

GCE

Physical Education

Advanced GCE

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

Mark Scheme for June 2012

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Annotations used in the detailed Mark Scheme (to include abbreviations and subject-specific conventions)

Annotation	Description	
✓	= Correct response	
NAQ	NAQ = Not answering the question	
BOD	= Benefit of the doubt	
R	= Repeat	
Vg	= Too Vague	
DEV	= Development	
IRRL	= Significant amount of material which does not answer the question	
SEEN	= Noted but no credit given	
L1	= Level 1	
L2	= Level 2	
L3	= Level 3	
L4	= Level 4	
Р	= Practical example	
E	= Evaluative point (levels scheme)	
i	= Independent opinion (levels scheme)	

Question		Answer		Marks	Guidance
1 (a)	5 marks for 5 of: Factors influencing the 1. (harsh lifestyle) 2. (widespread illiteracy) 3. (limited transport and communications)	e characteristics of mob foo (made MF) cruel or violent/b (made MF) rules simple/unv Or passed on by word of mo (made MF) locally(significant characteristics/local rules Or increased inter-village riv	orutality vritten/local/few rules outh nt)/ had local	5	Sub max 3 for influences Pt 2 Do not accept 'no rules'
		of 'free time' (sub max 2): 18 th century Seasonal time Time linked to/determined by agriculture Many Holy days/holidays No government intervention/no Factory Act/lack of Saturday half day (before 1870's)	19 th century Machine time Time linked to/determined by industry Fewer holy days/ fewer holidays Government intervention/Factory Act/Saturday half day (by 1870s)/week paid holiday (by 1890s)		Sub max 2 for descriptions Both 18 th and 19 th C references needed for a mark
					If inference of change then accept eg introduction of Saturday half day = pt 7

Questi	on	Answer	Marks	Guidance
(b)	5 marks fo		5	Sub max 4 for initial restrictions
		opportunities for lower classes (sub max 4):		initial restrictions
	1. (space			Do not accept
	2. (time			restricted
		72 hour week or fewer holidays/Holy Days Or lack of freedom or 'tied' to factory		opportunities
	3. (time			caused by other
	J. (unie	Or more structured lifestyle		influences eg the
	4. (rights			church or
	4. (lights	or RSPCA restricted blood sports		facilities
		or restrictions due to establishment of police		
	5. (acce	otance) 'old' ways not acceptable to (emerging) middle class		
	6. (healt			
	l o. (noan	of health/ hygiene		
		or disease / cholera or no energy		
	7. (trans			
	8. (incon			
		working class were slaves to the factory or could not afford to take		
		time off work		

Question		Answer	Marks	Guidance
	Increased opportuniti	es for working class participation (sub max 1):		Sub max 1 for
	9. (patronage)	Provision or patronage by industrialists for football or tennis or bowls or other example Or development of factory teams for football or tennis or bowls or other example		increased opportunities – must be linked to a specific activity
	10. (professionalism)	Chance for some to be professionals eg football or Rugby League or other suitable example Or broken time payments for Rugby League or Association Football allowed them to be professional		for mark to be scored Do not accept
	11. (church)	Sunday school or parish football teams		spectator MUST
	12. (provision of facilities eg public baths)	Public baths lead to provision for facilities		be participant
	13. (ex. clause)	Exclusion clauses retracted in athletics or rowing		
	14. (space)	More space such as park provision for tennis		
	15. (time)	More time – (for example to enter an athletics event on a Sunday/Half Day Saturday allows to play football)		
	16. (acceptance)	Rational sports such as tennis or rugby union acceptable to middle class or to the Church		
	17. (transport)	Could travel to games eg travel to cricket		

Question		Answer	Marks	Guidance
(c)	5 marks for 5 of: Impact of Arnold's refo	rms on Rugby School (sub max 4):	5	Sub max 4 for initial impact of
	1. (social control)	He brought about organised/civilised activities or social control or made the schools more civilised or reduced bullying or reduced offsite activities or promoted on-site activities		Dr Arnold's reforms
	2. (relationships)	He improved social relationships/more pastoral care/had a role outside of classroom or he changed the behaviour of boys or he restricted punishments by masters or he tried to establish good relationships with school's neighbours		
	3. (values/Christianity)	He preached Christianity Or values associated with muscular christianity/physical endeavour/athleticism/leadership Or made chapel central to school life Or he transformed the boys into Christian gentlemen		
	4. (general curriculum)	subjects		
	5. (games)	He supported games afternoons Or he saw value in athletic pursuits Or he used games to bring about change Or inter-house games Or competitive sport/inter-school sports		
	6. (responsibility)	He gave the sixth form responsibility Or he treated the sixth form like adults Or he required older boys to become adults/sixth form as 'police force'		
	7. (health)	He encouraged health/cleanliness		
	Arnoldian influence on	schools today (sub max 1):		Sub max 1 for
	8. (games)	Games still central/important to curriculum in some schools or in independent schools Or inter-house/inter-school sport/sports day		Arnold's influence
	9. (values/chapel)	Chapel/religion still central or important to some schools or values still reinforced		
	10. (responsibility)	Sixth form still have roles of responsibility in many schools		
	11. (Heads)	Head teachers promote extracurricular activities		

	Levels Descriptors	Levels Discriminators
Lov	el 4 (18 – 20 marks)	At Level 4 responses are likely to include:
	er 4 (10 – 20 marks) omprehensive answer:	 detailed knowledge of cricket as popular and rational recreation
	detailed knowledge & excellent understanding	 detailed knowledge of clicket as popular and rational recreation detailed analysis of the impact of both class and transport which
	detailed analysis and excellent critical evaluation	includes evaluation as part of the analysis
	well-argued, independent opinion and judgements which are well	excellent understanding of relevant factors including amateurism
	supported by relevant practical examples	and professionalism
•	very accurate use of technical and specialist vocabulary	 all aspects of the question addressed with appropriate balance.
•	high standard of written communication throughout.	
Lev	el 3 (13 – 17 marks)	At Level 3 responses are likely to include:
A co	empetent answer:	good knowledge of cricket as popular and rational recreation
•	good knowledge and clear understanding	detailed analysis of the impact of both class and transport
•	good analysis and critical evaluation	good understanding of relevant factors including amateurism and
•	independent opinions and judgements will be present but may	professionalism
	not always be supported by relevant practical examples	all aspects of the question addressed but not necessarily with
•	generally accurate use of technical and specialist vocabulary	appropriate balance.
•	written communication is generally fluent with few errors.	
	el 2 (8 – 12 marks)	At Level 2 responses <u>are likely</u> to include:
A lin	nited answer:	limited knowledge of cricket as popular and rational recreation
•	limited knowledge and understanding	some evidence of analysis of the impact of class and/or transport
•	some evidence of analysis and critical evaluation	limited understanding of relevant factors with possible reference to
•	opinion and judgement given but often unsupported by relevant	amateurism and professionalism
_	practical examples	an unbalanced approach but at the top of this level all parts of the
•	technical and specialist vocabulary used with limited success	question are likely to be addressed.
Lov	written communication lacks fluency and contains errors. el 1 (0 – 7 marks)	At Level 1 responses <u>are likely</u> to include:
	asic answer:	Show basic knowledge of cricket as popular and/or rational
•	basic knowledge and little understanding	recreation
•	little relevant analysis or critical evaluation	show little relevant analysis of the impact of class and/or transport
•	little or no attempt to give opinion or judgement	 produce an unbalanced response and not address all aspects.
•	little or no attempt to use technical and specialist vocabulary	,
•	errors in written communication will be intrusive.	
[0 m	narks] No response or no response worthy of credit.	

Question		Answer	Marks	Guidance
(d)*	Indicative Content:		20	
	Cricket as pre-indust	rial popular recreation:	_	
	1. (class/gender)	Inclusive game/both classes played together/played by men and women		
		upper class needed lower class to make up numbers		
		uc needed Ic because they were good/strong		
		reflection of feudal system or class structure		
		different roles for different classes eg lower class bowlers		
	2. (employment)	Gentry or UC teams/gentry patrons		
		gentry employed lower class		
		eg as gardeners or gamekeepers		
	3. (rules)	Some early rules/Articles of agreement		
		interest by gentry lead to standardisation of rules		
		eg 1774 – 3 rd stump/six balls an over/illegal to charge fielders attempting to		
		catch ball./under-arm bowling changed to round arm bowling		
	4. (equip)	Limited equipment/low technology		
		uneven/unrolled pitch		
		scores kept by 'notching' on wood/cutting into wood		
		eg club shaped bat/two stumps not three		
	5. (org)	Limited organisation		
		no distinct boundaries		
		no special kit		
	6. (rural)	Rural or village game		
		Hants, Surrey, Kent		
		played on village greens		
	7. (bat & ball)	Bat and Ball Inn (Hambledon, Hants)/'cradle' of cricket/		
		B&B team beat rest of England		
		Attracted large crowds/up to 2000 spectators		
		High stakes/played for large amounts of money		
	8. (MCC)	MCC formed (1788)	1	
		MCC employed Hambledon players as coaches or/and players		
		MCC moved to current site (St John's Wood)1811		
	9. (professionals)	Some (freelance) professionals	1	
		Eg Julius Caesar of Surrey		

Question		Answer	Marks	Guidance
	10. (wagering)	 Wagering on result gentry to show wealth or status/peasants to make money/rage to riches 		
	11. (non-violent)	Non-violent • but you could get batsman/runner out by throwing ball at them between wickets		
	12. (festivals)	Summer evening game/seasonal/festivals/Holy days eg midsummer day/Whitsuntide		
	13. (local)	Locally significant • rules locally adapted		
	Cricket as post indus	trial rational recreation:		
	14. (William Clarke)	 William Clarke XI Clarke an entrepreneur employed professionals took on teams of up to 22 (to make a game) 		
	15. (transport)	(Clarke took advantage of) improved transport		
	16. (Popularity regularity - county cricket)	Cricket became more popular county cricket took over from touring sides more frequent organised matches		
	17. W G Grace	W G Grace was a celebrity (circa 1880) He dominated the game/he became 'bigger than the game itself' eg he once over-rode his early dismissal at Oval saying spectators had come to watch him bat not the umpire		
	18. (Ashes)	Reference Ashes		

Question		Answer	Marks	Guidance
		Improved facilities or equipment Stadia/better pitches Pads/bats etc Influence of factories s may emerge with the following points:		
	20. (class)	Rational cricket had strict class divide middle class amateurs/working class professionals Fewer lower class participants Lack of money for equipment or subs		
	21. (amateur v professional/ differences)	Amateurs and professionals treated differently names appear differently in programmes Mr J Bloggs (gentleman), Bloggs (professional) they ate separately they travelled separately they entered field of play from different door captain usually an amateur/captain always an amateur at national level		
	22. (shamateur)	Grace a 'shamateur'/fake amateur paid £50 per game earned £120,000 from cricket (between 1870 and 1910)		
	23. (class today)	Continued evidence eg disproportionate number of independent school youngsters in many County sides BUT – attempts to redress balance eg Chance to Shine initiative		

Question		Answer	Marks	Guidance
	Impact of transport:			
	24. (enables travel for matches	More able to play teams outside the immediate area more matches / competitions played		
	25. (William Clarke)	See 14 above – his touring side only became viable with expansion of railways (1847)		
	26. (international games)	England v Australia – due to transport improvement		
	27. (road)	Increased car use		
	28. (flights)	 special coaches put on Increased air transport helped cricket world cup (1970s) cheap internal/European flights 		
		eg excursion flights for 'Barmy Army' use of helicopters by high earning players		
	29. (spectatorism)	Transport increased spectatorism/link between time distance cost and speed		
	30. (trains)	Special trains provided		

Section A Comparative Studies (Option A2)

Question		Answer	Marks	Guidance
2 (a)	5 marks for 5 of:		5	
		alism on the game of Rugby Union in Aus:		
	1. (end of amateur era)	the end of / limiting of (pre 1995) amateurism or 'Shamateurism'		
	2. (intensity)	more intense training		
		Or a harder or more demanding game		
		Or approach/more serious injuries/ shorter playing careers		
	3. (skill)	more skilful or better players/promote sporting excellence		
	4. (pathway)	more structured pathway programmes		
		Or reference to impact of academies		
		Or young players selected by pro clubs/best players scouted		
	5. (celebrity	celebrity status for elite or high earning careers for elite		
	earners/role models)	Or professionals act as role models (to increase participation)		
	6. (winning/	more focus on winning (at all costs)		
	deviance)	or more temptation towards or evidence of deviance		
	7. (commercial)	professionalism has made game increasingly 'increased commercialised'		
		Or reference to links with 'golden triangle'/increase in sponsorship funds		
	8. (facilities/ coaching)	Better facilities/equipment/coaching/support		
	9. (entertainment)	Mascots or cheerleaders or other examples of entertainment linked to game		
	10. (laws)	Rules changed to make game more media friendly attractive or watchable		
	11. (media interest/ spectators)	Intense/Increase media/spectator interest or coverage		Accept for pt 11 Super
	12. (league)	Super competition/super 12/14s (from 2011) or world class leagues		15s
	13. (RU v RL)	Rugby Union still less dominant than Rugby League in Australia		
		Or Top Rugby League players switching to Rugby Union		
		Or fewer Rugby Union players going to Rugby League		
	14. (overseas	Opportunities for British / other players to work/live/play in Australia/eg Danny		
	opportunities)	Cipriani employed by Melbourne Rebels		
	15. (women's game)	Since professionalism women's Rugby union has developed		

Question		Answer		Marks	Guidance
(b)	5 marks for 5 of: Opportunities for your SIM = similarity DIFF = Differences	oung people to participate		5	
	1. (Little League) 2. (Midnight leagues) 3. (clubs/gyms) 4. (PE in schools) 5. (sports within a school/intra mural) 6. (inter-school sport)	UK Community clubs/village or town teams/lads 'n' dads Or role of NGB's/Sport England to promote Or (some argue) less competitive than USA Midnight Leagues being copied in UK Or less or some evidence in UK Eg (general sporting) Game On Midnight Leagues or midnight football in Scotland Health clubs/gym membership School Physical Education gives variety of experiences/NC compulsary Or school PE focuses on skill development and BAHLs Or PESSYP in schools Intra-school sporting opportunities in (many/most) schools inter-school sporting opportunities in (many/most) schools or differences between schools' opportunities highly competitive or in some schools/more recreative in other schools	Little League/Eg Pop Warner Football or Biddy Basketball or Pee Wee Baseball/lads 'n' dads/hook a kid on golf Or American Athletic Union Or some argue more competitive than UK Midnight Leagues/midnight basketball SIM Health clubs/gym membership DIFF – PE in USA has different focus/No NC Or PE in USA focuses on testing and measuring Or PEP (Physical Education for Progress) (comprehensive) intra-mural sport programmes DIFF – tradition of highly competitive inter-school sport programmes Or inter-school sport more elitist		Must have comparison for mark to be awarded. Look for inferred comparisons eg more focus on skill development in the UK (infers less in the USA) = pt 4

Question	Answer			Marks	Guidance
	7. (Summer camps)	SIM – being copied in UK or idea growing in UK (Eg PGL similar) or not as widespread in UK	(tradition of) Summer camps Or children 'go away' for (all or part of) the summer		
	8. (National leagues/ competitions)	SIM -Leagues or competitions	Leagues or competitions (arranged by Amateur Athletic Union)		
	9. (natural or community provision)	Other natural or community provision Eg swimming pools or beaches	SIM (arguably) increased variety of natural resources in USA		

	Answer	Marks	Guidance
5 marks for 5 of:		5	Sub max 4 for description
Describe social discrimination and stacking (sub max 4):			
1. (social discrimination)	Unfair treatment of certain groups Or unfairness / bias / intolerance / bigotry linked to age / gender / disability / ethnicity		Accept practical example for application to
2. (social discrimination applied to sport)	Reference to lack of opportunity, provision, esteem for certain groups within sport Or discrimination linked with lack of money or ability or time or choice or access (eg cannot afford to join a golf club)		sport as part of the description
	Or discrimination linked with limited equipment or facilities, coaching (eg do not get private tennis coaching) Or discrimination due to limited confidence or respect (eg do not feel confident enough to join a club)		
3. (stacking)	Societal stacking – the layering of society on a discriminatory basis		
4. (stacking applied to sport)	The directing of players from particular ethnic groups into certain positions on a sports team Or players who experience discrimination have traditionally had less opportunity to hold key positions (e.g notion of 'white quarterback')		
One example of o	vercoming discrimination in the UK (sub max 1):		
5.	Accept reference to an idea or campaign that sets out to limit or overcome unfairness or discrimination eg women only sessions at leisure centres or reduced rates at leisure centres for unemployed or appointment of sports equity officers by Local Authorities or formation of Sports Equity Alliance or improved physical access for people with disabilities etc		Accept title of campaign eg Kick racism out of football
	Describe social discrimination) 2. (social discrimination applied to sport) 3. (stacking) 4. (stacking applied to sport) One example of over the social discrimination applied to sport)	Describe social discrimination and stacking (sub max 4): 1. (social discrimination)	5 marks for 5 of: Describe social discrimination and stacking (sub max 4): 1. (social Unfair treatment of certain groups Or unfairness / bias / intolerance / bigotry linked to age / gender / disability / ethnicity 2. (social Reference to lack of opportunity, provision, esteem for certain groups within sport Or discrimination linked with lack of money or ability or time or choice or access (eg cannot afford to join a golf club) Or discrimination linked with limited equipment or facilities, coaching (eg do not get private tennis coaching) Or discrimination due to limited confidence or respect (eg do not feel confident enough to join a club) 3. (stacking) Societal stacking – the layering of society on a discriminatory basis 4. (stacking The directing of players from particular ethnic groups into certain positions on a sports team Or players who experience discrimination have traditionally had less opportunity to hold key positions (e.g notion of 'white quarterback') One example of overcoming discrimination in the UK (sub max 1): 5. Accept reference to an idea or campaign that sets out to limit or overcome unfairness or discrimination eg women only sessions at leisure centres or reduced rates at leisure centres for unemployed or appointment of sports equity

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. Level 3 (13 – 17 marks) A competent answer: good knowledge and clear understanding	 At Level 4 responses are likely to include: detailed direct and relevant comparison of impact of cultural aspects in Australia and UK excellent understanding of impact of cultural factors on the development of sporting excellence with a broad range of factors considered. At Level 3 responses are likely to include: good direct and relevant comparison of Australia and UK clear understanding of impact of cultural factors on the development of
 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. 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 	At Level 2 responses are likely to include: some evidence of direct and relevant comparison of Australia and UK limited understanding of impact of cultural factors on the development of sporting excellence with a limited range of factors considered.
 technical and specialist vocabulary used with limited success written communication lacks fluency and contains errors. 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. [0 marks] No response or no response worthy of credit. 	At Level 1 candidates are likely to include: Iittle evidence of direct and relevant comparison of Australia and UK basic understanding of impact of cultural factors on the development of sporting excellence with a limited number of factors considered.

Question	Answer			Marks	Guidance
(d)*	Indicative Conte	ent:		20	
		Australia – all points to link to development of excellence:	UK – all points to link to development of excellence:		
	Historical:				
	1. (historical)	Keen to beat England or old colonial 'masters' or old Motherland/'Pommie bashing' as measure of 'progress'	Keen to beat old colony to show superiority		
	2. (British sports)	Adopted British sports in colonial period eg Rugby Union and League, cricket	Many sports developed in Britain		
		Initially amateur approach	Initially amateur approach		
	3. (bush culture)	Bush culture/culture of manliness/pioneering spirit suits high level/competitive sport	Tradition of sophistication/and claims of being a model of civilisation during days of 'Empire'		
		eg Aussie Rules Football			
	4. (end of bush	(But) – contemporary sport limits traditional image of ruggedness/modern sporting success			
	culture)	showcases increasingly sophisticated nation eg country on show in Sydney Olympics			
	Geographical:				
	5. (climate)	Favourable climate for sport outdoor sports all year round eg beach culture and sports	Less favourable climate for sport outdoor sport impacted on by weather and/or climate eg disruption to matches from school to prof. level		
	6. (urban)	Urbanised society encourages provision of facilities	Small (urbanised) society • helps facility provision eg local sports centres and community provision		
	7. (natural resources)	Accessibility or availability of varied natural resources for sport • plenty of space • varied topography eg mountains, desert, beaches etc	Less variety in UK/less accessibility/less scope Iimited 'free' space/overcrowding		

Question		Answer		Marks	Guidance
	8. (transport)	Good internal communication system stimulates competition • driving long distances the norm/excellent internal rails and air services	SIM		
	9. (population)	 (approx) 21 million/small population limited 'pool' to select from strong incentive for small population to be sporting superpower Australia – all points to link to development 	 (approx) 60 million/larger population larger 'pool' more to select from UK – all points to link to 		
		of excellence:	development of excellence:		
	Government:		•		
	10. (gov. support)	Government or political support for sporting excellence	 Government supports sporting success/ 'less' Gov funding than Australia National Lottery funds high performance sport 'issues' linked with recession/local authority cut backs Uk Sport etc central eg 'plug pulled' from 'free' swimming initiative 		
	11. (reflects well)	Sporting success reflects well on government	Less strong link between sporting success and politics/traditionally sports has been autonomous or separate from Government intervention		
	Economic:				
	12. (economic)	 (Comparatively) healthy economy happy to spend on high performance sport eg big investment in Sydney Olympics/hosting Ashes series or other example of being host nation 	 (Comparatively)less healthy economy impact of recession/impact of pressure on lottery funding/impact of performance related funding BUT – eg committed to funding for London 2012/hosting the ashes 		

Question		Answer		Marks	Guidance
	Social:				
	13. (Land of fair go)	 Australia as 'Land of the Fair Go' international sporting success supports idea of opportunities for all Eg disproportionate number of aboriginal people in high level Australian Rules Football 	Reference to discrimination and attempts to overcome discrimination		
	14. (equality)	Australia a multi-cultural society opportunities (in theory) for all to achieve excellence commitment to paralympic or disability sport	SIM		
	15. (multi- culturalism)	Australia an egalitarian society international sporting success helps address equality issues or helps to overcome discrimination	SIM		
	16. (unity)	International sporting success unites or gives focus to (small) population			
	17. (image)	Shop window effect sporting success gives positive image or enhances national identity/good image for 21st century sport endorses political system internationally Eg excellent of Sydney 2000	SIM – Shop window effect Eg London 2012 context/reference BUT – sport used less or not used to endorse political system internationally		
	18. (obsession)	Sporting obsession winning a high priority pursuit of excellence fuelled by pre- occupation or obsession with sport Australian displeasure over position in Olympic medals table after Beijing 2008	Sport valued but less of a pre- occupation in UK winning increasingly important		

Section B Sports Psychology (Option B1)

Q	uestion		Answer	Marks	Guidance
3	(a)	Features of a 'Naf' (sub max 2):	4	Mark the first two
		1. (innate)	Innate personality characteristics		identifiable descriptions
			or natural trait or enduring		
		2. (avoidance)	Avoidance behaviour		
			Or seek unattainable tasks		
			Or does not seek challenges/excitement/risks		Sub max 2 for features of a
			Or more anxious/stressed		Naf
		3. (non-competitive)	Is non-competitive		
		4. (lack of	Low levels of confidence/self-efficacy		
		confidence)	Or has learned helplessness		
		5. (gives up)	Is not persistent or gives up easily		Accept practical examples
			Or lacks determination.		as a description
		6. (avoids	Does not take responsibility		
		responsibility			
		7. (dislikes	Dislikes/avoids feedback/evaluation		
		feedback)	Or does not like/avoids an audience		
		8. (attribution)	Attribute success to external factors		
			Or attribute failure to internal factors/to themselves		
			achieve (Nach) (sub max 2):		Sub max 2 for changing to
		9. (+ve	Raise confidence or praise		need to achieve (Nach)
		reinforcement / confidence)	Or positive reinforcement/reward/verbal persuasion		need to achieve (Nach)
		10. (SMART goal	Give SMART goals		
		setting)	Or achievable targets/simple		
			Or incremental target		
		11. (Process goals)	Give process or performance goals (rather than		
			product/outcome goals)		
		12. (Identify	Identify success		
		success or	Or redefine success		
		process goals)	Or make them see what they have achieved		
			Or reflect on past success		

Question		Answer	Marks	Guidance
	13. (skill)	Improve skill/ability level or skills training		
	14. (control arousal)	Control arousal or calm them down or through stress management techniques		
	15. (reattribution)	Reattribute failure to controllable factors to empower or reattribute failure to external factors to raise confidence or reattribute failure to unstable factors/changeable factors or reattribute success to internal factors		
	16. (role models)	Show role models succeed or show others of similar ability succeed to raise confidence or use vicarious experiences or seeing others succeed or be rewarded		
	17. (Avoid evaluation)	Isolate performance from others or do not have an audience or solitary skill learning		

Question		Answer	Marks	Guidance
(b)	(Different effects of 5 marks for 5 from	f arousal in front of audience)	5	Credit opposites eg when task is fine with high arousal then
	1. (dominant response)	(increase in arousal/presence of an audience) leads to likelihood of the dominant response		performance will deteriorate
	2. (general)	Arousal levels/ presence of an audience can help performance or social facilitation/positive affects or hinder performance or social inhibition/negative affects		Do not award full 5 marks unless all three variables are covered (pts 3 – 8)
	3. (task)	If task is gross/dynamic/simple/closed/ballistic then high arousal/presence of audience with optimise performance		ie sub max 4 marks if only two
	4. (task)	If task is fine/complex/open then low arousal/lack of audience will optimise performance/arousal		variables covered
	5. (ability)	If weaker players/novices performance then low arousal/lack of audience will optimise performance		
	6. (ability)	If good performer/well learned/stronger/elite then high arousal/presence of audience will optimise performance		
	7. (personality)	Extroverts prefer high arousal/ presence of an audience for optimum performance / higher confidence		
	8. (personality)	Introverts prefer low arousal/lack of audience for optimum performance / lower confidence		
	9. (attention)	Attention narrows (for those who are used to audiences /those with high levels of ability) or attention narrowing will optimum cue utilisation		

Question		Answer	Marks	Guidance
(c)	Cognitive dissonan		6	Sub max of 3 for explaining
	1. (Differences)	Creating disharmony or discord or disagreement or differences between the components of an attitude		cognitive dissonance Sub max 3 for methods
	2. (triadic model)	Changing one aspect of the triadic model or influences the triadic model		Can use practical examples to
	3. (cognitive element)	Changing the cognitive element or changing beliefs to change attitudes		explain
	4. (affective element)	Changing the affective element or changing emotions/feelings to change attitudes		
	5. (behavioural element)	Changing the behavioural element or changing actions to change attitudes		
	6. (drive for consonance)	The changing of a component/s causes a drive to re- establish consonance or changing a component will make us try to change the other elements		
		ng attitudes relating to lifestyle (sub max 3):		
	7. (positive reinforcement)	Positive reinforcement or praise or giving reward - for following a healthy lifestyle or example of this eg a personal trainer giving praise for participating in regular		Mark first three methods only Must relate to BAHL
		exercise		
	8. (negative reinforcement)	Negative reinforcement or taking away a negative stimulus – to ensure change in attitudes or example eg realising that they feel less tired if they exercise or eat healthily		Accept practical examples as a description (but practical examples are not required)
	9. (punishment)	Punish dysfunctional or unhealthy lifestyle – to stop negative attitudes or example eg convicting someone if they are taking drugs		
	10. (cognitive method)	Promoting or Educating or getting them to believe – in the value of a healthy lifestyle or testing/measuring them to show how unhealthy they are		
	11. (affective method)	Getting them to enjoy activity/eating healthily to ensure a positive attitude or example of this eg varying the exercise routines or educating them about eating tasty but healthy foods		

Question		Answer	Marks	Guidance
	12. (role models)	Use role models – to show benefits of following a healthy lifestyle		
	13. (reattribution)	Using reattribution – to give reasons for following an unhealthy lifestyle as being controllable/internal /unstable or emphasising that lifestyle is under your control		
	14. (raise self- esteem/ 15. (confidence)	Raise self esteem or confidence – by convincing /persuading/verbally/reflecting on previous success or guiding them that they are able to look after themselves		
	16. (group or peer pressure)	or to value themselves Encourage them to join a group (of like minded people) – that follow healthy lifestyles or use vicarious experiences or show others who follow a healthy lifestyle be		
	17. (goal setting)	successful/more healthy (mentally/physically) Set goals/targets that are specific/achievable/relevant / realistic or give success by setting targets that are going to be achieved fairly easily to ensure a positive attitude		

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. 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. 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	At Level 4 responses are likely to include: excellent use of Weiner's model when describing all of the attributions accurate use of appropriate technical terminology from Weiner's model most points developed well with good references to the practical examples given excellent critical evaluation involves both positive and negative points and likely to have reasoned conclusions. At Level 3 responses are likely to include: good use of Weiner's model when describing most or all attributions generally accurate use of technical terminology from Weiner's model some points developed well with some reference to the practical examples given good critical evaluation with some positive and negative points made. At Level 2 responses are likely to include: limited use of Weiner's model when describing some attributions with some inaccuracies relevant technical vocabulary from Weiner's model used with limited success
 practical examples technical and specialist vocabulary used with limited success written communication lacks fluency and contains errors. 	 few points are developed with little reference to the practical examples given limited critical evaluation with either positive or negative points made.
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. [0 marks] No response or no response worthy of credit.	At Level 1 responses are likely to include: Iittle or no use of Weiner's model with few attributions directly referred to with many inaccuracies Iittle or no technical vocabulary from Weiner's model – superficial descriptions of attributions under-developed points response that is likely to be descriptive rather than evaluative.

Question			Answer			Marks	Guidance
(d)*	Indicative Content: (Describe the different types of	of attributior	n)			20	
				LOCUS OF C	AUSALITY		
				INTERNAL	EXTERNAL		
	S	TABILITY S	STABLE	ABILITY	TASK DIFFICULTY		
	DI	IMENSION	JNSTABLE	EFFORT	LUCK		
	2. (statement 1) 'The pitch did not suit our skilful way of playing; the pitch was too slippy' (EXTERNAL/STABLE)	drawing of	model to sho e factors are geable (over rnal factors ar esitional/to do environment) ental/external ding personal, difficulty too h	own attributions unchanging an the short term) re environment with individua reason/factors /dispositional re	d unstable factors are		
	3.	avoid	•		he coach or for team morale 't do anything about it so feel		
	4.	matches			be unstable over a period of erent/drier pitch)		
	5. (statement 2) 'We were unlucky; we played well but it was one of those days' (EXTERNAL/UNSTABLE)	• canno		•	ility		

Question		Answer	Marks	Guidance
	6.	Keeps motivation high • encourages sense that next time we might be luckier		
	7.	Unstable attribution • changeable		
	8. (Statement 3) 'We were not good enough; they deserved to win' (INTERNAL/STABLE)	Internal/dispositional reason		
	9.	Encouraging players to recognise that they must work harder or perform better next time more training adopt better tactics or strategies		
	10.	Stable reason if related to ability ability difficult to change over short term ability (relatively) uncontrollable		
	11.	Unstable reason if related to effort effort is easily changed effort is controllable		
	12. (Statement 4) 'Our players did not seem to be bothered; they just didn't try hard enough' (INTERNAL /UNSTABLE)	Internal/dispositional reason		
	13.	Encouraging players to recognise that they must work harder or perform better next time • more training • adopt better tactics or strategies		
	14.	 Unstable reason effort is easily changed effort is controllable 		

Question		Answer	Marks	Guidance
	Critical evaluation (E) of the	effects of these attributions could include:		
	15. (1) 'The pitch did not suit	Effect could be to keep up morale/motivation (+)		
	our skilful way of playing;	self-serving bias – protecting self esteem (+)		
	the pitch was too slippy'	may lead to tactics/different footwear etc being adopted to		
	(EXTERNAL/STABLE)	deal with such conditions (+)		
	16.	but could shield other real reasons (-)		
		could lead to lack of improvement (-)		
	17. (2) 'We were unlucky; we	Effect could be to keep up morale/motivation (+)		
	played well but it was one	self-serving bias – protecting self esteem (+)		
	of those days' (EXTERNAL/UNSTABLE)	keep team cohesive or no-one is to blame (+)		
	18.	but could shield other real reasons (-)		
		could lead to lack of improvement (-)		
	19. (3) 'We were not good	Effect could be to motivate to try harder (+)		
	enough; they deserved to	different training methods adopted (+)		
	win'	high fitness levels worked for (+)		
	(INTERNAL/STABLE)	could lead to trying to reach mastery orientation (+)		
	20.	Effect could be to experience learned helplessness or a sense of		
		failure or to de-motivate (-)		
		morale of team could go down (-)		
		future matches could be lost or performance deteriorates (-)		
	21. (4) 'Our players did not	Effect could be to motivate to try harder (+)		
	seem to be bothered; they	different training methods adopted (+)		
	just didn't try hard	high fitness levels worked for (+)		
	enough' (INTERNAL /UNSTABLE)	could lead to trying to reach mastery orientation (+)		
	22.	Effect could be to experience learned helplessness or a sense of		
		failure or to de-motivate (-)		
		morale of team could go down (-)		
		future matches could be lost or performance deteriorates (-)		
		Effect could be a deterioration of team cohesion (-)		
		individuals might fall out with each other causing		
		disruption/hostility (-)		

Question		Answer	Marks	Guidance
	23. Conclusions 24. Suggestions	That certain attributions are better than others with reasons internal unstable attributions usually better to motivate team members or to avoid learned helplessness Examples of other attributions that could be given that might be helpful specific tactics/areas of play that may be the cause of losing coach may take some responsibility		
	25. Controllability dimension	 use of other observers or technology to show possible and more undisputed causes of losing the game. other relevant attributions that would lead to greater motivation and improvement in performance Weiner's model has been extended or third dimension - to include 		
	20. Controllability difficulties	 control as an aspect the degree to which individuals perceive themselves as able to influence events. When success can be attributed to factors within your own control, motivation is likely to be increased This reinforces concept of mastery orientation This reinforces that lack of control can lead to learned helplessness 		

Section B Biomechanics (Option B2)

Question		Answer		Guidance
4 (a)	4 marks for 4 from:		4	
	1. (distance)	(Distance) is the length of the path / route / course taken by a body in moving from one position to another.		Do not accept 'total distance travelled' 'from a to b'
	2.	Distance = 150 <u>m</u>		
	3. (displacement)	(Displacement) is the shortest/straight-line route/distance between two positions		Accept 'how far they have travelled'
	4.	Displacement = 50 <u>m</u>		
(b)	5 marks for 5 from: Maximising height		5	
	1. (N1)	(Newton 1/law of inertia) High jumper will remain on the floor unless an external/unbalanced force acts on him		Do not accept
	2. (N1)	(N1) To leave the floor reaction/upward force must be greater than weight/downwards force/R>W/net upwards force		A definition of Newton's Laws
	3. (N2)	(Newton 2/law of acceleration/momentum) The greater the net/resultant force the greater the acceleration		Accept
	4. (N2)	(N2) The greater the acceleration the greater the height achieved		Definitions of Newton's Laws applied to high jumper
	5. (N3)	(Newton 3/law of reaction) The high jumper applies a force downwards into the floor		
	6. (N3)	(N3) Therefore the ground applies an (equal) upward force on the high jumper		

Question		Answer	Marks	Guidance
(c)	Diagram (sub max 1): 1. (Diagram)	E/Effort Or eq.	6	Guidance
	Description of composition of compos	pnents of third class lever (sub max 2) Fulcrum/F is the joint/elbow Load is the weight of the lower arm/limb/weights/resistance in		Sub max 1 for diagram Sub max 2 for description
	4. (effort)	the hands Effort is the force applied by the biceps (brachii)/muscle		Sub max 3 for explanation
	Explanation of advantages5. (disadvantages)6. (advantages)7. (explanation)	It requires more effort to move an equivalent load/mechanical disadvantage/performer struggles to move heavy loads Third Class lever can give a greater/larger range of movement/speed of load is faster than speed of effort/can produce faster/quicker movement Because the effort lies between fulcrum and load/closer to fulcrum than load Or the load is further away from the fulcrum than the load Or load arm is greater than effort arm		Do not accept 'more effort' on its own for pt 5

	Levels Descriptors	Levels Discriminators			
Leve	el 4 (18 – 20 marks)	At Level 4 responses <u>are likely</u> to include:			
	emprehensive answer:	accurate and clear sketch of velocity-time graph showing excellent			
•	detailed knowledge & excellent understanding	understanding of vector (negative) nature of velocity			
•	detailed analysis and excellent critical evaluation	description of graph showing detailed knowledge			
•	well-argued, independent opinion and judgements which are	accurate and clear use of a free body diagram showing all forces			
	well supported by relevant practical examples	acting on ball			
•	very accurate use of technical and specialist vocabulary	detailed analysis of both the generation and effect of all the forces			
•	high standard of written communication throughout.	very accurate use of technical language throughout the answer.			
Lev	el 3 (13 – 17 marks)	At Level 3 responses are likely to include:			
A co	mpetent answer:	clear sketch of velocity-time graph for first part of sequence			
•	good knowledge and clear understanding	candidates at top end of this level will show understanding of the			
•	good analysis and critical evaluation	vector nature of velocity			
•	independent opinions and judgements will be present but	description of the graph showing good knowledge			
	may not always be supported by relevant practical examples	free body diagram is clear and shows all three forces but there may be			
•	generally accurate use of technical and specialist vocabulary	some inaccuracies at the lower end of this level			
•	written communication is generally fluent with few errors.	• good analysis of both the generation and effect of the forces is evident			
		generally accurate use of technical language.			
	el 2 (8 – 12 marks)	At Level 2 responses <u>are likely</u> to include:			
A lin	nited answer:	velocity-time graph attempted but likely to show inaccuracies in the			
•	limited knowledge and understanding	understanding of changing velocities			
•	some evidence of analysis and critical evaluation	description of the graph shows limited knowledge			
•	opinion and judgement given but often unsupported by relevant practical examples	free body diagram attempted but not all forces shown and with some inaccuracies			
•	technical and specialist vocabulary used with limited success	some evidence of analysis of either the generation or effect of the			
•	written communication lacks fluency and contains errors.	forces is evident			
		technical language used with limited success.			
Leve	el 1 (0 – 7 marks)	At Level 1 responses <u>are likely</u> to include:			
A ba	sic answer:	little or no attempt at a velocity-time graph and basic understanding of			
•	basic knowledge and little understanding	changing velocities			
•	little relevant analysis or critical evaluation	a basic attempt at a free body diagram			
•	little or no attempt to give opinion or judgement	little understanding of the effect of the forces.			
•	little or no attempt to use technical and specialist vocabulary				
•	errors in written communication will be intrusive.				
[0 m	parks] No response or no response worthy of credit.				

Question		Answer	Marks	Guidance
(d)*	Indicative Content:		20	
	Graph			
	Sketch	Velocity/time graph		
		VELOUNT VELOUNT VELOUNT TIPLE -VE		
	Description:			
	1. (acceleration)	Acceleration/increase in velocity of the ball.		
	2. (Constant velocity)	 when ball is being hit by player A Constant/slight decrease in velocity/deceleration 		
	2. (Constant velocity)	when ball has left player A's racquet		
		ball during flight to player B		
	3. (deceleration)	Large deceleration/decrease in velocity		
		ball has hit player B's racquet		
	4. (change direction)	Change direction Accerleration of ball/increase velocity of ball in opposite direction		
	5. (constant velocity)	 when ball is being hit by player B Constant/slight decrease in velocity in opposite direction 		
	3. (Constant velocity)	when has left B		
		flight to net		
	 		 []	
	6. (ball stopping)	Large deceleration/decrease in velocity		

Question		Answer	Marks	Guidance
	Free body diagram:			
	7.	Direction of Motion ->> MF(9) W (7)		
	8. (weight)	Weight acting downwards from CM		
	9. (air resistance)	Air resistance opposite direction of motion • From edge of ball or centre of mass		
	10. (magnus force)	Magnus/force acting upwards from CM perpendicular to direction of motion		
	(Generation/effect of force Weight:	es)		
	11. (gravity)	 (Gravitational) force that the earth exerts on a body measured in newtons W = mg 		
	12. (mass)	Depends on the mass of a body • greater mass = greater weight		
	13. (altitude)	Depends on distance from centre of earth/ altitude further/higher = less W		
	14. (flight path)	Causes ball to have parabolic/symmetrical flight path g = constant 10ms-2		
	15. (effect of size of mass)	Heavier ball means slower flight more force required to keep same acceleration acceleration indirectly proportional to mass		

Question		Answer	Marks	Guidance
	Air resistance:			
	16. (definition)	Force acting in opposite direction to motion of body travelling through air		
	17. (velocity)	Depends on velocity of ball • faster = greater AR		
	18. (shape)	 Depends on shape/frontal x-sectional area more streamline = less AR greater frontal X-sectional area = more AR 		
	19. (surface)	Depends on surface of ball rougher/fluffier = greater AR		
	20. (density)	Depends on density of air/altitude denser/lower = greater AR		
	21. (effect of AR 1)	Causes ball to decelerate • greater AR = greater deceleration		
	22. (effect of AR 2)	Causes asymmetrical/non parabolic flight path • shortens flight path		
	Magnus effect:		7	
	23. (spin)	 Caused by spin during flight amount determined by off centre/eccentric force/torque at beginning of flight 		
	24. (backspin)	Backspin causes air to travel further over top of ball		
	25. (pressure gradient)	Air moves from high to low pressure/gradient • creates lift force on ball		
	26. (flight path)	Creates asymmetric/non parabolic flight path lengthens flight path		Accept opposite
	27. (more spin)	More spin means more distance means more magnus force but less speed		points for Magnus effect

Section B Exercise and Sport Physiology (Option B3)

Q	uestion		Answer	Marks	Guidance
5	(a)	5 marks for:		5	
		Pody compos	sition (out may 1).		
			sition (sub max 1):		Sub max 1 for body composition
		1.	Fat mass and lean body mass		Sub max 1 for body composition
			OR % of body weight that is fat (adipose tissue) and weight of the rest of the body (bone, muscle, organs)		
			the rest of the body (bone, muscle, organs)		
		Assessing bo	ody composition (sub max 4):		
		2.	Hydrostatic weighing		Only mark first method given
		3.	Obtain subject's scale weight (out of water)		
		4.	Totally immersed in a tank of water		Sub max 4 for one of the body
		5	Find their underwater weight (must remain motionless)		composition techniques
		6	Calculate the difference between scale weight and underwater weight		
		7.	Greater the difference between the dry and wet weights, the more fat the person has		
		8.	Density of water/trapped air in lungs may be taken into account		
		9.	Bioelectrical Impedance Spectroscopy/BIS		
		10.	Use body fat scales		
		11.	(Low, safe) electrical current is sent through the body		
		12.	Passes freely through muscle		
		13.	Encounters resistance (when it passes through fat/adipose		
			tissue this is called bioelectrical impedance)		
		14.	When set against height and weight, % body fat can be		
			calculated		
		15.	Skinfold Measures		
		16.	Skin fold callipers are used (not pinchers/grabbers)		
		17.	These measure (in millimetres) the (subcutaneous) fat below		
			the skin		

Question		Answer	Marks	Guidance
	18.	At selected sites on the body/these sites can vary/more detailed tests use more sites		
	19.	but common sites include triceps/biceps/subscapular/ suprailiac (regions of the body)		
	20.	Sites can be gender specific/fat is distributed differently in males and females		
	21.	The sum of these skin folds is used to estimate % body fat		
	22.	Bod Pod		
	23.	Fitted clothing must be worn by subject/hair covered (in swim cap)		
	24.	Weight of subject is measured		
	25.	BodPod is calibrated		
	26.	Subject sits inside the BodPod		
	27.	Twice/for 50 seconds		
	28.	Test results can be printed from the computer		
(b)	Adaptation Adaptation Adaptation 1. Incres 2. Incres 3. Great 4. (Greatinitian Benefit to Increased OR Decreor OR Impresion OR Impresio	eased elasticity/increased length (of muscles and connective tissue) eased resting elasticity atter range of movement at a joint atter range of movement (ROM)) before the stretch reflex is ted/stretch reflex inhibited	4	Need both adaptation and benefit for mark – any combination Accept repeat benefits but adaptations must be different to score further marks Do not accept: 'greater flexibility'

Question		Answer	Marks	Guidance		
(c)	6 marks for 6 from: Use of periodisation to plan a health and fitness programme Periodisation (general): (sub max 4 marks)			Examples, where used, should relate to a personal health & fitness programme		
	Use of periodisation (general) 1. 2. 3. 4. 5. 6. 7.	on to plan a health and fitness programme	6	relate to a personal health &		
	12. (overload)	needed/taper when necessary working in blocks allows alteration of intensity/duration/frequency of exercise				

	Lavala Daganintana	Lavela Diagriminatana			
	Levels Descriptors	Levels Discriminators			
	el 4 (18 – 20 marks)	At Level 4 responses <u>are likely</u> to include:			
A co	mprehensive answer:	detailed knowledge of the energy systems			
•	detailed knowledge & excellent understanding	excellent understanding of all three energy systems and their use in			
•	detailed analysis and excellent critical evaluation	relation to intensity and duration of activity			
•	well-argued, independent opinion and judgements which are well	excellent understanding of the relationship between the three energy			
	supported by relevant practical examples	systems – energy continuum, thresholds			
•	very accurate use of technical and specialist vocabulary	excellent evaluation of the use of energy systems			
•	high standard of written communication throughout.	excellent application of practical activities to the relevant energy system.			
	el 3 (13 – 17 marks)	At Level 3 responses <u>are likely</u> to include:			
A co	mpetent answer:	good knowledge of the energy systems			
•	good knowledge and clear understanding	clear understanding of all three energy systems and their use in relation to			
•	good analysis and critical evaluation	intensity and duration of activity			
•	independent opinions and judgements will be present but may	clear understanding of the relationship between the three energy systems			
	not always be supported by relevant practical examples	– energy continuum, thresholds			
•	generally accurate use of technical and specialist vocabulary	good evaluation of the use of energy systems			
•	written communication is generally fluent with few errors.	good application of practical activities to the relevant energy system.			
	el 2 (8 – 12 marks)	At Level 2 responses <u>are likely</u> to include:			
A lim	nited answer:	limited knowledge of the energy systems			
•	limited knowledge and understanding	limited understanding of the energy systems and their use in relation to			
•	some evidence of analysis and critical evaluation	intensity and duration of activity			
•	opinion and judgement given but often unsupported by relevant	limited understanding of the relationship between the energy systems –			
	practical examples	energy continuum, thresholds			
•	technical and specialist vocabulary used with limited success	some evidence of evaluation of the use of energy systems			
•	written communication lacks fluency and contains errors.	Iimited application of practical activities to the relevant energy system.			
	el 1 (0 – 7 marks)	At Level 1 responses <u>are likely</u> to include:			
A ba	sic answer:	basic knowledge of the energy systems			
•	basic knowledge and little understanding	little understanding of energy systems			
•	little relevant analysis or critical evaluation	little relevant evaluation; response likely to be descriptive.			
•	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.				
[0 m	arks] No response or no response worthy of credit.				

Question			Answer	Marks	Guidance
(d)*	Indicative Content: (Critically evaluate the use of energy systems to resynthesize ATP)			20	
	1.	(ATP)	energy currency of body		
			stores last up to 2 secondsATPase		
			structure of ATP		
	2.	(ATP resynthesis)	 reversible reaction exothermic/endothermic reactions 		
	3.	Energy Continuum (accept graph)	systems do not work in isolation/they interact to resynthesise ATP		
			 energy system thresholds/the point at which one system is taken over by another as the predominant system 		
	4.	Exercise intensity and duration of the activity being undertaken will affect which	high intensity/short duration – predominant systems are ATP/PC and LA love to greating intensity/long duration.		
		energy system is predominant	 low to medium intensity/long duration – predominant system will be aerobic 		
	5.	Fitness level of the performer will affect which energy system is	thresholds will change depending upon training done		
		used and when	 oxygen supply will vary fuel available will vary enzyme activation levels will vary 		
	6. ATP/PC system	ATP can be resynthesised via ATP/PC system/alactic system/PC system	 enzyme activation levels will vary sufficient detail about this system eg involves coupled reactions PC is broken down into P + C + energy 		
			This is an exothermic reaction Energy released + ADP + PATP Site= muscle cell sarcoplasm		
	7.	Identify use with a high intensity	Enzyme = creatine kinasesuitable example		
		and short duration activity	up to 10 seconds		

Question			Answer	Marks	Guidance
	8. E	Advantages of this system identified	 no fatiguing by products are produced allows for the quick re synthesis of ATP/doesn't need oxygen or few reactions PC can be quickly re synthesised (so recovery is quick)/50% recovery in 30 seconds/100% recovery in 180 seconds PC is readily available in the muscle 		
	9. E	Disadvantages of this system identified	 only small amounts of fuel stored in muscle cell (PC) low energy yield/only 1 ATP re synthesised can only provide energy for short period of time/2-10 seconds 		
	10. Lactic Acid system	ATP can be resynthesised via Lactic Acid system/lactacid system/anaerobic glycolysis	sufficient detail about this system eg Glucose is (partially) broken down by the enzyme phosphofructokinase (PFK) Into pyruvic acid/pyruvate This is further broken down into lactic acid by the enzyme lactate dehydrogenase (LDH) Site= muscle cell sarcoplasm Glucose is stored as glycogen Glycogen is broken down by the enzyme glycogen phosphorylase (GPP) into glucose		
	11.	Identify use with a high intensity and short duration activity	suitable example10 seconds-180 seconds		
	12. E	Advantages of this system identified	 large potential fuel store of glycogen available (stored in muscles and liver) requires few reactions can work anaerobically/in the absence of oxygen can provide energy quickly/faster/quicker (than the aerobic energy system) 		

Question	Answer			Marks	Guidance
	13. E	Disadvantages of this system identified	 produces the by–product Lactic acid/Reduces pH/inhibits enzyme action/Causes pain/stimulates pain receptors/causes fatigue (relatively) low yield of ATP (in comparison to aerobic system) Long recovery 		
	14. Aerobic system / oxidative	ATP can be resynthesised via Aerobic system/oxidative system	sufficient detail about this system eg has 3 stages/stage 1 = aerobic glycolysis/stage 2 = Krebs cycle/stage 3 = electron transport chain (ETC) Stage 1 site = muscle cell sarcoplasm Glucose is broken down into pyruvic acid This combines with coenzyme A to form Acetyl CoA Stage 2 site = matrix of the mitochondria Carbon Dioxide is produced Hydrogen atoms are removed (oxidised) Stage 3 site = cristae of the mitochondris Hydrogen atoms combine with NAD & FAD Carried along the ETC Hydrogen electron splits from the hydrogen atom Combines with oxygen to form water		
	15.	Identify use with a low/medium intensity and long duration activity	suitable example180 seconds +		
	16. E	Advantages of this system identified	 large energy yield of ATP/34-38 ATP's in total/2 in anaerobic glycolysis, 2 in Krebs cycle/34 in the electron transport chain no fatiguing by products are produced/carbon dioxide & water easily removed able to work for long periods of time fats can also be used / provide more energy fat can also be used as a fuel 		

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Question		Marks	Guidance		
	17. E	Disadvantages of this system identified	 slower rate of ATP re synthesis/due to delay in getting enough oxygen at the start of exercise more complex series of reaction/anaerobic glycolysis & Krebs (citric acid) cycle & electron transport chain requires more oxygen/15% more to break down free fatty acids (FFE's)/fats 		

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