

Mark Scheme (Results)

Summer 2010

GCSE

GCSE Physical Education (1827/ 01)

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Question Number	Answer	Mark
1(a)	Q - correct definition of fitness B (The ability to meet the demands of the environment)	(1)
(b)	Q - relates to overload training A (Making the body work harder to increase fitness)	(1)
(c)	Q - describes an isotonic muscle contraction C (Muscle contraction resulting in movement)	(1)
(d)	Q - effective use of power B (A tennis player serving an 'Ace')	(1)
(e)	Q - Athlete's foot is C (A fungus)	(1)
(f)	Q - when the recovery position should be used? C (When a performer is injured and unconscious but breathing)	(1)
(g)	Q - Which of the following is an accurate statement C (Capillaries are the smallest of the blood vessels)	(1)
(h)	Q - What type of bones are the vertebrae? D (Irregular)	(1)
(i)	Q - Which of the following is the true statement? D (Fast twitch muscle fibres are used in anaerobic activities)	(1)
(j)	Q - Which statement gives a description and example of an involuntary muscle B (This muscle type is not consciously controlled, for example the muscles in the digestive system)	(1)
Total for Question 1		(10)

TOTAL FOR SECTION ONE: 10 MARKS

Question Number	Answer	Mark
2(a) (i)	Physical	(1)
(ii)	Physical (accept mental) Do not accept social	(1)
(iii)	Social	(1)
(iv)	Mental	(1)
(b)	<p>IF TRUE:</p> <ol style="list-style-type: none"> 1. True –At first they wanted to play with friends/ other benefit 2. but now do it to keep healthy/ other benefit. <p>IF FALSE:</p> <ol style="list-style-type: none"> 1. False –it doesn't matter what age/ will still have same reasons, 2. e.g participate to meet friends/ increase/ maintain health/ relax 	(2)
(c)	<p>Mark in relation to image / feeling:</p> <ol style="list-style-type: none"> 1. losing weight does not necessarily make people look better/ feel better/ might look worse. <p>Mark in relation to physical consequence:</p> <ol style="list-style-type: none"> 2. could lead to being underweight/ <u>too</u> thin/ lose <u>too</u> much weight/ anorexic/ ill 3. e.g. <i>Weight should be considered in terms of being healthy <u>not</u> how the individual looks.</i> (2 marks for this answer if given in full) 	(2)
Total for Question 2		(8)

Question Number	Answer	Mark															
3a	<table border="1"> <tr> <td>Performer</td> <td>(i) Most important component</td> <td>(ii) Why this is the most important component</td> </tr> <tr> <td>Weight Lifter holding weight above head</td> <td>(Muscular) Strength</td> <td>1. Use: allows him to lift the weight – 2. no other components would allow him to lift weight</td> </tr> <tr> <td>Rower 8 minutes into the race</td> <td>Muscular endurance (Allow CV – but can only be used once)</td> <td>1. Allows <u>muscles / equiv (accept arms)</u> to continue working / use muscles for a long time/ finish the race. 2. Although strength is important that alone would be insufficient for an endurance activity.</td> </tr> <tr> <td>Long distance runner 1 hour in to the marathon</td> <td>Cardiovascular endurance (Allow muscular endurance can only be used once)</td> <td>1. allows them to continue to work <u>for a long period of time/ keep running/ finish the race/ equiv –</u> 2. the other components will be used by the runner but <u>none allow for prolonged activity</u> required in this event.</td> </tr> <tr> <td>Golfer taking a short putt</td> <td>Co-ordination</td> <td>1. so the ball goes in the hole / need to use hand/ eye coordination. 2. Short lived action therefore does not require endurance. Only hit a short distance therefore strength not a factor.</td> </tr> </table>	Performer	(i) Most important component	(ii) Why this is the most important component	Weight Lifter holding weight above head	(Muscular) Strength	1. Use: allows him to lift the weight – 2. no other components would allow him to lift weight	Rower 8 minutes into the race	Muscular endurance (Allow CV – but can only be used once)	1. Allows <u>muscles / equiv (accept arms)</u> to continue working / use muscles for a long time/ finish the race. 2. Although strength is important that alone would be insufficient for an endurance activity.	Long distance runner 1 hour in to the marathon	Cardiovascular endurance (Allow muscular endurance can only be used once)	1. allows them to continue to work <u>for a long period of time/ keep running/ finish the race/ equiv –</u> 2. the other components will be used by the runner but <u>none allow for prolonged activity</u> required in this event.	Golfer taking a short putt	Co-ordination	1. so the ball goes in the hole / need to use hand/ eye coordination. 2. Short lived action therefore does not require endurance. Only hit a short distance therefore strength not a factor.	
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(i)	1 mark for correctly stated component	(4)															
(ii)	1 mark for identifying use of component 1 mark for explaining why this component is more important than another component.	(8)															
3(b) (i)	Speed	(1)															
(ii)	Power	(1)															
(iii)	Agility/ Reaction Time	(1)															
Total for Question 3		(15)															

Question Number	Answer	Mark
4	<p>1. Specificity is relating the training to activity/ sport/ equiv</p> <p>2. Individual Needs relating training to person. e.g. strengths/ weaknesses/ level of fitness/ experience/ age/ weight/ height equiv</p> <p>3. Therefore the difference is that specificity is linked to the activity, whereas individual needs considers the individual. E.g. you could complete Fartlek training as appropriate to games players, but within it you would design a different programme for different individuals based on current fitness/ equiv.</p> <p>1 mark for each correct statement</p>	(3)

Question Number	Answer	Mark
5	<p>1. Threshold is a range/ zone/ training zone</p> <p>2. There should be a lower and upper limit</p> <p>3. Working within the threshold should give safe training effect</p> <p>4. Normally 60%- 80%(of max HR) (allow range between 60 –85%/ allow HR range if age stated and correct) Max 2 marks for points 1-4.</p> <p>5. This is because it matches the <u>intensity/ equiv</u> of the activity/ working anaerobically compared to aerobically</p>	(3)

Question Number	Answer			Mark
6	Body System	(i) Immediate effect	(ii) Regular training effect	
	Respiratory	Increased rate/ depth of breathing	Drop in <u>resting</u> respiratory rate/ Increased efficiency of gas exchange at alveoli/ Slight increase in vital capacity/ Slight increase in tidal volume/ Increased Vo2 max Increased surface area of alveoli	
	Circulatory	Increased HR/ SV/ Blood Flow/ cardiac output.	Drop in <u>resting</u> HR/ Increased SV Increased <u>maximum</u> cardiac output/ Cardiac hypertrophy/ Increased capillarisation/ Increased red blood cell count	
	Skeletal		Stronger bones/ increased bone density.	
	Muscular	Fatigue/ equiv	Bigger muscles/ more muscular Increased strength/ Muscle hypertrophy/ Increased muscular endurance/ Increased mitochondria/ Increased myoglobin	
Total for Question 6				(7)

Question Number	Answer	Mark
7(a)	1. being at the right/ best weight/ not being too heavy/ equiv 2. based on your stature/ height/ build/ equiv 3. for the activities they are involved in/ long distance runner lighter than sumo wrestler/ equiv 1 mark from each row, max 2 marks	(2)
(b)	1. Sex/ gender 2. Height/ equiv 3. Bone structure/ density 4. Muscle size/ girth Allow body composition as alternative to 3. or 4. but only once. Any two, maximum of 2 marks	(2)
Total for Question 7		(4)

Question Number	Answer	Mark
8	Group 1 – safety/ prevent injury / equiv Group 2 – see who the winner is/ get a result or equiv/ fair Group 3 – fun/ excitement (maintain a fast pace)/ entertainment/ enjoyable/ not-boring/ stop time wasting/ keep game flowing/ equiv	(3)

Question Number	Answer			Mark
9	Item of safety equipment	(a) Activity where used	(b) Why it is needed for activity	
	Shin guards	Any appropriate game activity (football; rugby; hockey)	Might get kicked in shins by opponent/ equiv Protect against cuts/ bruises/ blows/ (grazes) / equiv/	
	Gum shield	Any appropriate activity (boxing; rugby; hockey)	Might get hit in the mouth by opponent/ equiv Protect against punches/ clash of heads/ broken teeth/ equiv	
	Padding around posts	Any appropriate game activity (accept boxing if not previously used)	Might run into posts during play, prevents bruising/ concussion	
	Landing mats	Any appropriate activity (trampolining; gymnastics, high jump, pole vault)	Breaks fall (during movement if carried out incorrectly)/ stop from falling on hard surface/ Reduces chance of (neck) injury <u>due</u> to bad landing/ falling off/ landing funny and breaking something/ equiv	
	Buoyancy aids	Any appropriate activity (sailing/ canoeing/ water sports/ swimming)	Reduces risk of drowning/ keeps them afloat/ equiv	
	Marking guidance –(ii) – credit specific link to activity or specific injury associated with activity (provided links to protective item)			
Total for Question 9				(10)

Question Number	Answer	Mark
10(a) (i)	Heart rate	(1)
(ii)	Tidal volume	(1)
(iii)	Stroke volume	(1)
(b)	1 SV/ HR 2 Stroke volume and heart rate 3 (i) and (iii) Accept any from points 1 - 3	(1)
Total for Question 10		(4)

Question Number	Answer	Mark
11(a)(i)	B	(1)
(ii)	1. Arrow shows air flow inwards 2. Lungs inflated/ bigger/ expand / equiv 3. More space for lungs/ equiv 4. (Arrow indicates) diaphragm has moved down/ flattened/ contracts/ equiv 5. (Arrows indicate) ribs moved up and/ or out/ increased thoracic cavity/ expand Point per correct response to max 3	(3)
(b)(i)	Higher concentration/ increased (percentage)/ equiv (of oxygen in the lungs during inspiration than expiration.)	(1)
(ii)	1. Some oxygen is used by the body/ muscles / goes to the muscles 2. to release energy/ produce energy/ for respiration	(2)
(c)(i)	Carbon dioxide/ CO ₂ / Nitrogen	(1)
(ii)	Expected response relates to CO ₂ , but must credit Nitrogen if stated There is less Accept increase ONLY if linked to expiration remain constant/ equiv	(1)
Total for Question 11		(9)

Question Number	Answer	Mark
12	Ossification Compact Epiphysis Joint	(4)
Total for Question 12		(4)

Question Number	Answer	Mark
13(a)(i)	Pivot	(1)
(ii)	Rotation Flexion & extension	(2)
(b)(i)	Hip – Ball & Socket	(1)
(ii)	Abduction & adduction	(1)
Total for Question 13		(5)

Question Number	Answer	Mark
14 (a)	Biceps/ bicep brachii	(1)
(b)	Quadriiceps	(1)
(c)	Gastrocnemius	(1)
(d)	Deltoid/ latissimus dorsi	(1)
(e)	Abdominals Also accept internal/ (external obliques)	(1)
Total for Question 14		(5)

TOTAL FOR SECTION TWO: 80 MARKS

Question Number	Answer	Mark
15(a) (i)	1. Improve health through exercise/ equiv. 2. Relevant example/ e.g. drop in resting blood pressure/ lower resting heart rate/ less chance of CHD/ equiv/ accept reference to mental/ social health 1 mark for each point.	(2)
(ii)	1. If fitness increased performance increases (or fitness decreases performance decreases) 2. as better able to meet the demands/ performance decreases due to overtraining/ equiv 3. Accept any relevant example. Second point for explaining link (expecting +ve but accept either provided 'argument', i.e. not just goes up/ down).	(2)
(b) (i)	1. pulse raise/ jogging/ increasing HR/ cardiovascular/ aerobic 2. stretching (muscles)/ mobilising (joints) 3. activity specific drills/ increased activity/ skill-related activity / small sided games 1 mark/ correct item – must be stated in this order.	(3)
(ii)	1. (<i>Physical example</i>) - increase heart rate/ blood flow/ oxygen delivery/ temperature/ increase flexibility/ accept other relevant examples. 2. Credit second physical example (2 nd mark for 2 nd example from list in point 1) / prepares you physically (only credit if not already credited prepares you mentally) 3. (<i>Mental example</i>) - allows performer to focus on task / in the zone/ better concentration / reduce anxiety 4. Credit second mental example (2 nd mark for 2 nd example from list in point 3)/ prepares you mentally (only credit if not already credited prepares you physically) 5. Practise task 6. Leads to improved performance (only credit if achieved 1. 2. 3. 4. or 5)	(3)
(c) (i)	Soft tissue/ sprain/ strain/ torn muscle/ pulled muscle/ torn (Achilles) tendon	(1)
(ii)	RICE/ rest, ice, compression, elevation	(1)
(d) (i)	Reversibility	(1)
(ii)	Performer C	(1)
(iii)	1. heart rate increases / <u>decreases and then increases/ equiv</u> 2. Demonstrates a drop in fitness/ lack of ability to train	(2)

(e)	1. reduce calorie intake/ reduce amount eaten/ eat fewer fats/ equiv 2. as they will be expending less energy/ not burning as many calories / do not want to gain weight/ not doing as much activity/ equiv	(2)
(f)	1. Moderation 2. Progression 3. Individual needs Any two, Any order	(2)
Total for Question 15		(20)

Question Number	Answer	Mark
16(a)(i)	1. Oxygen transport/ equiv 2. Regulating temperature 3. Removing Co2/ lactic acid/ transport nutrients/ waste materials. Any point	(1)
(ii)	1. <u>More</u> efficient transfer/ <u>more</u> oxygen 2. improved energy production/ more aerobic energy/ can work for longer Point 2 is 'extension' mark	(2)
(iii)	Used in recovery/ to allow performer to sprint again/ equiv	(1)
(b)(i)	1. Amount of oxygen consumed/ used/ needed/ paying back/ required 2. above that which would normally be used 3. at rest/ pre-exercise state.	(3)
(ii)	Anaerobically	(1)
(iii)	1. reference to need for recovery/ rest/ equiv 2. reference to varying intensities/ aerobically to prevent/ reduce oxygen debt/ equiv 3. credit reference to an appropriate selection of training method accept any two, any order NB Differential question	(2)
(c)(i)	1. Different exercises/ stations/ separate activities/ range of stations 2. Flexible method/ work everything or can be tailored to specific muscles/ skills/ activities. 3. set time/ number of reps/ equiv 4. move from station to station/ equiv 5. allowing time for muscle recovery/ work for period then rest/ alternating muscle groups worked. 6. Credit responses relating to advantages i.e. large numbers in a small space/ no specialist equipment required/ low cost	(3)

(ii)	Hope/ sprinter	(1)
(d)(i)	Jade/ long distance - Continuous/ Fartlek	(1)
(ii)	Hope/ sprinter - Interval/ Weight	(1)
(e)(i)	Ectomorph	(1)
	Jade/Long distance running advantage 1. Less weight (to carry)/ equiv 2. Longer stride length (due to relatively long limbs) Accept appropriate advantage even if body type is incorrectly stated.	(1)
(ii)	Mesomorph	(1)
	Hope/Sprinting advantage 1. (More muscle therefore) more power/ speed/ equiv Accept appropriate advantage even if body type is incorrectly stated.	(1)
Total for Question 16		(20)

Question Number	Answer					Mark
17(a)	Bone	(i) Bone Type	(ii) Function of bone type	(iii) Performer	(iv) Explanation/ use	(3 + 3 + 3 + 3) (12)
	Carpals	Short	Weight bearing/ support / shock absorbing	Gymnast/ C Tennis/ B	Is able to support body weight to hold balance. Absorbs shock of ball hitting racket	
	Cranium	Flat	Protection	Footballer / A	Prevents injury <u>to brain</u> / (Protects) when heading ball.	
			Muscle attachment		To allow Movement/ Force/ equiv.	
	Humerus	Long	Act as levers	Tennis/ B Gymnast/ C	Lever - Can hit the ball (harder) / reaching the ball.	
			blood production		Blood production – oxygen transport (RBC)	
NB (iii) – Advantage/ use MUST relate to image Tennis player/ Gymnast B/ C alternative						
Only accept each performer once						

(b)	Component	Name (i)	Function (ii)	How it is used by the badminton player (iii)	
	A	Muscle/ Quadricep	Movement / Extend leg at knee	Move to play shots/ equiv	
	B	Tendon	Attach muscle to bone		
	C	Ligament	Join bone to bone/ stabilise the joint	can change direction to reach shuttle/ make sharp movements on court prevents dislocation when reaching for shuttle	
Total for Question 17					(3 + 3 + 2) (8) (20)

TOTAL FOR SECTION THREE: 60 MARKS
TOTAL FOR PAPER: 150 MARKS

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Telephone 01623 467467
Fax 01623 450481

Email publications@inneydirect.com

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