
PHYSICAL EDUCATION

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Paper 3

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MARK SCHEME

Maximum Mark: 90

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This document consists of **9** printed pages.

Question	Answer	Marks
Section A		
1(a)	<p>6 marks for 6 of:</p> <p>(Krebs cycle) (sub-max. 4) <i>Accept use of diagrams in descriptions if arrows show direction.</i></p> <ol style="list-style-type: none"> 1 (acetyl co-enzyme A) combines with oxaloacetic acid to form citric acid; 2 ... which undergoes several reactions to become oxaloacetic acid again / regeneration of oxaloacetic acid; 3 2 ATP produced; 4 CO₂ is by-product; 5 hydrogen is removed; 6 takes place in (matrix of) mitochondria; <p>(Electron Transport (Transfer) Chain) (sub-max. 4)</p> <ol style="list-style-type: none"> 7 hydrogen is transported to cristae / inner membranes (of mitochondria) 8 (hydrogen) is split into a proton / H⁺ and electron / H⁻ / hydride; 9 electrons are passed down the electron chain releasing energy; 10 32–34 ATP produced; 11 (hydrogen) combines with oxygen to produce water; 	6
1(b)	<p>3 marks for any 3 of:</p> <p>(higher fitness levels because ...)</p> <ol style="list-style-type: none"> 1 increased VO₂ max. / aerobic capacity; 2 improved ability to transport oxygen / increased capillarisation / more haemoglobin / increased blood volume; 3 more myoglobin / mitochondria / more slow-twitch fibres / greater oxygen uptake at muscles; 4 increased use of alveoli / greater lung volumes / greater oxygen uptake at lungs; 5 able to use / break down fats for energy / fats require more oxygen than carbohydrates; 6 use of fats reduces depletion of carbohydrates / glycogen sparing; 7 quicker removal of lactic acid / delayed lactate threshold / OBLA / athlete can work aerobically at higher intensity; 8 increase in oxidative enzymes; 	3
1(c)(i)	<p>1 mark for:</p> <ol style="list-style-type: none"> 1 the ability to sustain a number of muscular contractions for a period of time OR the ability to sustain a number of muscular contractions and withstand fatigue / OWTTE; <p>3 marks for any 3 of:</p> <ol style="list-style-type: none"> 2 muscle fibre type; 3 cross-sectional area / size of muscle; 4 lifestyle / training; 5 gender; 6 age; 7 hormones / testosterone; 	4

Question	Answer				Marks																
1(c)(ii)	3 marks for any 3 of (<i>Accept any recognised test that measures strength endurance.</i>): <table border="1" data-bbox="320 349 1289 1021"> <tr> <td data-bbox="320 349 587 501">1 (name)</td> <td data-bbox="592 349 820 501">NCF abdominal curl conditioning test;</td> <td data-bbox="825 349 1054 501">press up / sit up / pull up test;</td> <td data-bbox="1059 349 1289 501">bent arm hang;</td> </tr> <tr> <td data-bbox="320 508 587 786">2 (description – protocol)</td> <td data-bbox="592 508 820 786">perform sit ups in time with bleeps on a CD until you can no longer keep up with bleeps;</td> <td data-bbox="825 508 1054 786">perform as many repetitions as possible in a given time period / 30 seconds / 1 minute;</td> <td data-bbox="1059 508 1289 786">hang from a bar with elbows bent and chin above bar for as long as possible / until chin drops below bar;</td> </tr> <tr> <td data-bbox="320 792 587 936">3 (description – measure)</td> <td data-bbox="592 792 820 936">record the level and number of sit ups completed;</td> <td data-bbox="825 792 1054 936">count / record the number of reps performed;</td> <td data-bbox="1059 792 1289 936">(use stopwatch to) measure time that position is held;</td> </tr> <tr> <td data-bbox="320 943 587 1021">4 (evaluation)</td> <td colspan="3" data-bbox="592 943 1289 1021">compare result to standardised table / norms to give a rating;</td> </tr> </table>				1 (name)	NCF abdominal curl conditioning test;	press up / sit up / pull up test;	bent arm hang;	2 (description – protocol)	perform sit ups in time with bleeps on a CD until you can no longer keep up with bleeps;	perform as many repetitions as possible in a given time period / 30 seconds / 1 minute;	hang from a bar with elbows bent and chin above bar for as long as possible / until chin drops below bar;	3 (description – measure)	record the level and number of sit ups completed;	count / record the number of reps performed;	(use stopwatch to) measure time that position is held;	4 (evaluation)	compare result to standardised table / norms to give a rating;			3
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1(c)(iii)	5 marks for any 5 of: <ol style="list-style-type: none"> 1 (muscle / cardiac) hypertrophy / increase in size / mass of muscle; 2 hyperplasia; 3 increase in ATP / PC stores; 4 increase in glycogen stores; 5 increased tolerance to lactic acid / delayed OBLA / delayed lactic threshold; 6 quicker removal of lactic acid / improved buffering capacity; 7 increased enzyme activity; 8 increased density of / more myoglobin / mitochondria; 9 increased capillarisation; 10 increased recruitment / co-ordination (of muscle fibres / motor units); 11 increased strength of ligaments / tendons / connective tissue; 				5																

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1(d)	<p>4 marks for:</p> <ol style="list-style-type: none"> 1 (reversibility – def.) physiological adaptations will be lost if training stops, OWTTE; 2 (application) avoid periods of inactivity such as illness by following a healthy lifestyle OR avoid injury by warming up / using correct techniques / not overtraining OR if a holiday is booked continue training by booking hotel with gym or running / swimming regularly OR alternative training methods while injured etc.; 3 (moderation – def.) if training is too intense overuse injuries will occur, OWTTE; 4 (application) apply principle of progression / gradually increase the training load OR include rest or recovery periods in training OR do not train when in pain or fatigued OR vary the intensity of training etc.; 	4
1(e)	<p>5 marks for 5 of (sub-max. 3 marks for points 1–4):</p> <ol style="list-style-type: none"> 1 BMI is a measure of body composition based on height and weight / weight divided by height squared; 2 a BMI of 30+ is classed as obese; 3 health implications of obesity / high BMI include: high cholesterol / atherosclerosis / hypertension / coronary heart disease / strokes / diabetes / gall bladder disease / cancers / psychological problems; 4 credit a second health risk from list above; 5 (however) elite athletes generally have a much higher percentage of muscle mass; 6 and increased bone density / muscle weighs more than fat; 7 which means that they have a very low percentage body fat (despite high BMI) / BMI does not distinguish between muscle and fat; 	5

Question	Answer	Marks
Section B		
2(a)(i)	2 marks for any 2 of: 1 innate / inherited / genetically determined / born with; 2 enduring; 3 stable / predictable; 4 pre-determined / not learned (behaviours) / generalised;	2
2(a)(ii)	2 marks for any 2 of: 1 (behaviour is) a function of personality AND environment / $B = f(PE)$; 2 combination of trait AND social learning theories; 3 dependent on the situation / situation determines behaviour;	2
2(b)	4 marks for any 4 of: 1 avoidance behaviour, so will avoid competitive situations / to avoid embarrassment; 2 does not like a challenge, so will avoid risks / take easy option; 3 gives up easily / lacks persistence / social loafing, so may not complete the task / stop trying; 4 prone to learned helplessness, so will feel that trying is pointless / lack effort; 5 dislikes feedback / only wants positive feedback so may react negatively / sulk / stop trying; 6 has low self-confidence / efficacy so will avoid risks / give up easily / lack effort; 7 does not take responsibility for own actions, so may blame others for performance; 8 attributes success externally, so will attribute success to luck / poor opponents / etc.; 9 attribute failure internally, so will attribute poor performance to self / ability; <i>Accept general negative effects on performance or implied negative effects.</i>	4
2(c)(i)	2 marks for: 1 task orientated; 2 person / social orientated;	2
2(c)(ii)	4 marks for 4 of (<i>Max. 3 marks if no example used.</i>): 1 relationship within group is good; 2 leader is respected by group / has a strong position of power; 3 task is clear; 4 leader has respect for group; 5 group is highly motivated to achieve goal; 6 environment / situation supports likelihood of success; 7 group are highly skilled / have record of success / high ability;	4

Question	Answer	Marks
2(d)(i)	1 mark for: 1 self-confidence in a specific situation;	1
2(d)(ii)	4 marks for any 4 of (<i>Max. 2 marks if no sporting examples used, max. 3 marks if only 1 sporting example used.</i>): 1 highlight performer's previous accomplishments / past success; 2 vicarious experiences / watching others of similar age / ability perform successfully; 3 verbal persuasion / encouragement / coach says 'you can do it'; 4 emotional control / control arousal / anxiety / cognitive or somatic techniques to manage stress; 5 give success / use achievable goals / SMARTER goals; 6 attribution retraining;	4
2(e)	4 marks for any 4 of (<i>Max. 2 marks if no sporting examples used, max. 3 marks if only 1 sporting example used.</i>): 1 optimal arousal; 2 relaxed / calm / low anxiety; 3 focused / selective attention / attention to relevant cues / ignoring distractions; 4 enjoyment / satisfaction; 5 performance feels effortless / fluent / performance is automatic; 6 high levels of self-confidence / feels in control; 7 perfect / high-quality performance;	4
2(f)	4 marks for 4 of: (causes) (sub-max. 2) 1 nature of the audience / who is in the crowd; 2 perception of being judged / assessed; 3 linked to confidence of performer; (effects) (sub-max. 2) 4 increase in arousal / increase likelihood of dominant response occurring; 5 if highly skilled / self-confident / simple task performance will be better / low anxiety; 6 if novice / lacks self-confidence / complex task performance will be worse / increased anxiety;	4
2(g)	3 marks for any 3 of: 1 observing and copying / imitating aggressive behaviour of others / vicarious processes; 2 others must be role models / significant others; 3 behaviour must be (positively) reinforced; 4 learning / copying more likely if model is same gender / age / ability / conforms to norms of sport; 5 aggression that is viewed live is more likely to be copied;	3

Question	Answer	Marks
Section C		
3(a)	3 marks for any 3 of: 1 sponsorship; 2 donations from private corporations / businesses; 3 government subsidies / lottery; 4 sale of TV / media rights; 5 IOC; 6 ticket sales;	3
3(b)	3 marks for examples and 3 marks for reasons for each example: <i>Reason must link to example.</i> 1 1936 Berlin Games, boycotted by (Olympic council of) Ireland; 2 ... IOC insisted team needed to be restricted to the Irish Free State rather than the entire island of Ireland; 3 1956 Melbourne Games boycotted by Netherlands / Spain / Switzerland; 4 ... repression of the Hungarian uprising by the Soviet Union (also other boycotts at these Games); 5 1976 Montreal Games, boycotted by many African countries; 6 New Zealand rugby team toured apartheid South Africa (and IOC would not ban New Zealand from Olympic Games); 7 1980 Moscow Games, boycotted by the United States and New Zealand (and 64 other countries); 8 ... Soviet Union invasion of Afghanistan; 9 1984 Los Angeles Games, boycotted by Soviet Union (accept Russia) and 15 other nations; 10 (accept any of ...) tit for tat / retaliation for 1980 boycott / safety concerns due to anti-Soviet feelings in USA; 11 1988 Seoul Games, boycotted by North Korea; 12 ... wanted a share in the Olympic Games / stage some events / host opening / closing ceremonies; 13 Taiwan boycott 1976 Montreal Games; 14 ... not recognised as separate country by IOC;	6

Question	Answer	Marks
3(c)	<p>6 marks for 6 of:</p> <p>(Hitler's ideology) (sub-max. 4)</p> <ol style="list-style-type: none"> 1 nationalism (as ideology); 2 to show the strength of Nazi Germany / Third Reich; 3 to demonstrate superiority of <u>Aryan</u> race; 4 Jewish athletes not selected for German team; 5 games were extremely well organised / Olympic film produced as propaganda; <p>(Jesse Owens) (sub-max. 4)</p> <ol style="list-style-type: none"> 6 won 4 gold medals; 7 impact of black American athlete beating German athletes (incl. world champion in long jump); 8 good sportsmanship / friendship evident between Owens and German long jumper; 9 Owens respected and treated as a hero by German public; 10 proved that Aryan race was not superior; 	6
3(d)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> 1 development of (transport) infrastructure; 2 new roads / railways / airports built; 3 removal of old / dangerous / dilapidated housing; 4 building of high-rise apartment blocks; 5 relocation / movement of people from old housing to new blocks / people moved to suburbs / relocation of 300 000 people / movement of people from urban areas into cities; 6 elimination of 'hutongs' / rural village life within city; 7 use of foreign exchange reserves for funding; 8 globalisation causing industrialisation of their economy; 	4
3(e)	<p>5 marks for any 5 of:</p> <ol style="list-style-type: none"> 1 expanding their horizons; 2 pushing the body to the limits of endurance; 3 intensity of competition / competing against the best in the world; 4 spiritual aspects / bravery in face of competition; 5 once in a lifetime achievement; 6 striving for highest standards of performance / honour of winning a medal / perform at your best; 7 meeting athletes from other cultures / other sports; 8 raise athlete's profile / potential for increased income / sponsorship; 9 participation in opening / closing ceremony; 	5

Question	Answer	Marks
3(f)	<p>6 marks for any 6 of:</p> <ol style="list-style-type: none"> 1 athletes compete as individuals (rather than as part of a nation's team); 2 removal of team sports; 3 removal of national flags; 4 removal of national uniforms; 5 removal of national anthems from medals ceremonies / use of Olympic anthem; 6 removal of medal count / medal table; 7 use of one permanent host site / sharing of venues across several countries; 8 revision of opening / closing ceremony to focus on achievements of athletes; 9 influence of media in a positive way (not politicising event or performances); 10 however, media freedom may mean political aspects are highlighted; 11 governments / individuals may still use Olympic Games as political platform; 12 IOC to fully fund costs of hosting Olympic Games; <p><i>Accept other valid suggestions.</i></p>	6