OCR
Oxford Cambridge and RSA

GCE

Physical Education

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

Advanced GCE

Mark Scheme for June 2018

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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.

These are the annotations, (including abbreviations), including those used in scoris, which are used when marking

Annotation	Meaning
✓	**= Correct response**
BOD	= Benefit of the doubt
REP	= Repeat
TV	= Too Vague
DEV	= Development (levels scheme)
SEEN	= Noted but no credit given
L1	= Level 1 (levels scheme)
L2	= Level 2 (levels scheme)
L3	= Level 3 (levels scheme)
L4	= Level 4 (levels scheme)
EG	= Practical example (levels scheme)
S	= Sub max

Here are the subject specific instructions for this question paper

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/Indicative content	Mark	Guidance
1	(a)		**(Description of pedestrianism) Sub-max 3** Three marks for three of: 1. (Foot race) Race walking / walking races / foot races 2. (Class) Both classes participated / lower and upper class 3. (Patronage) Gentry patronised/employed lower class as footmen/messengers 4. (Wagering) Wagering/gambling was widespread /betting 5. (Venue) Use of large venues/huge crowds/spectators 6. (Rules) Rules were set by organisers/agreed by parties involved 7. (Corruption) Corruption/cheating/fixing of results was common **(Reasons for its popularity) Sub-max 3** Three marks for three of: 8. (Money) Rags to riches / prize money 9. (Status/role models) High status / fame / celebrity / Barclay Allardice / Deerfoot / Weston 10. (Challenge) Physical/mental challenge (for upper class) 11. (Festival) Exciting festival occasion/sporting contest / associated with other activities e.g. prize fighting/horse racing 12. (Cheap) simple/cheap activity to do / occupational (for lower class)	**5**	Pt 6. Limited rules, agreed rules, lack of rules = TV **Guidance: Accept Barclay or Allardice for point 9**

<table>
<tr><th colspan="3">Question</th><th>Answer/Indicative content</th><th>Mark</th><th>Guidance</th></tr>
<tr><td>1</td><td>(b)</td><td></td><td>
4 marks for 4 from:
Sub max 3 from:
<table>
<tr><td>1(non local)</td><td>Mix of activities (from home or from different regions)/start of standardised rules / allowed ‘melting pot’ of games or rules</td></tr>
<tr><td>2(boarding)</td><td>Time to play/impact on standards/games occupied boys outside of classroom/kept them out of trouble</td></tr>
<tr><td>3(fee paying)</td><td>Money for facilities/equipment /coaching/staff/transport</td></tr>
</table>
Sub max 1 from:
<table>
<tr><td>4.(non local)</td><td>Affects whether boarder or day student</td></tr>
<tr><td>5.(boarding)</td><td>Affects school experience and/or relationships with friends and family/more time to play sport</td></tr>
<tr><td>6(fee paying)</td><td>Affects choice of school/independent v state/can affect quality of facilities</td></tr>
</table>
</td><td>4</td><td>Accept accurate/relevant comment about how one characteristic continues to impact today</td></tr>
</table>

<table>
<tr><th colspan="3">Question</th><th>Answer/Indicative Content</th><th>Marks</th><th>Guidance</th></tr>
<tr><td colspan="3"></td><td></td><td></td><td></td></tr>
<tr><td>1</td><td>(c)</td><td></td><td>
<table>
<tr><td colspan="3">significance of social class
sub max 5</td></tr>
<tr><td>1.</td><td>(class)</td><td>Middle class were amateurs / working class were professionals</td></tr>
<tr><td>2.</td><td>(amateur v professional)</td><td>Amateurs and professionals treated differently /names different in programmes/ ate separately / travelled separately/
they entered field of play from different door / different roles</td></tr>
<tr><td>3.</td><td>(captain)</td><td>captain usually an amateur/captain always an amateur at national level</td></tr>
<tr><td>4.</td><td>(W G Grace)</td><td>WG Grace a ’shamateur’ or fake amateur /
he was paid to play / he earned a significant amount of money from cricket</td></tr>
<tr><td>5.</td><td>(William Clarke)</td><td>William Clarke employed professionals professionals / played for William Clarke XI / William Clarke XI toured country and promoted game (as spectator attraction)</td></tr>
<tr><td>6.</td><td>Influence of old boys of public schools</td><td>Influence of old boys on expansion of cricket through the church / industry / schools</td></tr>
<tr><td colspan="3">Sub max 1</td></tr>
<tr><td>7.</td><td>(cricket today)</td><td>Chance to Shine initiative / inspiration of the Ashes / indoor facilities / artificial wickets / 20:20 / world cups / increased entertainment at game / big bash / Sky Sports / media
Accept any suitable factor</td></tr>
</table>
</td><td>6</td><td>Factor must be described</td></tr>
</table>

1 (d)*	
Levels Descriptors	**Levels Discriminators**
Level 4 (18 – 20 marks) A comprehensive answer: • detailed knowledge & excellent understanding • detailed analysis and excellent critical evaluation • well-argued, independent opinion and judgements which are well supported by relevant practical examples • very accurate use of technical and specialist vocabulary • high standard of written communication throughout.	Discriminators at **Level 4** <u>are likely</u> to include: • detailed knowledge and excellent understanding of the 1933 syllabus • excellent evaluation to include both positive and negative aspects of curriculum developments in school PE. • all aspects of question addressed with balance
Level 3 (13 - 17 marks) A competent answer: • good knowledge and clear understanding • good analysis and critical evaluation • independent opinions and judgements will be present but may not always be supported by relevant practical examples • generally accurate use of technical and specialist vocabulary • written communication is generally fluent with few errors.	Discriminators at **Level 3** <u>are likely</u> to include: • good knowledge and clear understanding of the 1933 syllabus • good evaluation of curriculum developments in school PE • all aspects of question addressed but not necessarily with balance
Level 2 (8 - 12 marks) A limited answer: • limited knowledge and understanding • some evidence of analysis and critical evaluation • opinion and judgement given but often unsupported by relevant practical examples • technical and specialist vocabulary used with limited success • written communication lacks fluency and contains errors.	Discriminators at **Level 2** <u>are likely</u> to include: • limited knowledge and understanding of the 1933 syllabus • some evidence of evaluation of curriculum developments in school PE although likely to be more descriptive • an unbalanced approach but at the top end of this level all parts of the question are likely to be addressed
Level 1 (0 - 7 marks) A basic answer: • basic knowledge and little understanding • little relevant analysis or critical evaluation • little or no attempt to give opinion or judgement • little or no attempt to use technical and specialist vocabulary • errors in written communication will be intrusive.	At **Level 1** candidates <u>are likely</u> to: • show basic knowledge and understanding of the 1933 syllabus • descriptive rather than evaluation of curriculum developments in school PE • be unbalanced and not address all aspects
[0 marks] No response or no response worthy of credit.	

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>1</td><td>(d)*</td><td></td><td>
Indicative Content:

Description of 1933 course
<table>
<tr><td>1. Background (1930s)</td><td>A time of industrial depression,
• many working class men were unemployed and living in poverty
• 1930’s were something of a watershed between the syllabus used in the past and the PE of the future</td></tr>
<tr><td>2. (Newman)</td><td>last syllabus produced by Dr George Newman
• A detailed, respected syllabus
• Newman stated - good nourishment, hygiene and physical training was required for normal healthy development</td></tr>
<tr><td>3.(Children)</td><td>Treating children as children
• not treating children as ‘little soldiers’</td></tr>
<tr><td>4. (Hadow Report)</td><td>Based upon Hadow report of 1926
• suggesting greater need for differentiation between ages groups
• One section for under 11s
• One section for over 11s</td></tr>
<tr><td>5. (Objectives)</td><td>• Physical fitness/strengthening or health or therapeutic benefits
• Acquiring skills
• Physique development / improving physique
• Development of (correct) posture
• Holistic development / development of mind and body / the whole child / create thinkers
• More varied in its aims</td></tr>
<tr><td>6.(Content)</td><td>Athletics
• gymnastics,
• games skills,
‘playground games’
• Emphasis on group work as a central part of the lessons
• All set out in a series of tables for teachers</td></tr>
</table>
</td><td>20</td><td></td></tr>
</table>

Question	Answer	Marks	Guidance

7.(Methodology)	Centralised and direct for majority of the lesson • still had exercise tables which teachers used to plan their own lessons • Special clothing/kit • 5 x 20 minutes lessons per week recommended • Newly build gymnasia • Some specialist PE teachers • Syllabus identified the need for different activities for different groups • Children were encouraged to use imagination and develop skills • Increased interaction between teacher and pupil

Positive points – developments in school PE since 1950s

8. (time)	Specific amount of time available / National Curriculum • protected time /compulsory • e.g. government targets/5 hour offer
9. (teachers)	More specialist PE teachers
10. (balance/variety)	A balanced PE experience/wider variety or broader range of skills developed • thinking or analytical or social skills or creativity developed e.g. fair play/integrity/independence/problem solving • Variety leads to great likelihood of lifelong participation / healthy lifestyles
11.(consistency)	Consistent experience wherever child goes to school/same in all schools • easy transfer between schools
12. (support)	Support provided • especially to non-specialist teachers • e.g. by partnerships/by SSCOs
13. (adapt)	Schools can adapt it • to suit themselves or their strengths or the strengths of teachers
14. (standards)	(Arguably) higher standards/clear national standards
15. (rights)	Learners gain the right to learn certain content • E.g. dance

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td></td><td></td><td></td><td>
Negative points - developments in school PE since 1950's
<table>
<tr><td>16. (admin)</td><td>Burden of admin/record keeping
• Restricts time for creative planning</td></tr>
<tr><td>17. (inadequate support)</td><td>Inadequate support
• Especially for non-specialist teachers
E.g. in primary schools</td></tr>
<tr><td>18. (lack of experience)</td><td>Lack of experience of assessment
• Can lead to confusion or skewed results</td></tr>
<tr><td>19. (unbalanced)</td><td>Schools still able to offer unbalanced programme
E.g. no dance if teachers not keen</td></tr>
<tr><td>20. (constraints)</td><td>It can constrain or reduce creativity of teachers</td></tr>
<tr><td>21. (pressure)</td><td>It can put pressure on schools
E.g. to provide certain activities or facilities</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

Section A Comparative Studies (Option A2)

Question Number	Answer	Marks	Guidance
2. (a)	**(Effect of four of these geographical factors in Australia on sporting opportunity) Sub-max 4** Four marks for four of: 1. (size) Very large / 6th largest country / over 30x the size of UK **so** many open spaces to play sport 2. (topography) Diverse environment / mountains and sea (and wilderness/desert) **so** suitable for summer and winter sports 3. (climate) Favourable climate **so** sports can be played all year round 4. (pop. density) Low population density / most of population live in urban areas/cities **so** easy access to urban facilities or reduced access to outdoor activities 5. (transport) Extensive transport network **so** facilities are easily accessible **(Compare one of these factors with the geography of the UK) Sub-max 1** One mark for one of: 6. (size) UK much smaller than Australia 7. (topography) Limited environment compared to Australia 8. (climate) Unfavourable/Western maritime climate 9. (pop. density) Higher population density / most of population also live in urban areas/cities 10. (transport) Extensive transport network / all areas accessible within one days travel	**5**	**Effect on participation must be given for each factor.** **DO NOT ACCEPT – Tyranny of distance.**

<table>
<tr><th>Question Number</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>2 (b)</td><td>
5 marks for 5 from:

Sub max 3 from one section
<table>
<tr><th></th><th>The UK</th><th></th></tr>
<tr><td>1</td><td>(democracy</td><td>Society organised as a democracy/freedom of speech</td></tr>
<tr><td>2</td><td>(teamwork)</td><td>Working as part of a team is traditional/learning to interact with others</td></tr>
<tr><td>3</td><td>(individuality)</td><td>People treated as Individuals/each person unique</td></tr>
<tr><td>4</td><td>(fair play)</td><td>A sense of fair play/sportsmanship is important</td></tr>
<tr><td>5</td><td>(competitiveness)</td><td>Competitiveness/desire to achieve</td></tr>
<tr><td>6</td><td>(participation)</td><td>Participation/(traditionally)taking part more important than winning</td></tr>
<tr><td>7</td><td>(overcoming discrimination)</td><td>Overcoming discrimination/Multi-culturalism/fairness/egalitarianism/equal opportunity/social equality</td></tr>
</table>
</td><td>5</td><td></td></tr>
</table>

Question Number	Answer		Marks	Guidance
	The USA			
	8	(Lombardianism)	Lombardianism/win at all costs/traditionally winning more important than taking part	
	9	(counter culture ethic)	(less dominant) counter culture ethic/taking part more important than winning	
	10	(radical ethic)	(less dominant) radical ethic/taking part and winning of equal importance	
	11	(rags to riches)	Rags to riches opportunities/ref American dream/Land of opportunity/work ethic/frontier spirit	
	12	(pluralism)	Pluralism/different ethnic or religious or political groups within one society/the theory that minority groups maintain cultural differences but share power	
	13	(hegemony)	Hegemony(or control or domination or power or authority held by certain group)/key roles or positions held by dominant societal group/ WASP domination.	

Question Number	Answer			Marks	Guidance
2 (c)	**5 marks for 5 of:**			5	
		PE in USA	**Comparison with UK**		
	1. (focus on)	Direct skill learning/fitness	Participation/skills/holistic development/educational emphasis		
	2. (assessment)	(focus on) testing or measurement	(less formal) teacher assessment		
	3. (exams)	Limited/none at school level	Widespread examinations in PE		
	4. (prof dev)	Provided by superintendent or state	Provided by public or private routes		
	5. (good practice)	Blue Ribband Schools/Beacon Schools	Specialist sports colleges/Beacon schools/independent schools that focus on sport		
	6. (admin)	Decentralised admin	Decentralised admin/becoming more centralised		
	7. (funding)	State funded	State funded/schools need or seek additional funding		
	8. (control)	Controlled by school board	Schools(increasingly) autonomous/ Academy status		
	9. (inspection)	Inspected by superintendent (of school board)	Inspection by Ofsted/ Estyn		
	10. (NC)	No National Curriculum/optional	National curriculum		
	11. (status)	PE lower status(than sport)	PE higher status		

Levels Descriptors	Levels Discriminators
Level 4 (18 – 20 marks) A comprehensive answer: • detailed knowledge & excellent understanding • detailed analysis and excellent critical evaluation • well-argued, independent opinion and judgements which are well supported by relevant practical examples • very accurate use of technical and specialist vocabulary • high standard of written communication throughout.	At **Level 4** responses <u>are likely</u> to include: • detailed knowledge and understanding of all aspects of the question • detailed direct and relevant comparison of provision of sport and the pursuit of excellence in Australia and UK
Level 3 (13 – 17 marks) • A competent answer: • good knowledge and clear understanding • good analysis and critical evaluation • independent opinions and judgements will be present but may not always be supported by relevant practical examples • generally accurate use of technical and specialist vocabulary • written communication is generally fluent with few errors.	At **Level 3** responses <u>are likely</u> to include: • good knowledge and understanding of most aspects of the question • good direct and relevant comparison provision of sport and the pursuit of excellence in Australia and UK
Level 2 (8 – 12 marks) • A limited answer: • limited knowledge and understanding • some evidence of analysis and critical evaluation • opinion and judgement given but often unsupported by relevant practical examples • technical and specialist vocabulary used with limited success • written communication lacks fluency and contains errors.	At **Level 2** responses <u>are likely</u> to include: • limited knowledge and understanding of some aspects of the question • some evidence of direct and relevant comparison of provision of sport and the pursuit of excellence in Australia and UK
Level 1 (0 – 7 marks) A basic answer: • basic knowledge and little understanding • little relevant analysis or critical evaluation • little or no attempt to give opinion or judgement • little or no attempt to use technical and specialist vocabulary • errors in written communication will be	At **Level 1** candidates <u>are likely</u> to include: • basic knowledge and understanding of some aspects of the question • little evidence of direct and relevant comparison of provision of sport and the pursuit of excellence in Australia and UK
[0 marks] No response or no response worthy of credit.	

2 (d) Indicative content **20 marks**

	Provision of Sport in Australia	Provision of sport in UK
1. ASC / Sport England	ASC • Plays a central leadership role in the development and operation of the Australian sports system, • administering • funding innovative sport programs and • providing leadership, coordination and support for the sport sector.	Sport England • wants everyone in England regardless of their age, background or level of ability to feel able to engage in sport and physical activity
2. Initiatives	• Play. Sport. Australia • is the game plan to get more Australians, particularly young Australians, playing sport more often – at school or with mates at their local club.	Sport England Objectives • Protect, enhance, provide • E.g. This Girl Can initiative
3. School Sport	Intra and Inter school games • E.g. Pacific games • National schools teams • National Schools Championships in some sports	Intra and Inter school games • E.g. Derbyshire School Games • National schools teams • National Schools Championships in some sports
4. School-Club Links	Sport Linkage scheme • School club links sharing of facilities/pathway for talented children to progress to clubs	Similar
5. Award Schemes	awarded for achievement in school sport school sports • A state Blue • The De Coubertin Awards	• Sports Mark for schools
6. Role Models	Use of role models to promote participation in sport • E.g.	• Similar

	Pursuit Of excellence in Australia	Pursuit of excellence in the UK
7. ASC v UK Sport	ASC • Overall organisation and responsibility for sporting excellence	UK Sport • Overall organisation and responsibility for sporting excellence
8. AIS v UKSI	AIS • Clear networks set up to develop sporting talent • Based in Canberra • Funded by ASC	UKSI / EIS/ WIS/SIS/ NIIS Based on Australian model
9. AIS (Role) UKSI (Role	• Provides world-class expertise and services to identify, develop and produce world, Olympic and Paralympic champions. • Links sports investment to performance targets	similar
10. Local Institutes	Institutes in each state • E.g. VIS • Enable athletes to train in the locality	A number of EIS institutes E.G. Sheffield
11. funding	Federal and state funding • Supplemented by private funding	Government funding Lottery funding
12. Facilities	World class facilities	World class facilities
13. gov. support	Government or political support for sporting excellence • much Govt funding (funding through) ASC	Government supports sporting success/ • 'less' Gov funding than Australia • National Lottery funds high performance sport • 'issues' linked with recession/local authority cut backs central eg 'plug pulled' from 'free' swimming initiative
14. reflects well	Sporting success reflects well on government	Sporting success reflects well on government
15. Pathways into excellence	Other ways to get into professional sports Drafts – Aussie rules Rugby League – club academy Cricket – through clubs	Similar

Question			Answer	Marks	Guidance
3	(a)		Identify **two** characteristics of an effective leader in sport. Explain how good leadership can affect lifestyle behaviour. **4 marks for 4 of:** **Sub max of two marks for:** 1. Good communication skills 2. Highly motivated / enthusiastic /positive attitude 3. Clear goal / vision 4. Empathy / gets on well with team mates / can see others' points of view 5. Good at sport themselves / experienced 6. Good knowledge of the sport 7. Charismatic / has presence / commands respect / influential /confident /good decision making 8. Is flexible in the styles used or can adapt **Sub max 2 marks for two effects of leadership on lifestyle** **behaviour:** 9. Can help to motivate /influence others to follow healthy lifestyle or encourage achievement motivation. 10. Can focus others on positive lifestyle behaviours or on activity/balanced diet or healthy activities. 11. Can educate others/convince others to follow healthy lifestyle 12. Can create a role model (showing healthy lifestyle) or be a significant other so others can copy. 13. You would follow a healthy lifestyle to keep the leader happy or that you want to remain part of the group. 14. By helping others to be more organised or to make the right decisions or to manage others effectively 15. To set goals (re healthy lifestyle) that others will follow **16.** To give effective feedback on lifestyle to improve lifestyle behaviour.	**4**	**Accept first two characteristics given** **Sub max 2 marks for identification:** **Accept other relevant characteristics of effective leadership.**

Question			Answer	Marks	Guidance
3	(b)		Describe strategies that might promote mastery orientation and help to avoid learned helplessness in sports performance. **5 marks for 5 of:** 1. Attribute success to controllable / internal factors 2. Empower them/ convince that they can control part of future performances. 3. Attribute failure to unstable factors or changeable factors or external factors /or aspects that are not permanent / enduring (examples may include effort/luck/tactics / developing skills etc) 4. Use role models / significant others/leaders/coach/other players. 5. Use relevant vicarious experiences or to see those of similar ability succeed in the task. 6 . Positive reinforcement / encouragement/ verbal persuasion. 7. Raise (general) self-confidence 8. Enable success to be experienced / give success / enable positive outcomes 9. Control arousal / calm them. / use of positive self-talk / thought stopping /control anxiety 10. Use mental practice or mental rehearsal / imagery of successful movement. 11. Use SMART goals or goal setting that is specific or measured target/goal setting or goal setting that is realistic / achievable or that goals must be challenging.	**5**	**Accept strategies described that promote MO as relevant to avoiding LH and visa versa.** **Accept relevant examples as descriptions**

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>3</td><td>(c)</td><td></td><td>Using practical examples, describe these faulty processes related to team performance in sport.
1 marks for 6 of:
<table>
<tr><td colspan="2">Motivational losses</td><td></td></tr>
<tr><td>1</td><td>(social loafing / lack of motivation)</td><td>Team performance/productivity is affected by social loafing / lack of individual motivation/ poor motivation can decrease performance/productivity

eg The hockey team did not win because one key player did not try hard enough</td></tr>
<tr><td>2</td><td>(learned helplessness)</td><td>Called learned helplessness/attributions of failure to internal stable factors/ losing and blaming themselves/ lacks self-confidence/ low self-efficacy /inexperience

eg A netball player who does not try could lack confidence in her own ability.</td></tr>
<tr><td>3</td><td>(lack of role)</td><td>Lack of identifiable roles for team members

eg players in a rugby team are not sure of their role within the team.</td></tr>
<tr><td>4</td><td>(accountability)</td><td>Insufficient accountability/individual efforts not recognised

eg a member of the cricket team does not feel that his contribution to fielding is being appreciated.</td></tr>
<tr><td>5</td><td>(injury/illness)</td><td>Injury/illness of players may lead to lack of motivation/fatigue

eg A member of a volleyball team may be injured and therefore cannot contribute fully.</td></tr>
</table></td><td>6</td><td>Candidates may relate more than one point to the same practical example of team performance.
Relevant and detailed practical example alone may gain credit for description</td></tr>
</table>

Question	Answer	Marks	Guidance

6	(Cohesion)	Lack of team cohesion/ lack of social cohesion/ disputes/perceptions that others are not trying *e.g. some members of the football team dislike each other and cannot work together effectively.*
7	(incentives)	Insufficient incentives to work together/work as a team / lack of common goals / group incentive *e.g. The individuals in a hockey team have different personal goals.*
8	(anxiety)	Too high a level of competition / anxiety of team/individuals /goal perceived to be unachievable/losing *e.g. One player in a basketball team feels that the opponents will be too good for them to win.*
9	(others)	Negative effects of an audience/crowd/coach de-motivates/criticises performer/officials' decisions *e.g. The football team lose motivation because the crowd are criticising them.*
10	(environment)	Environmental factors/stressors may lead to lack of motivation *e.g. the cold weather demotivates the players in a rugby match*

Question	Answer	Marks	Guidance
	Co-ordination Looses 11 (co-ordination) — Team performance affected by lack of co-ordination/working together/lack of communication *eg the players in a rounders team do not work together effectively.* 12 (Ringelmann) — Ringelmann effect/individual performance decreases as group size increases *eg the hockey squad seems to be too big for some players who are losing motivation.* 13 (leadership) — Inadequate leadership *eg the football team do not have a team captain and so the team lacks co-ordination.* 14 (tactics) — Poor team tactics/strategies *eg the coach of a handball team has chosen ineffective defensive strategies and players are not aware of who they should be marking.*		

(d)* Levels of Response	
Level 4 (18-20 marks) A comprehensive answer: • detailed knowledge & excellent understanding • detailed analysis and excellent critical evaluation • well-argued, independent opinion and judgements which are well supported by relevant practical examples • very accurate use of technical and specialist vocabulary • high standard of written communication throughout.	**Discriminators from L3 <u>are likely</u> to include:** • A good range of relevant and detailed practical examples for both CU and AS • Detailed explanations of both CU and AS • Good links throughout with effective performance
Level 3 (13-17 marks) A competent answer: • good knowledge and clear understanding • good analysis and critical evaluation • independent opinions and judgements will be present but may not always be supported by relevant practical examples • generally accurate use of technical and specialist vocabulary • written communication is generally fluent with few errors.	**Discriminators from L2 <u>are likely</u> to include:** • Relevant and detailed practical examples for both CU and AS • Explanations of both CU and AS • Relevant links throughout with effective performance
Level 2 (8-12 marks) A limited answer: • limited knowledge and understanding • some evidence of analysis and critical evaluation • opinion and judgement given but often unsupported by relevant practical examples • technical and specialist vocabulary used with limited success • written communication lacks fluency and contains errors.	**Discriminators from L1 <u>are likely</u> to include:** • Relevant practical examples for both CU and AS but lack detail • Limited explanations of both CU and AS • Some links with effective performance
Level 1 (0 – 7 marks) A basic answer: • basic knowledge and little understanding • little relevant analysis or critical evaluation • little or no attempt to give opinion or judgement • little or no attempt to use technical and specialist vocabulary • errors in written communication will be intrusive.	**At L1 responses <u>are likely</u> to:** • Very few or no practical examples for both CU and AS • Limited explanations of either CU and AS • Few or no links with effective performance • Some inaccuracies / misunderstandings of CU and AS

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>3</td><td>(d)*</td><td></td><td>
Indicative Content:

(Cue utilisation)
<table>
<tr><td>1. focus</td><td>This focuses attention (Easterbrook)
• (concentration) selective attention / perceptual narrowing.
• Eg a goalkeeper will keep her eye on the ball during a penalty kick</td></tr>
<tr><td>2.arousal</td><td>….as arousal increases so does concentration.
• Eg when a hockey player is about to start a competitive game</td></tr>
<tr><td>3 optimum arousal</td><td>When arousal is <u>moderate/optimal / at the right level</u> then performance can increase
• because important cues / signals / stimuli can be attended to.
• Eg a tennis player will be psyched up to return the serve but is under control</td></tr>
<tr><td>4. ZOF</td><td>Enter zone of optimal functioning
• peak flow experience effecting performance positively
• building confidence/well-being leading to good performance.
• Eg the swimmer will feel that she is confident during the race</td></tr>
<tr><td>5.high arousal so miss cues</td><td>If arousal <u>continues to increase or is high</u> then this results in narrowing of attention
• leading to the missing of vital cues / signals / reduction in performance / poor performance.
• Eg a netball player loses her opponent because she is too anxious</td></tr>
</table>
</td><td>20</td><td>Accept opposite view of negative influences</td></tr>
</table>

Question	Answer	Marks	Guidance

6.high arousal so too much information process	If arousal is high then processing system could be overloaded • information overload / performer cannot sort out all the information • leads to confusion or the performer 'freezing' • Eg A tennis coach shouting out too many instructions in an important match
7.low arousal so miss cues	Low levels of arousal / wide field of attention can lead to poor performance because cues are missed. • Eg a volleyball player will miss the ball because he is not paying enough attention
8.hypervigilance	High arousal can lead to hypervigilance • that can be good if very narrow attention needed • eg archery • but bad if other cues missed • eg as a midfield player in football.

(Attentional styles)

9. (Nideffer) attentional styles affects attentional control
   - broad and narrow dimension
   - external and internal dimension
10. (broad) - attention takes into account a lot of information
   - peripheral stimuli/can enable performer to take in peripheral info
   - eg open skills
11. (narrow) - attention is on very few stimuli
   - concentrate on small amount of stimuli/information/cue
   - can enable performer to focus on important elements in the environment
   - eg watch the ball/take aim.

Question			Answer	Marks	Guidance
			12. (external) - Focus is on environmental stimuli • focus directed outwards 13. (external) can enable performer to concentrate on external factors (other than internal) • can escape inner pain/exhaustion. 14. (Internal) - Focus on themselves/emotions/thoughts 15. (internal) - performer can concentrate on feeling good • zone of optimal functioning/ZOF/peak flow experience/control arousal 16. information overload • too much information can cause confusion 21. the right attention can enable performers to deal effectively with Distraction • will not be put off 17. effective attention will improve reaction • improve reaction time/response time/movement time 23. effective attention can prevent negative feelings 24. enables positive attributions • focus on how well you felt about your effort rather than the fact that you lost the game of netball 25. good performers can draw on a range or combination of different styles • eg good midfield footballer will be able to look wide, look for other players but also concentrate on his own skills.		

Section B2 Biomechanics

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>4</td><td>(a)</td><td></td><td>
4 marks for 4 of
Description of factors that affect the air resistance acting against a racing cyclist

<table>
<tr><td>1. (velocity)</td><td>The faster the cyclist moves the greater the AR.</td></tr>
<tr><td>2. (frontal/forward cross sectional area)</td><td>The greater the frontal/forward cross sectional area the greater the AR or the more tucked the cyclist the less AR.</td></tr>
<tr><td>3. (surface of cyclist/bike)</td><td>The smoother the surface of cyclist/bike the less AR or use of lycra clothing reduces AR.</td></tr>
<tr><td>4. (shape of cyclist/bike/helmet)</td><td>Streamlining reduces AR or (tear drop) shape of helmet reduces AR / tapering of the helmet reduces drag/ aerofoil shape</td></tr>
<tr><td>5. (Density of air)</td><td>Less dense air means less AR or altitude reduces AR</td></tr>
<tr><td>6. (slip streaming)</td><td>Cyclist tucks in behind lead cyclist to get dragged along</td></tr>
</table>
</td><td>4</td><td></td></tr>
</table>

Question			Answer	Marks	Guidance
4	(b)		**6 marks for 6 of:**	6	
		(i)	**Defining impulse (sub max 1)** 1. (definition) - Impulse = force x time / Ft / change in momentum / mv – mu		
		(ii)	**Estimating value of impulse (sub max 2)** 2. (method) - Impulse = area under curve or Impulse = ½ x 1000 x 0.1 3. (impulse) - Impulse = 50 N/s (units must be correct)		
		(iii)	Relationship between impulse and momentum **(sub max 3)** 4. (follow through) By using a follow through 5. (time) Increases time that force is applied 6. (impulse) Increases impulse acting on ball. 7. (momentum) Increases outgoing / final momentum of the ball 8. (velocity/control) Increases velocity of ball / distance ball travels / control over ball		

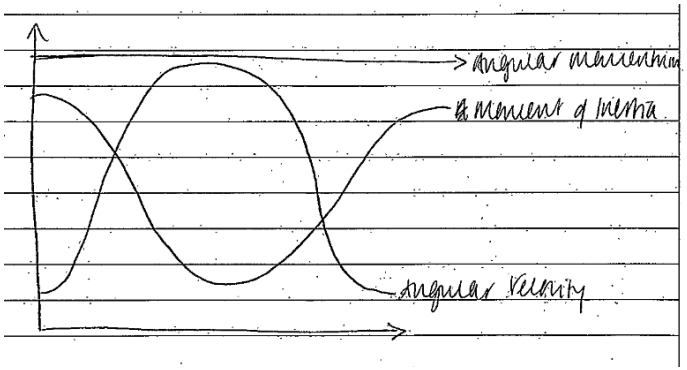
<table>
<tr><th colspan="3">Question</th><th></th><th>Marks</th><th>Guidance</th></tr>
<tr><td>4</td><td>(c)</td><td></td><td>
5 marks for 5 of:

Description of flight path of a golf ball (sub max 2)
<table>
<tr><td>1. (hang /float)</td><td>Causes golf ball to ‘hang’ / ‘float’ in flight or follow a non-parabolic / asymmetric flight path</td></tr>
<tr><td>2. (increase distance)</td><td>Increases the (horizontal) distance covered</td></tr>
<tr><td>3. (more predictable)</td><td>Flight path becomes more predictable to read / accurate (than a ball with no spin)</td></tr>
<tr><td colspan="2">Explanation of bounce of golf ball (sub max 4)</td></tr>
<tr><td>4. (Surface of ball)</td><td>(on bouncing) bottom surface of ball wants to slide forwards</td></tr>
<tr><td>5. (Friction opposing)</td><td>Friction opposes this sliding motion</td></tr>
<tr><td>6. (Friction direction)</td><td>Friction acts in opposite direction to motion of golf ball / causes a backwards force</td></tr>
<tr><td>7. (Effect 1 – speed)</td><td>Causing ball to decelerate / hold up / sit up</td></tr>
<tr><td>8. (Effect 2 – height)</td><td>At a greater angle (than it would normally)</td></tr>
</table>
</td><td>5</td><td>Sub max 2 for description

Sub max 4 for explanation</td></tr>
</table>

(d)* Levels of Response	
Level 4 (18-20 marks) A comprehensive answer: • detailed knowledge & excellent understanding • detailed analysis and excellent critical evaluation • well-argued, independent opinion and judgements which are well supported by relevant practical examples • very accurate use of technical and specialist vocabulary • high standard of written communication throughout.	**<u>At level 4 answers are likely to show:</u>** • Accurate graphs of both angular velocity and moment of inertia with axes labelled correctly. • Detailed explanation of the concept of moment of inertia. • Knowledge of all 3 analogues. • Detailed understanding of the analogue of Newton 1 and its application to a triple spin. • Detailed explanation of how moment of inertia and angular velocity change at take-off, during flight and landing.
Level 3 (13-17 marks) A competent answer: • good knowledge and clear understanding • good analysis and critical evaluation • independent opinions and judgements will be present but may not always be supported by relevant practical examples • generally accurate use of technical and specialist vocabulary • written communication is generally fluent with few errors.	**<u>At level 3 answers are likely to show:</u>** • Accurately shaped graphs of both angular velocity and moment of inertia • Good explanation of the concept of moment of inertia. • Good understanding of the analogue of Newton 1 and its application to a triple spin. • Good explanation of how moment of inertia and angular velocity change at take-off, during flight and landing.
Level 2 (8-12 marks) A limited answer: • limited knowledge and understanding • some evidence of analysis and critical evaluation • opinion and judgement given but often unsupported by relevant practical examples • technical and specialist vocabulary used with limited success • written communication lacks fluency and contains errors.	**<u>At level 3 answers are likely to show:</u>** • Graphs of angular velocity and/or moment of inertia attempted but with some inaccuracies. • Description of the concept of moment of inertia. • Some understanding of the analogue of Newton 1 and its application to a triple spin. • Some explanation of how moment of inertia and angular velocity change at take-off or during flight or landing. Candidates at the top of this level should have covered at least two of these phases
Level 1 (0 – 7 marks) A basic answer: • basic knowledge and little understanding • little relevant analysis or critical evaluation • little or no attempt to give opinion or judgement • little or no attempt to use technical and specialist vocabulary • errors in written communication will be intrusive.	**<u>At level 4 answers are likely to show:</u>** • Graphs of either angular velocity or moment of inertia are inaccurate • Basic description of the concept of moment of inertia. • Basic description of changes in angular velocity or moment of inertia that take place during performance of a triple spin.

			Answer	Marks	Guidance
4	(d)*		**Indicative Content:**	**20**	



Graphs

1. (angular velocity)	Inverted U shaped graph • ω on vertical axis / radss^{-1} • t on horizontal axis / secs
2. (moment of inertia)	U shaped graph • I / moment of inertia on vertical axis in kgm^2 • T on horizontal axis / secs
3. **(Concept of moment of inertia)**	Resistance of a rotating body to change its state of angular motion • Greater MI means the greater the resistance to start rotating / stop rotating • Rotational equivalent of inertia
4. (mass)	Depends on the mass of an object • The greater the mass the greater the MI
5. (distribution of mass)	Depends on the distribution of mass about the axis of rotation • The further the mass is away from the axis of rotation the greater MI • MI = Σmr^2

			Answer	Marks	Guidance

6. (Analogue of N1)	The angular momentum of a rotating body will remain constant unless acted upon by an external torque • Also known as the Law of Conservation of Angular Momentum • Angular momentum of the skater remains constant during the flight of the triple spin
7. (Analogue of N2)	The rate of change of angular momentum of an object is proportional to the size of the torque acting upon it • And takes place in the direction in which the torque acts • The greater the torque acting on the skater the greater the angular momentum of the skater
8. (Analogue of N3)	For every torque that is exerted by one body on another there is an equal and opposite torque exerted by the second body on the first. • The skater exerts a torque on the ground therefore the ground exerts an equal but opposite torque on the skater
9. (angular momentum)	Angular momentum refers to the amount of angular motion a rotating body possesses / is a measure of angular motion. • Depends on its moment of inertia and angular velocity. • AM = moment of inertia x angular velocity / Iω
10. (take off of skater) (MI)	MI is high • Skater's mass is distributed away from axis of rotation / centre of mass • Eg Skater has arms wide / leg out away from body
11. (axis of rotation)	(Angular Momentum) given to skater about longitudinal axis of rotation. • Reaction force from feet acts outside of the centre of mass/longitudinal axis of rotation of the skater or torque exerted on skater from ground

			Answer	Marks	Guidance

12.	(angular velocity)	Angular velocity is low • Rate of spin is low.
13.	**(During flight)** (MI)	MI is reduced • Skater's mass is brought closer to (longitudinal) axis of rotation • Eg skater brings in arms / leg into side of body
14.	(angular velocity)	Angular velocity / rate of spin increases • Because Angular Momentum is conserved • Eg This means skater can perform more full spins during flight.
15.	**(Just before / on landing)** (MI)	MI is increased • To increase resistance to rotation • Eg Skater's arms / leg moves out
16.	(angular velocity)	Angular velocity is reduced • Prevents over rotation on landing • Eg Skater more likely to stay on feet / scores better

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>5</td><td>(a)</td><td></td><td>5 marks for 5 of:

<table>
<tr><td>1) (anaerobic)</td><td>anaerobic reaction/ anaerobic glycolysis/ no oxygen required</td></tr>
<tr><td>2) (fuel)</td><td>Fuel used is glucose/ glycogen</td></tr>
<tr><td>3) (site)</td><td>Takes place in muscle cell sarcoplasm</td></tr>
<tr><td>4) (yield)</td><td>Produces 2 ATP per mole of glucose</td></tr>
<tr><td>5) (stages)</td><td>Glycogen Phosphorylase / GPP breaks down glycogen into glucose</td></tr>
<tr><td>6) (stages)</td><td>During glycolysis Phosphofructokinase/ PFK breaks down glucose into pyruvic acid</td></tr>
<tr><td>7) (stages)</td><td>(Lack of oxygen results in) lactate dehydrogenase / LDH converting pyruvic acid to lactic acid</td></tr>
<tr><td>8. (duration)</td><td>resynthesises ATP for 2-3 mins/ peaks at 1 minute</td></tr>
<tr><td>9. (intensity)</td><td>resynthesises ATP during high intensity exercise</td></tr>
</table></td><td>5</td><td>No credit given for:
Bi-product of lactic acid.</td></tr>
</table>

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>5</td><td>(b)</td><td></td><td>
6 marks for 6 of:

Sub max 4 for how/ why
<table>
<tr><td>How (sub max 4)</td><td></td></tr>
<tr><td>1. (mega)</td><td>mega cycle-4 years – e.g. Olympics</td></tr>
<tr><td>2. (macro aim)</td><td>macro cycle – overall aim/ long term goal/ long term objective – to compete in Olympics</td></tr>
<tr><td>3. (macro time)</td><td>typically lasts one year</td></tr>
<tr><td>4. (meso aim)</td><td>meso cycle – intermediate block of training/ medium term goal/ objective</td></tr>
<tr><td>5. (meso time)</td><td>4-16 weeks</td></tr>
<tr><td>6. (micro aim)</td><td>micro cycle –number of training sessions that make a unit/ weekly training/ short term goal/ objective</td></tr>
<tr><td>7. (micro time)</td><td>1-3 weeks</td></tr>
<tr><td>8. Split into seasons</td><td>Pre season / Competitive season / Off season</td></tr>
<tr><td>Why (submax 4)</td><td></td></tr>
<tr><td>9. (Peak)</td><td>Can peak at the right time for competition</td></tr>
<tr><td>10. (Double peak)</td><td>Allows performer to peak twice if more than one competition/ rounds/ qualifiers</td></tr>
<tr><td>11. (Tapering)</td><td>Allows training to be tapered to allow rest before a competition/ allow for recovery</td></tr>
<tr><td>12. (moderation/ reversibility)</td><td>Helps prevent overtraining/ allows for recovery/avoid injury</td></tr>
<tr><td>13. (Specificity)</td><td>Can be specific to performance or specific aspect of training/ sport specific</td></tr>
</table>
</td><td>6</td><td></td></tr>
</table>

Question	Answer	Marks	Guidance

14. (Variance)	Avoids boredom/ maintains motivation by splitting training up into units
15. (Overload)	Enables performer/ coach to easily change intensity, frequency, duration and rest.
16. (Progression)	Allows progress to be monitored more often and necessary changes made to maintain progress
17. (pre season)	To prepare the body for competition All round fitness training / progressive increase in intensity / build a training base
18. (competitive season)	Maintain peak performance Aims to maintain fitness/ avoid injury
19. (off season/ transition)	To avoid boredom / allow for recovery / maintain base fitness Focus on rest/ low level activity/ recovery/ cross training

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>5</td><td>(c)</td><td></td><td>4 marks for 4 of:

<table>
<tr><td>1.(Karvonen/ Critical threshold)</td><td>Target HR %, often called critical threshold is calculated using the Karvonen principle= RHR + % (Max HR - RHR)</td></tr>
<tr><td>2.(Karvonen)</td><td>Often max. HR is estimated using 220-age</td></tr>
<tr><td>3. (overload)</td><td>Allows for overload to occur so that adaptations occur</td></tr>
<tr><td>4. (individual difference)</td><td>Calculation (220 –age) does not account for individual differences, such as training</td></tr>
<tr><td>5. (different zones)</td><td>Different percentages of HR max/ training zones allow for different adaptations</td></tr>
<tr><td>6. (higher heart rate)</td><td>The higher the HR the greater the adaptations</td></tr>
<tr><td>7. (65-85%)</td><td>Work between 65-85% of max heart rate is target heart rate zone</td></tr>
<tr><td>8. (50-65%)</td><td>50-65% is fat burning zone</td></tr>
<tr><td>9. (85-100%)</td><td>85-100% - anaerobic threshold zone</td></tr>
<tr><td>10.(50% or less)</td><td>50% or less is recovery</td></tr>
</table></td><td>4</td><td>Points 9, 10,11,12 accept any value within the range.</td></tr>
</table>

(d)* Levels of Response	
Level 4 (18-20 marks) A comprehensive answer: • detailed knowledge & excellent understanding • detailed analysis and excellent critical evaluation • well-argued, independent opinion and judgements which are well supported by relevant practical examples • very accurate use of technical and specialist vocabulary • high standard of written communication throughout.	<u>At level 4 answers are likely to include</u>: • correct definition of aerobic capacity • detailed explanations of a range of physiological adaptations to training, likely to include points from at least 3 categories (respiratory, cardio, vascular, muscular, connective) • selection of relevant tests to measure aerobic capacity • a range of positives and negatives for selected tests • evaluation/ independent opinion relating the tests to the performer's needs
Level 3 (13-17 marks) A competent answer: • good knowledge and clear understanding • good analysis and critical evaluation • independent opinions and judgements will be present but may not always be supported by relevant practical examples • generally accurate use of technical and specialist vocabulary • written communication is generally fluent with few errors.	<u>At level 3 answers are likely to include:</u> • correct definition of aerobic capacity • explanations of some physiological adaptations to training, likely to include points from at least 2 categories (respiratory, cardio, vascular, muscular, connective) • selection of relevant tests to measure aerobic capacity • some positives and negatives for selected test(s) • some evaluation/ independent opinion relating the tests to the performer's needs
Level 2 (8-12 marks) A limited answer: • limited knowledge and understanding • some evidence of analysis and critical evaluation • opinion and judgement given but often unsupported by relevant practical examples • technical and specialist vocabulary used with limited success • written communication lacks fluency and contains errors.	<u>At level 2 answers are likely to include:</u> • attempted definition of aerobic capacity • limited explanation of some physiological adaptations to training • selection of relevant test to measure aerobic capacity • limited positives and negatives for selected test(s) • basic/ limited evaluation/ independent opinion relating the tests to the performer's needs
Level 1 (0 – 7 marks) A basic answer: • basic knowledge and little understanding • little relevant analysis or critical evaluation • little or no attempt to give opinion or judgement • little or no attempt to use technical and specialist vocabulary • errors in written communication will be intrusive.	<u>At level 1 answers are likely to include:</u> • attempted definition of aerobic capacity • identification/ description of limited physiological adaptations to training • selection of relevant test to measure aerobic capacity • limited or no positives/negatives for selected tests • little or no evaluation/ independent opinion relating the tests to the performer's needs

Question			Answer	Marks	Guidance
5	(d)*		**Indicative Content:**	**20**	Definition requires all three aspects

1. (definition)	The ability to **take in**, **transport** and **utilise** oxygen • For continued periods of sub-maximal activity
Cardiovascular	
2. (cardiac hypertrophy)	Increase in size of the heart resulting in a greater stroke volume (SV) • lower resting heart rate (RHR)/ bradycardia • increased cardiac output (Q) • Resulting in increased blood flow and therefore increased O_2 transport
Vascular	
3. (blood pressure)	Lower blood pressure
4. (RBCs)	Increased number of red blood cells so more oxygen is transported around the body • Increase in haemoglobin • Increase in gaseous exchange • Increase in cardiac output/ stroke volume
5. (plasma)	Increase in plasma volume so decrease in viscosity during exercise
6. (capilliarisation of alveoli)	Increased capilliarisation of alveoli • Increases surface area for diffusion • Increased removal of CO_2
7. (arterial walls)	Increased elasticity of arterial walls helps regulate blood pressure/ decrease in resting/ diastole BP • Increase in vascular shunt so more efficient redistribution of blood
Respiratory	
8. (respiratory muscles)	Stronger respiratory muscles so more efficient breathing mechanics • increased VO_2 max
9. (alveoli)	Increase in aleveoli surface area • Increase in diffusion

Question	Answer	Marks	Guidance
	Muscular		
	10. (muscle hypertrophy)	Muscle hypertrophy results in increased strength	
	11. (myoglobin)	Increased myoglobin stores improve O_2 storage and transport to mitochondria	
	12. (mitochondria)	Increased number of mitochondria	
	13. (enzyme activity)	Increased aerobic enzyme activity increases metabolism of fat	
	14. (capilliarisation)	Increased muscle capilliarisation increases O_2 transport • Increase in surface area • Increased diffusion • Increased removal of CO_2	
	Connective tissue		
	15. (tendons/ ligaments)	Increased strength of tendons/ligaments	
	16. (Strength of bones)	Increased strength of bones due to increased calcium content	
	17. (Body composition)	Decrease in non-lean muscle mass/ fat mass	
	18. (synovial fluid)	Increased production of synovial fluid helps lubricate joints and reduce friction	
	Evaluation of tests		
	19. (MSFT description)	Multi stage fitness test • Progressive, maximal running test • 20 metre shuttle run test • Compares score to standardised tables • Predicts VO_2 max	
	20. (MSFT – positives)	Easy to administer/ simple procedure • Cheap- only requires CD and CD player • Easy to understand • Competitive • Easy to measure • Not very time consuming • Easy to administer to a team/ large group	

Question	Answer	Marks	Guidance
	21. (MSFT – negatives)	Boring to perform so people give up • Repetitive • Running specific so might not be very good for a swimmer/ cyclist etc • Only a prediction so not very accurate, especially for elite athletes • Standard values might not very accurate/ old • Quite intense for beginners • Not challenging enough for elite performers • Would depend on time of day and conditions • Could be affected by fluid or food intake before the test • Bad memories associated with school	
	22. (PWC 170 description)	PWC 170 test • Sub maximal test on a cycle ergometer • Cycle at 3 progressive low to moderate work intensities • Record HR values • Plot HR values against work intensity to predict work rate when HR reaches 170 bpm/ anaerobic level	
	23. (PWC 170 positives)	Easy to administer/ simple procedure • Not too strenuous so wouldn't put people off • Only 6 minutes at a time so easy to complete • Only need access to a cycle ergometer so not lots of complicated equipment • Cycle ergometers are in most gyms	
	24. (PWC 170 negatives)	Cycling specific so people might not be motivated • Requires cycle ergometer • Takes over 30 minutes so time consuming • Not used to cycling so could gain a poor result due to not being used to action • Only a prediction/ estimates HR at higher levels • Line of best fit is subjective/ open to errors	

Question			Answer		Marks	Guidance
				• Performer might not be trying much as only working at low to moderate intensity so result might not be accurate • Depends on time of day and conditions • Could be affected by fluid intake or food intake before the test • Not easy to administer to a large group/ team		
			25. (12 minute cooper run description)	Measures how far the participant can run in 12 minutes • Often based around a running track • The distance achieved is then compared to standard values		
			26. (12 min positives)	Easy to administer/ simple procedure • Cheap – doesn't require much equipment • Easy to administer to groups • Competitive • Could be adapted to walking if running is too hard • Could be adapted to treadmill in gym		
			27. (12 min negatives)	Boring to carry out so might not be motivated • Running specific • Only as estimation • Pacing practice could affect scoring • 12 minutes of running might be too difficult		
			28. (VO_2 max test description)	VO_2 max treadmill test • Exercise is performed on a treadmill/ cycle ergometer. • Workload increases gradually from moderate to maximal intensity. • Oxygen uptake is calculated from measures of ventilation and the oxygen and carbon dioxide in the expired air, and the maximal level is determined at or near test completion		

Question	Answer	Marks	Guidance

29. (VO_2 max positives)	Can be adapted to different ergometers to be more sport specific, e.g. treadmill, cycle, rower • Most accurate as it is actually a measure of oxygen consumption • Maximal test so gives elite athletes an accurate measure
30. (VO_2 max negatives)	More complicated procedure due to gas analysis • Requires specialist equipment • Expensive • Time consuming • Requires accurate calibration • Requires precision in process to get accurate result • Depends on the skill of person administering the test • Affected by quality of equipment • Maximal test so not suitable for beginners/ injured/ elderly • Hard to carry out with more than one person due to complicated procedure
31. (sport specific)	Which test is best is dependent upon how sports specific you want the test to be • If for cycling – PCW 170 • If running or more team sport based involving running then MSFT
32. (intensity/ fitness levels)	Perhaps for those who are new to exercise then the PCW 170 is best as it is less daunting than the multistage fitness test/ more trained athletes MSFT better as more demanding so better gauge

Question			Answer	Marks	Guidance
			33. (motivation) — The most suitable test might be determined by how motivated they are. • If low motivation a shorter test of lower intensity might be better • If high motivation/ competition then less influence by time and intensity 34. (requirements) — If an elite performer is after a very accurate measure then actually performing a VO_2 max analysis would be most reliable measure • However if just a gauge of aerobic capacity to measure progress then any of the tests would be better • Would only do VO_2 max testing when actual data/ analysis required/ not a measure for general progress		

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