li> <li>• written communication lacks fluency and contains errors.</li> </ul>	<p><b>At Level 2 reponses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Explanation showing limited knowledge and understanding of cohesion</li> <li>• Explanation showing mostly description that is under-developed in respect of negative group influences</li> <li>• Limited practical examples and mostly about sport.</li> </ul>
<p><b>Level 1 (0–7 marks)</b> A basic answer:</p> <ul style="list-style-type: none"> <li>• basic knowledge and little understanding</li> <li>• little relevant analysis or critical evaluation</li> <li>• little or no attempt to give opinion or judgement</li> <li>• little or no attempt to use technical and specialist vocabulary</li> <li>• errors in written communication will be intrusive.</li> </ul>	<p><b>At Level 1 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Description rather than explanation showing basic knowledge and little understanding of cohesion</li> <li>• Description rather than explanation with a lack of clarity re negative group influences</li> <li>• Few or no practical examples/mainly examples of limited relevance.</li> </ul>

Question	Answer	Marks	Guidance																		
3 (d)*	<p><b>Indicative Content:</b></p> <p><b>Explanation of cohesive and successful teams</b></p> <table border="1" data-bbox="376 316 1592 1412"> <tr> <td data-bbox="376 316 479 491">1.</td> <td data-bbox="479 316 1592 491">           Group members sharing the same goals           <ul style="list-style-type: none"> <li>• Group members sharing norms and values/similar outlooks</li> <li>• Similar backgrounds or cultures/beliefs</li> <li>• Knowing your role in the team</li> <li>• Eg all team members want to win.</li> </ul> </td> </tr> <tr> <td data-bbox="376 491 479 563">2.</td> <td data-bbox="479 491 1592 563">           Strong team identity           <ul style="list-style-type: none"> <li>• Ways in which a team shows identity eg kit/routines/group behaviours.</li> </ul> </td> </tr> <tr> <td data-bbox="376 563 479 671">3.</td> <td data-bbox="479 563 1592 671">           Frequent or numerous friendships           <ul style="list-style-type: none"> <li>• Amount/quality of social interaction / team bonding</li> <li>• Eg a cohesive team will involve friendship groups.</li> </ul> </td> </tr> <tr> <td data-bbox="376 671 479 847">4.</td> <td data-bbox="479 671 1592 847">           Effective leadership/quality of leadership           <ul style="list-style-type: none"> <li>• Leader can adapt to the needs of the group</li> <li>• Leader has emerged from the group</li> <li>• Leader has focus/values that are accepted by the group</li> <li>• Eg the captain has been chosen by team members.</li> </ul> </td> </tr> <tr> <td data-bbox="376 847 479 991">5.</td> <td data-bbox="479 847 1592 991">           Level of success/past experiences           <ul style="list-style-type: none"> <li>• If team has been successful then more likely to be cohesive</li> <li>• If team has attributed past failures externally then this can help cohesion</li> <li>• Eg hockey team have been winning and this makes the team more cohesive.</li> </ul> </td> </tr> <tr> <td data-bbox="376 991 479 1099">6.</td> <td data-bbox="479 991 1592 1099">           Environmental/situational aspects           <ul style="list-style-type: none"> <li>• hostility of environment or where they are playing</li> <li>• Eg A netball team is playing away and are being booed by the crowd.</li> </ul> </td> </tr> <tr> <td data-bbox="376 1099 479 1243">7.</td> <td data-bbox="479 1099 1592 1243">           The event importance can increase cohesion           <ul style="list-style-type: none"> <li>• the expected outcomes of the event.</li> <li>• Perceived adversity can increase cohesion</li> <li>• Eg Playing in the cup final makes a team more unified</li> </ul> </td> </tr> <tr> <td data-bbox="376 1243 479 1386">8.</td> <td data-bbox="479 1243 1592 1386">           Successful teams limit the faulty processes (Steiner)           <ul style="list-style-type: none"> <li>• Improved co-ordination within the team</li> </ul> </td> </tr> <tr> <td data-bbox="376 1386 479 1412">9.</td> <td data-bbox="479 1386 1592 1412">           High level of individual motivation or a lack of social loafers (Steiner)         </td> </tr> </table>	1.	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High level of individual motivation or a lack of social loafers (Steiner)	20	Look for relevant practical examples throughout
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Question	Answer	Marks	Guidance
	<ul style="list-style-type: none"> <li>• Eg Team members are equally motivated to win in the rugby team.</li> </ul>		
	<p><b>Explanation of negative group influences</b></p>		
	<p>10. To be accepted/behaviour can follow that of others to seek acceptance or a sense of belonging to a group</p> <ul style="list-style-type: none"> <li>• which can lead negative lifestyle behaviour or you make more friends giving a sense of belonging or well-being.</li> <li>• Can lead you to avoid participation in BAML.</li> </ul>		
	<p>11. The negative influence of group norms or values</p> <ul style="list-style-type: none"> <li>• pressure from others in the group or pressure to conform to follow a certain unhealthy or dysfunctional lifestyle</li> <li>• pressure to avoid healthy lifestyle/participation.</li> </ul>		
	<p>12. Group members can motivate/encourage you to follow an unhealthy lifestyle</p> <ul style="list-style-type: none"> <li>• Perceived greater gains being unhealthy than healthy</li> <li>• Better to avoid participation/healthy behaviours.</li> </ul>		
	<p>13. Confidence to be dysfunctional or unhealthy can be increased with the presence of others in the group or confidence is increased to avoid participation/healthy living</p> <ul style="list-style-type: none"> <li>• Confidence to be healthy could decrease and social loafing could occur or lack of individual effort.</li> </ul>		
	<p>14. Aggression may increase when in a group</p> <ul style="list-style-type: none"> <li>• Need to find identity within a group can cause aggression or striving for status in a group</li> <li>• De-individuation or losing your individual identity or becoming part of a mob,</li> </ul>		
	<p>15. Can lead to prejudice against others/other groups</p> <ul style="list-style-type: none"> <li>• In-group Out-group effect or valuing your group more than others can lead to dysfunctional/unhealthy behaviour</li> <li>• Can lead to avoidance behaviour or not wanting to be associated with groups that participate in BAML,</li> </ul>		
	<p>16. Leaders who themselves are dysfunctional can influence behaviour</p> <ul style="list-style-type: none"> <li>• Others follow the behaviour of the leader because they are frightened/value the leader or is a role model/of high status/significant other</li> <li>• Leaders can reinforce avoidance behaviour by avoiding BAML themselves,</li> </ul>		

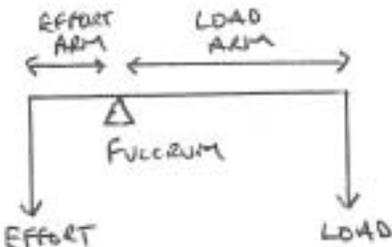
## Section B2 Biomechanics

Question		Answer	Marks	Guidance										
4	(a)	<p><b>Definitions</b> 4 marks for</p> <table border="1"> <tr> <td>1. (angular distance)</td> <td>The angle through which a body has rotated (about an axis) in moving from the first position to the second.</td> </tr> <tr> <td>2. (estimation)</td> <td><math>4\pi</math> rads/12.5 rads/720°/2 revs</td> </tr> <tr> <td>3. (angular displacement)</td> <td>The shortest change in angular position/smallest angle through which a body can rotate to reach the second position from the first position.</td> </tr> <tr> <td>4. (estimation)</td> <td>0 rads/0°/0 revs</td> </tr> </table>	1. (angular distance)	The angle through which a body has rotated (about an axis) in moving from the first position to the second.	2. (estimation)	$4\pi$ rads/12.5 rads/720°/2 revs	3. (angular displacement)	The shortest change in angular position/smallest angle through which a body can rotate to reach the second position from the first position.	4. (estimation)	0 rads/0°/0 revs	4	Pts 2 and 4 units must be stated		
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	(b)	<p><b>Definition centre of mass (sub max 1)</b></p> <table border="1"> <tr> <td>1. (centre of mass)</td> <td>Is the position on a body through which it is balanced in all directions or the point at which the mass of a body is said to be concentrated / said to act</td> </tr> </table> <p><b>Description of performer applying eccentric force (sub max 2)</b></p> <table border="1"> <tr> <td>2. (eccentric force)</td> <td>Is an off centre force/moment of force/torque</td> </tr> <tr> <td>3.</td> <td>Force applied outside the centre of mass of the ball</td> </tr> </table> <p><b>Explanation its effect (sub max 2)</b></p> <table border="1"> <tr> <td>4. (effect)</td> <td>Creates spin/angular motion/angular momentum/rotation</td> </tr> <tr> <td>5.</td> <td>Causes swerve/dip/lift/deviation in flight</td> </tr> </table>	1. (centre of mass)	Is the position on a body through which it is balanced in all directions or the point at which the mass of a body is said to be concentrated / said to act	2. (eccentric force)	Is an off centre force/moment of force/torque	3.	Force applied outside the centre of mass of the ball	4. (effect)	Creates spin/angular motion/angular momentum/rotation	5.	Causes swerve/dip/lift/deviation in flight	5	
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(c)	<p>6 marks from</p> <p>Free Body Diagram</p>  <table border="1" data-bbox="365 938 1317 1182"> <tbody> <tr> <td>1.</td> <td>Weight</td> <td>Acting downwards from centre of mass.</td> </tr> <tr> <td>2.</td> <td>(Normal) Reaction</td> <td>Acting upwards from foot in contact with floor.</td> </tr> <tr> <td>3.</td> <td>Friction</td> <td>Acting forwards from foot in contact with floor greater than air resistance.</td> </tr> <tr> <td>4.</td> <td>Air Resistance</td> <td>Acting from centre of mass opposite direction of motion.</td> </tr> </tbody> </table>	1.	Weight	Acting downwards from centre of mass.	2.	(Normal) Reaction	Acting upwards from foot in contact with floor.	3.	Friction	Acting forwards from foot in contact with floor greater than air resistance.	4.	Air Resistance	Acting from centre of mass opposite direction of motion.	6	Points 1–4 must be illustrated in a free body diagram.
1.	Weight	Acting downwards from centre of mass.													
2.	(Normal) Reaction	Acting upwards from foot in contact with floor.													
3.	Friction	Acting forwards from foot in contact with floor greater than air resistance.													
4.	Air Resistance	Acting from centre of mass opposite direction of motion.													

Question		Answer		Marks	Guidance
		<b>Explanation</b>			<b>Pts 5-7 points must relate to correct Newton's Law.</b>
		5. Newton 1/Law of Inertia	Sprinter will remain stationary unless an external/unbalanced force acts on him <u>or</u> to accelerate forwards the frictional force must be greater than air resistance.		
		6. Newton 2/Law of Acceleration/ Momentum	The greater the (net/resultant) (forward) force acting on the sprinter the greater the sprinter's (forward) acceleration/ faster out of the blocks..		
		7. Newton 3/Law of Reaction	The sprinter applies a force downwards/backwards into the floor, therefore, the ground applies an equal upwards/forwards force on the sprinter.		

<b>4 Levels of response</b>	
<p><b>Level 4 (18–20 marks)</b> A comprehensive answer:</p> <ul style="list-style-type: none"> <li>• detailed knowledge &amp; excellent understanding</li> <li>• detailed analysis and excellent critical evaluation</li> <li>• well–argued, independent opinion and judgements which are well supported by relevant practical examples</li> <li>• very accurate use of technical and specialist vocabulary</li> <li>• high standard of written communication throughout.</li> </ul>	<p><b>At Level 4 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Detailed knowledge and understanding of the components of a first class lever</li> <li>• Accurate and logical calculation of torque</li> <li>• Detailed knowledge and understanding of class 2 and class 3 lever systems</li> <li>• There are relevant evaluative points made for class 2 and class 3 levers</li> <li>• Practical examples are consistently used effectively for each lever.</li> </ul>
<p><b>Level 3 (13–17 marks)</b> A competent answer:</p> <ul style="list-style-type: none"> <li>• good knowledge and clear understanding</li> <li>• good analysis and critical evaluation</li> <li>• independent opinions and judgements will be present but may not always be supported by relevant practical examples</li> <li>• generally accurate use of technical and specialist vocabulary</li> <li>• written communication is generally fluent with few errors.</li> </ul>	<p><b>At Level 3 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Most components of a first class lever are explained</li> <li>• A logical calculation of torque attempted</li> <li>• Good knowledge and understanding of both class 2 and class 3 lever systems</li> <li>• There are relevant evaluative points made for at least one lever system</li> <li>• Some practical examples are used successfully to give context</li> </ul>
<p><b>Level 2 (8–12 marks)</b> A limited answer:</p> <ul style="list-style-type: none"> <li>• limited knowledge and understanding</li> <li>• some evidence of analysis and critical evaluation</li> <li>• opinion and judgement given but often unsupported by relevant practical examples</li> <li>• technical and specialist vocabulary used with limited success</li> <li>• written communication lacks fluency and contains errors.</li> </ul>	<p><b>At Level 2 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Some components of a first class lever are described rather than explained</li> <li>• Both class 2 and class 3 are described</li> <li>• There is an attempt to make relevant evaluative points for one of the lever systems.</li> <li>• At least one practical example is used to give context.</li> </ul>
<p><b>Level 1 (0–7 marks)</b> A basic answer:</p> <ul style="list-style-type: none"> <li>• basic knowledge and little understanding</li> <li>• little relevant analysis or critical evaluation</li> <li>• little or no attempt to give opinion or judgement</li> <li>• little or no attempt to use technical and specialist vocabulary</li> <li>• errors in written communication will be intrusive.</li> </ul>	<p><b>At Level 1 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Only identify components of a first class lever system</li> <li>• Describe only one lever system</li> <li>• Have little or no evaluation</li> <li>• Irrelevant or no practical examples.</li> </ul>

Question	Answer	Marks	Guidance																		
(d)*	<p><b>Indicative Content:</b></p>  <p><b>Explanation of lever components</b></p> <table border="1" data-bbox="376 769 1585 1401"> <tr> <td>1. (Components) (Lever)</td> <td>Rigid structure/bar • Bones give leverage.</td> </tr> <tr> <td>2. (Fulcrum)</td> <td>(Fixed) point of rotation/axis about which the lever moves • Fulcrum is the elbow / joint</td> </tr> <tr> <td>3. (Load)</td> <td>Weight/resistance to be moved • Weight of body part/implement to be moved.</td> </tr> <tr> <td>4. (Effort)</td> <td>(Internal) force applied that causes lever to move • (Agonist) muscle.</td> </tr> <tr> <td>5. (Load arm)</td> <td>Distance from load to fulcrum • Perpendicular (distance).</td> </tr> <tr> <td>6. (Effort arm)</td> <td>Distance from effort to fulcrum • Perpendicular (distance).</td> </tr> <tr> <td colspan="2"><b>Calculation</b></td> </tr> <tr> <td>7. (Torque)</td> <td>Moment of force • = force x (perpendicular) distance from fulcrum / <math>F \times d</math></td> </tr> <tr> <td>8. (Calculation)</td> <td><math>100 \text{ (N)} \times 0.3 \text{ (m)}</math> • = <math>30\text{Nm}</math>.</td> </tr> </table>	1. (Components) (Lever)	Rigid structure/bar • Bones give leverage.	2. (Fulcrum)	(Fixed) point of rotation/axis about which the lever moves • Fulcrum is the elbow / joint	3. (Load)	Weight/resistance to be moved • Weight of body part/implement to be moved.	4. (Effort)	(Internal) force applied that causes lever to move • (Agonist) muscle.	5. (Load arm)	Distance from load to fulcrum • Perpendicular (distance).	6. (Effort arm)	Distance from effort to fulcrum • Perpendicular (distance).	<b>Calculation</b>		7. (Torque)	Moment of force • = force x (perpendicular) distance from fulcrum / $F \times d$	8. (Calculation)	$100 \text{ (N)} \times 0.3 \text{ (m)}$ • = $30\text{Nm}$ .	20	
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Question	Answer	Marks	Guidance
	<p><b>Critical evaluation</b></p> <p>9. 2nd class lever</p> <p>10. (eg)</p> <p>11.</p> <p>12.</p> <p>13. (Negative)</p> <p>14. 3<sup>rd</sup> class lever</p> <p>15. (eg)</p> <p>16.</p> <p>17.</p> <p>18. (Negative)</p>		
	Load is in between fulcrum and effort/eq diagram.		
	Ball of the foot/Jumping in basketball		
	<ul style="list-style-type: none"> <li>Fulcrum is the joint between the metatarsals and phalanges.</li> <li>Load is the weight of the body</li> <li>Effort is force generated by gastrocnemius/soleus.</li> </ul>		
	Mechanical advantage/requires less effort to move equivalent loads.		
	<ul style="list-style-type: none"> <li>Due to effort being further from fulcrum than load.</li> <li>Effort arm being greater than load arm.</li> </ul>		
	Very efficient at moving a heavy load.		
	<ul style="list-style-type: none"> <li>Sporting eg When jumping gastrocnemius/soleus can move weight of entire body.</li> </ul>		
	Move heavy loads only over a small distance		
	<ul style="list-style-type: none"> <li>At expense of speed/range of movement.</li> </ul>		
	Effort between fulcrum and load/eq dig.		
	Flexion of elbow/bicep or arm curl.		
	<ul style="list-style-type: none"> <li>Fulcrum is elbow</li> <li>Load is weight of forearm/plus implements</li> <li>Effort is force generated by biceps brachii.</li> </ul>		
	Mechanical disadvantage/less efficient - requires more effort to move equivalent load		
	<ul style="list-style-type: none"> <li>Due to effort being closer to fulcrum than load.</li> <li>Load arm being greater than effort arm.</li> </ul>		
	Performer can accelerate load through a large range of movement		
	<ul style="list-style-type: none"> <li>Speed of load faster than speed of effort</li> <li>Sporting eg Bicep curl, speed of dumbbell is faster than speed of Biceps Brachii.</li> </ul>		
	Struggle to move heavy loads.		
	<ul style="list-style-type: none"> <li>Sporting eg Biceps Brachii can only move relatively small loads in Bicep Curl.</li> </ul>		

## Section B3 Exercise and Sport Physiology

Question		Answer	Marks	Guidance																								
5	(a)	<p><b>Evaluating aerobic capacity.</b></p> <p><b>5 marks in total</b></p> <p><b>MSFT</b></p> <p><b>Sub max 3 for description</b></p> <table border="1"> <tr> <td>1. description</td> <td>Progressive test to exhaustion</td> </tr> <tr> <td>2. description</td> <td>Shuttle runs between 20m markers to a timed beep</td> </tr> <tr> <td>3. description</td> <td>Timed between bleeps reduces / speed increases until performer fails to keep up with bleep</td> </tr> <tr> <td>4. description</td> <td>Level &amp; shuttle number estimates or predicts a VO<sub>2</sub>max value</td> </tr> <tr> <td colspan="2"><b>Sub max 1 for advantage</b></td> </tr> <tr> <td>5. advantage</td> <td>Good levels of validity and reliability/scores easily evaluated in published table/easy to set up (easy to access/available)/large groups can be tested</td> </tr> <tr> <td colspan="2"><b>Sub max 1 for disadvantage</b></td> </tr> <tr> <td>6. disadvantage</td> <td>Test to exhaustion not good for unfit/overweight individuals/predicted values and not 100% accurate/not good correlation/estimated with similar others/favours runners not cyclists or swimmers or rowers/relies on motivational levels of performers</td> </tr> </table> <p><b>PWC 170</b></p> <p><b>Sub max 3 for description</b></p> <table border="1"> <tr> <td>1. description</td> <td>Sub max test on bicycle/cycle ergometer</td> </tr> <tr> <td>2. description</td> <td>Performer cycles at three low to moderate intensities and heart rates recorded</td> </tr> <tr> <td>3. description</td> <td>Plotted on a graph to predict intensity level at a HR of 170</td> </tr> <tr> <td>4. description</td> <td>170 approximate anaerobic work or used as prediction of VO<sub>2</sub>max</td> </tr> </table>	1. description	Progressive test to exhaustion	2. description	Shuttle runs between 20m markers to a timed beep	3. description	Timed between bleeps reduces / speed increases until performer fails to keep up with bleep	4. description	Level & shuttle number estimates or predicts a VO <sub>2</sub> max value	<b>Sub max 1 for advantage</b>		5. advantage	Good levels of validity and reliability/scores easily evaluated in published table/easy to set up (easy to access/available)/large groups can be tested	<b>Sub max 1 for disadvantage</b>		6. disadvantage	Test to exhaustion not good for unfit/overweight individuals/predicted values and not 100% accurate/not good correlation/estimated with similar others/favours runners not cyclists or swimmers or rowers/relies on motivational levels of performers	1. description	Sub max test on bicycle/cycle ergometer	2. description	Performer cycles at three low to moderate intensities and heart rates recorded	3. description	Plotted on a graph to predict intensity level at a HR of 170	4. description	170 approximate anaerobic work or used as prediction of VO <sub>2</sub> max	5	<p>Submax 3 marks for description Submax 1 mark for advantage Submax 1 mark for disadvantage</p> <p><b>Any valid method should be credited</b></p> <p><b>Accept:</b></p> <p>Coopers 12 min</p> <p>(Harvard) Step Test</p>
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Question	Answer		Marks	Guidance
	<b>Sub max 1 for advantage</b>			
	5. advantage	Sub-maximal test not requiring work to exhaustion/ good for less fit/overweight individuals/satisfactory levels of validity/reliability/easy to set up		
	<b>Sub max 1 for disadvantage</b>			
	6. disadvantage	Cycle test favours cyclists/does not directly measure aerobic capacity or O <sub>2</sub> consumption/predicted test of VO <sub>2</sub> max from HR/relies on linear relationship of HR & intensity		
	<b>Direct Gas analysis</b> <b>Sub max 3 for description</b>			
	1. description	Maximal test to exhaustion		
	2. description	Performer measured at increasing levels of intensity while running, cycling, rowing and swimming		
	3. description	(Computer) analyses O <sub>2</sub> inspired and expired.		
	1. description	Calculates VO <sub>2</sub> max consumed by muscles		
	<b>Sub max 1 for advantage</b>			
	5. advantage	Most accurate/valid/reliable test of aerobic capacity/directly measures O <sub>2</sub> consumption/most activities can be measure eg running, cycling, rowing and swimming.		
	<b>Sub max 1 for disadvantage</b>			
	6. disadvantage	Maximal test to exhaustion/not good for unfit/overweight individuals/not practical as it requires laboratory access and expensive equipment		

Question	Answer	Marks	Guidance										
(b)	<p><b>Principle of a coupled reaction</b></p> <p><b>4 marks max</b></p> <p><b>Reference to question (sub max 4)</b></p> <table border="1" data-bbox="367 379 1352 794"> <tbody> <tr> <td data-bbox="367 379 651 485">1. Principle of Coupled reaction</td> <td data-bbox="651 379 1352 485"><b>linked</b> reactions take place/the products of one reaction are used/linked in/to another/second reaction</td> </tr> <tr> <td data-bbox="367 485 651 555">2. exothermic reaction</td> <td data-bbox="651 485 1352 555">the first reaction (a compound is broken down) produces energy/exothermic reaction</td> </tr> <tr> <td data-bbox="367 555 651 625">3. eg</td> <td data-bbox="651 555 1352 625">PC broken down to release energy/ PC ---→ P+C+ENERGY</td> </tr> <tr> <td data-bbox="367 625 651 695">4. endothermic reaction</td> <td data-bbox="651 625 1352 695">in the second reaction the energy created in the first is used to form a compound/endothermic reaction</td> </tr> <tr> <td data-bbox="367 695 651 794">5. eg</td> <td data-bbox="651 695 1352 794">Energy from breakdown of PC used to resynthesise ATP Energy +ADP+Pi=ATP</td> </tr> </tbody> </table>	1. Principle of Coupled reaction	<b>linked</b> reactions take place/the products of one reaction are used/linked in/to another/second reaction	2. exothermic reaction	the first reaction (a compound is broken down) produces energy/exothermic reaction	3. eg	PC broken down to release energy/ PC ---→ P+C+ENERGY	4. endothermic reaction	in the second reaction the energy created in the first is used to form a compound/endothermic reaction	5. eg	Energy from breakdown of PC used to resynthesise ATP Energy +ADP+Pi=ATP	4	<p><b>For principles (1,2,&amp;4) Sub Max 3 marks</b></p> <p><b>Must use example (3&amp;5) to gain max mark of 4.</b></p> <p><b>3&amp;5. Accept use of Pi in place of P</b></p>
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(c)	<p><b>Sub max 1 (explanation of gene doping)</b></p> <table border="1" data-bbox="349 263 1337 300"> <tr> <td data-bbox="349 263 629 300">1. Explanation</td> <td data-bbox="629 263 1337 300">Altering a person's DNA</td> </tr> </table> <p><b>Sub max 3 (Effect of gene doping)</b></p> <table border="1" data-bbox="349 336 1337 437"> <tr> <td data-bbox="349 336 629 437">2. Both</td> <td data-bbox="629 336 1337 437">All performers/can increase physiological structures benefitting <b>both</b> aerobic and anaerobic power athletes</td> </tr> </table> <table border="1" data-bbox="349 474 1337 574"> <tr> <td data-bbox="349 474 629 574">3. Increase in aerobic performance</td> <td data-bbox="629 474 1337 574">increase mitochondria/red blood cells for aerobic performance or equiv</td> </tr> </table> <table border="1" data-bbox="349 579 1337 679"> <tr> <td data-bbox="349 579 629 679">4. Increased in anaerobic performance</td> <td data-bbox="629 579 1337 679">by increase in amino acids for muscle growth/mass or equiv</td> </tr> </table> <table border="1" data-bbox="349 684 1337 751"> <tr> <td data-bbox="349 684 629 751">5. (health)</td> <td data-bbox="629 684 1337 751">may be significant potential negative health risks/lack of control of gene doping process</td> </tr> </table> <p><b>Sub max 3 (Judgement)</b></p> <table border="1" data-bbox="349 788 1337 855"> <tr> <td data-bbox="349 788 629 855">6.</td> <td data-bbox="629 788 1337 855">Arguably a safer alternative than other known aids eg anabolic steroids/HGH etc</td> </tr> </table> <table border="1" data-bbox="349 860 1337 896"> <tr> <td data-bbox="349 860 629 896">7.</td> <td data-bbox="629 860 1337 896">gene doping affects unknown/no long-term studies</td> </tr> </table> <table border="1" data-bbox="349 901 1337 938"> <tr> <td data-bbox="349 901 629 938">8.</td> <td data-bbox="629 901 1337 938">Presently illegal to use</td> </tr> </table> <table border="1" data-bbox="349 943 1337 979"> <tr> <td data-bbox="349 943 629 979">9.</td> <td data-bbox="629 943 1337 979">May lead to a genetically produced 'Super Athlete'</td> </tr> </table> <table border="1" data-bbox="349 984 1337 1051"> <tr> <td data-bbox="349 984 629 1051">10.</td> <td data-bbox="629 984 1337 1051">Moral/ethical issue of changing an individual's DNA/a form of cheating</td> </tr> </table> <table border="1" data-bbox="349 1056 1337 1123"> <tr> <td data-bbox="349 1056 629 1123">11.</td> <td data-bbox="629 1056 1337 1123">Virtually undetectable by current testing procedures as we can't determine if natural or illegal/DNA testing at birth only way &amp; not practical</td> </tr> </table>	1. Explanation	Altering a person's DNA	2. Both	All performers/can increase physiological structures benefitting <b>both</b> aerobic and anaerobic power athletes	3. Increase in aerobic performance	increase mitochondria/red blood cells for aerobic performance or equiv	4. Increased in anaerobic performance	by increase in amino acids for muscle growth/mass or equiv	5. (health)	may be significant potential negative health risks/lack of control of gene doping process	6.	Arguably a safer alternative than other known aids eg anabolic steroids/HGH etc	7.	gene doping affects unknown/no long-term studies	8.	Presently illegal to use	9.	May lead to a genetically produced 'Super Athlete'	10.	Moral/ethical issue of changing an individual's DNA/a form of cheating	11.	Virtually undetectable by current testing procedures as we can't determine if natural or illegal/DNA testing at birth only way & not practical	6	
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<b>(d)* Levels of Response</b>	
<p><b>Level 4 (18–20 marks)</b> A comprehensive answer:</p> <ul style="list-style-type: none"> <li>• detailed knowledge &amp; excellent understanding</li> <li>• detailed analysis and excellent critical evaluation</li> <li>• well–argued, independent opinion and judgements which are well supported by relevant practical examples</li> <li>• very accurate use of technical and specialist vocabulary</li> <li>• high standard of written communication throughout.</li> </ul>	<p><b>At Level 4 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• Very accurate definition of obesity and its measurement</li> <li>• excellent understanding of the implications of obesity on health and involvement in physical activity</li> <li>• excellent understanding of how knowledge of energy intake/expenditure can help prevent obesity</li> <li>• all aspects of the question addressed with appropriate balance</li> </ul>
<p><b>Level 3 (13–17 marks)</b> A competent answer:</p> <ul style="list-style-type: none"> <li>• good knowledge and clear understanding</li> <li>• good analysis and critical evaluation</li> <li>• independent opinions and judgements will be present but may not always be supported by relevant practical examples</li> <li>• generally accurate use of technical and specialist vocabulary</li> <li>• written communication is generally fluent with few errors.</li> </ul>	<p><b>At Level 3 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• generally accurate definition of obesity and its measurement</li> <li>• clear understanding of the implications of obesity on health and involvement in physical activity</li> <li>• clear understanding of how knowledge of energy intake/expenditure can help prevent obesity</li> <li>• all aspects of the question addressed but not necessarily with appropriate balance</li> </ul>
<p><b>Level 2 (8–12 marks)</b> A limited answer:</p> <ul style="list-style-type: none"> <li>• limited knowledge and understanding</li> <li>• some evidence of analysis and critical evaluation</li> <li>• opinion and judgement given but often unsupported by relevant practical examples</li> <li>• technical and specialist vocabulary used with limited success</li> <li>• written communication lacks fluency and contains errors.</li> </ul>	<p><b>At Level 2 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• definition of obesity and its measurement attempted with limited success</li> <li>• limited understanding of the implications of obesity on health and involvement in physical activity</li> <li>• limited understanding of how knowledge of energy intake/expenditure can help prevent obesity</li> <li>• an unbalanced approach but at the top of this level all aspects of this question are likely to have been addressed</li> </ul>
<p><b>Level 1 (0–7 marks)</b> A basic answer:</p> <ul style="list-style-type: none"> <li>• basic knowledge and little understanding</li> <li>• little relevant analysis or critical evaluation</li> <li>• little or no attempt to give opinion or judgement</li> <li>• little or no attempt to use technical and specialist vocabulary</li> <li>• errors in written communication will be intrusive.</li> </ul>	<p><b>At Level 1 responses <u>are likely</u> to include:</b></p> <ul style="list-style-type: none"> <li>• little or no attempt to define obesity and its measurement</li> <li>• little understanding of the implications of obesity on health and involvement in physical activity</li> <li>• little understanding of how knowledge of energy intake/expenditure can help prevent obesity</li> <li>• unbalanced; unlikely to have addressed all aspects of the question</li> </ul>

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(d)	<p><b>Indicative Content:</b></p> <table border="1"> <tr> <td data-bbox="376 272 488 309"></td> <td data-bbox="488 272 1608 309"><b>Obesity and how it is measured</b></td> </tr> <tr> <td data-bbox="376 309 488 488">1</td> <td data-bbox="488 309 1608 488"> <b>(Obesity / Body composition)</b> <ul style="list-style-type: none"> <li>Relative amount of body fat compared to lean mass</li> <li>Norm Av values; males = 12–18% and females 22–29%</li> <li>Obese values; 20–25% + men and 30–35% + female</li> <li>Obesity described as extreme body fatness.</li> </ul> </td> </tr> <tr> <td data-bbox="376 488 488 730">2</td> <td data-bbox="488 488 1608 730"> <b>(Measurement using)</b> <ul style="list-style-type: none"> <li>hydrostatic weighing : water displacement when submerged in water tank</li> <li>skin fold callipers – measured at different sites &amp; fat % calculated</li> <li>bio–electrical impedance ; resistance to an electrical current passing through body calculated fat%</li> </ul>           BMI           <ul style="list-style-type: none"> <li>weight in kg divided by height in metres squared.</li> </ul> </td> </tr> <tr> <td data-bbox="376 730 488 943">3</td> <td data-bbox="488 730 1608 943"> <b>(Body Mass Index)</b> <ul style="list-style-type: none"> <li>BMI between 25–29.9 =overweight</li> <li>BMI over 30 = obese</li> <li>BMI predicts body composition/does NOT directly measure body composition (fat)</li> <li>although simple/practical it is not suitable for athletes with larger muscle mass.</li> </ul> </td> </tr> <tr> <td colspan="2" data-bbox="376 943 1608 979"><b>Explanation of health implications</b></td> </tr> <tr> <td data-bbox="376 979 488 1267">4</td> <td data-bbox="488 979 1608 1267"> <b>Increased risk of CHD/vascular diseases</b> <ul style="list-style-type: none"> <li>Arteriosclerosis – hardening of coronary arteries</li> <li>Atherosclerosis – narrowing of coronary arteries</li> <li>Angina – partial blockage of coronary artery</li> <li>Heart attack – larger blockage of coronary artery possibly leading to death</li> <li>Stroke –blockage of artery to/within the brain</li> <li>Hypertension –long term high blood pressure</li> <li>Varicose veins/deep vein thrombosis.</li> </ul> </td> </tr> <tr> <td data-bbox="376 1267 488 1402">5</td> <td data-bbox="488 1267 1608 1402"> <b>(Others)</b> <ul style="list-style-type: none"> <li>Increased risk of; diabetes/renal/gall bladder disease/increased surgical risk/temperature regulation/cancers/respiratory problems.</li> <li>Shorter life-expectancy</li> </ul> </td> </tr> </table>		<b>Obesity and how it is measured</b>	1	<b>(Obesity / Body composition)</b> <ul style="list-style-type: none"> <li>Relative amount of body fat compared to lean mass</li> <li>Norm Av values; males = 12–18% and females 22–29%</li> <li>Obese values; 20–25% + men and 30–35% + female</li> <li>Obesity described as extreme body fatness.</li> </ul>	2	<b>(Measurement using)</b> <ul style="list-style-type: none"> <li>hydrostatic weighing : water displacement when submerged in water tank</li> <li>skin fold callipers – measured at different sites &amp; fat % calculated</li> <li>bio–electrical impedance ; resistance to an electrical current passing through body calculated fat%</li> </ul> BMI <ul style="list-style-type: none"> <li>weight in kg divided by height in metres squared.</li> </ul>	3	<b>(Body Mass Index)</b> <ul style="list-style-type: none"> <li>BMI between 25–29.9 =overweight</li> <li>BMI over 30 = obese</li> <li>BMI predicts body composition/does NOT directly measure body composition (fat)</li> <li>although simple/practical it is not suitable for athletes with larger muscle mass.</li> </ul>	<b>Explanation of health implications</b>		4	<b>Increased risk of CHD/vascular diseases</b> <ul style="list-style-type: none"> <li>Arteriosclerosis – hardening of coronary arteries</li> <li>Atherosclerosis – narrowing of coronary arteries</li> <li>Angina – partial blockage of coronary artery</li> <li>Heart attack – larger blockage of coronary artery possibly leading to death</li> <li>Stroke –blockage of artery to/within the brain</li> <li>Hypertension –long term high blood pressure</li> <li>Varicose veins/deep vein thrombosis.</li> </ul>	5	<b>(Others)</b> <ul style="list-style-type: none"> <li>Increased risk of; diabetes/renal/gall bladder disease/increased surgical risk/temperature regulation/cancers/respiratory problems.</li> <li>Shorter life-expectancy</li> </ul>	20	Accept any % value within the range
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	<p><b>Explain how the knowledge of energy expenditure &amp; intake can help prevention</b></p>		<p>Accept use of calorie/s in replace of energy</p>      <p><b>Accept:</b> do more/increase activity and consume less food</p>
13	<p><b>increased energy intake</b></p> <ul style="list-style-type: none"> <li>• increase in food consumption/calories.</li> </ul>		
14	<p><b>decreased energy expenditure</b></p> <ul style="list-style-type: none"> <li>• inactivity/sedentary lifestyle/lack of exercise.</li> </ul>		
15	<p><b>Obesity</b></p> <ul style="list-style-type: none"> <li>• occurs as a result of an imbalance between energy expenditure and energy intake</li> <li>• termed a <b>positive</b> energy balance if energy intake exceeds expenditure energy is stored as fat increasing weight.</li> </ul>		
	<p><b>Preventing obesity</b></p>		
16	<p><b>energy balance</b></p> <ul style="list-style-type: none"> <li>• <b>negative</b> energy balance needs to be achieved</li> <li>• where energy expenditure exceeds energy intake</li> <li>• increase energy expenditure eg more physical activity</li> <li>• decrease energy intake eg consume less food/calories.</li> </ul>		
17	<p><b>Practical guidance</b></p> <ul style="list-style-type: none"> <li>• exercise programme for a BAHL/low impact/weight bearing aerobic activity eg swimming/cycling</li> <li>• adopt a more balanced diet/ eg reduced fat/calories</li> <li>• Calculating energy intake eg Calorie counting</li> <li>• Calculating energy expenditure eg RMR &amp; MET's.</li> </ul>		

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