

GCE 2004
June Series



Mark Scheme

Sport & Physical Education *Unit PED1*

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

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Sport & Physical Education

Unit 1

General Instructions

In the mark scheme	;	separates single marks
	/	indicates alternatives
	CAO	correct answer only
	Equiv.	Means allow any equivalent answers.

1

- (a)
1. Power – the ability to push off the blocks/wall;
 2. Speed – arm/leg speed through the water;
 3. (Local) muscular endurance – (arms/legs) muscles producing force through the water/off the wall/starting blocks;
 4. Flexibility-range of pull for swimming/ankles for breaststroke;
 5. Agility – use in the tumbleturn;
 6. Co-ordination – effective body movement;
 7. Reaction time – quickness out of the blocks/off the wall.
- (NB: Do not credit cardio-vascular endurance/body composition or strength)*
2 marks for fitness components
1 mark for example
3 marks
- (b)
1. Set period of time;
 2. Not full intensity/not too exhaustion (*accept reverse*)/maximum effort;
 3. Height of bench;
 4. Step cadence/rate of stepping/work at a steady rate;
 5. Fitness is measured by heart rate after exercise;
 6. Recovery rates compared to nomogram/chart to calculate predicted level of fitness;
 7. Able to repeat test as it is not maximal/not too exhaustion.
- 3 marks*
- (c)
1. Reliability – can the results be replicated next time with the same method;
 2. Validity – do the results/method actually investigate/reflect what they are meant to;
 - 3a. Stepping action is not relevant to a swimmer;
 - 3b. Stepping action is relevant to a swimmer;
 4. Step test is land based (*accept reverse*);
 5. (Not) using relevant muscle groups/legs;
 6. Not a valid test for a swimmer/not specific;
 7. But step test is a reliable measure of fitness/cardio-vascular endurance.
- Must link 3a or 3b with Point 5*
3 marks

- (d) 1. Knowledge of results - outcome of the action;
2. Times for the lengths/equiv sporting example;
3. Knowledge of performance – information regarding the movement pattern/
kinethesis/feel of the movement/intrinsic;
4. Breathing rate/arm action/leg action/equiv sporting example. 2 marks
- (e) 1. The correction of errors/improve techniques/highlight weaknesses/equiv;
2. Reinforcement/illustrate success/highlight strengths/equiv;
3. Motivation/Self confidence/equiv.
(Positive/negative feedback too vague) 3 marks
- (f) 1. Performer can only process a small amount of information limited/succinct/
short;
2. Information that is clear/accurate/correct and focused/relevant on specific
points/simple/equiv;
3. As soon as possible after the event – immediate/terminal;
4. Individual rather than to the group;
5. Different formats verbal and visual;
6. Coach/performer recognising intrinsic feedback/understanding of knowledge of
performance;
7. Terminal feedback more appropriate for beginners/concurrent feedback better
for advanced;
8. Positive feedback better for beginners/low self-confidence;
9. Negative feedback better for advanced performer/high self-confidence. 4 marks

2

- (a) (i) 1. Agonist – Triceps brachii
2. Antagonist – Biceps. *Accept first answer only*
2 marks
- (ii) 1. Humerus
2. Ulna
3. Radius. *1 mark for 2 correct, 2 marks for 3 correct*
2 marks
- (iii) 1. Position A – Isometric;
2. Position B – Concentric/Isotonic. *Accept first answer only*
2 marks
- (iv) 1. Extension
2. Sagittal plane
3. Transverse axis. 3 marks

- (b)
1. Information enters from the STSS (Short Term Sensory Store);
 2. Only items receiving selective attention enter the STM;
 3. Limited capacity 7+/-2 items;
 4. Retrieves information STM from LTM;
 5. Referred to as memory trace/schema/programmes of movement;
 6. Unless the information is practiced/reinforced/it will fade/easily lost;
 7. Duration up to 60 seconds (*must be over 1 second*);
 8. Competing information interferes with information entering the STM;
 9. Referred to as the working memory/decision making;
 10. Receives from Sensory Store and transfers to LTM/DCR;
 11. Impulses sent to appropriate muscles/affecter system.

5 marks

- (c)
1. Rehearse/repeat;
 2. Associate with familiar information;
 3. Make information meaningful/related to past experience;
 4. Make experience enjoyable /painful/interesting/rewards linked to experience;
 5. Make stimuli more recognisable/contrasting/e.g;
 6. Use of 'chunking';
 7. Use imagery.

4 marks

3

- (a) (i)
1. Bradycardia - reduction in resting heart rate/below 60bpm;
 2. Athlete's heart – an increase in the size of the chambers/hypertrophy of heart.
(Do not credit 'larger'/'bigger')

2 marks

- (ii)
1. An increase in stroke volume/volume per beat;
 2. Cardiac output can be maintained with fewer beats/maximum Q increases;
 3. More muscle;
 4. Increase in the number of mitochondria;
 5. Greater capillarisation of the heart/greater supply of blood;
 6. Improved contractility of the heart/heart beats stronger/more powerful/greater ejection fraction;
 7. Greater heart rate (HR) range;
 8. Increase in parasympathetic/vagal tone/ vagus stimulation;

3 marks

- (b) 1. Prior to exercise – increase in heart rate (HR) due to adrenaline;

Sub max 1 mark

During exercise

2. Due to increased Carbon Dioxide (CO₂)/more lactic acid;
3. Drop in blood pH/increase in acidity;
4. Detected by chemoreceptors;
5. Nerve message sent to medulla/cardiac centre;
6. (Sympathetic) nerve impulse is sent to SAN to increase HR/noradrenaline/
myogenic impulses.

Sub max 3 marks

After exercise

7. Change in blood pressure;
8. Detected by Baroreceptors;
9. Decrease in HR due to stimulation of parasympathetic nervous system;
10. Reduction in sympathetic nerve impulses.

4 marks

- (c) (i) 1. A – Cognitive;
2. B - Associative stage. *Accept first answer only*
2 marks
- (ii) 1. Plateau effect/levelling (of performance);
2. Fatigue/lack of fitness/injury;
3. Loss of motivation/interest/boredom;
4. Bad technique;
5. Focus on wrong cues;
6. Low level of aspiration;
7. Lack of ability to adapt skills;
8. Reached maximum performance;
9. Limited/poor coaching/poor feedback. *4 marks*
- (iii) 1. Set new goals/targets/easier/bigger/roles/level of competition;
2. Extrinsic motivation/rewards/praise/encouragement/positive reinforcement;
3. Ensure rest breaks;
4. Make performer fitter;
5. Make practices more interesting/variation on training;
6. Discuss lack of progress/explaining the plateau effect;
7. Better quality coaching/new coach. *3 marks*

4

- (a) (i) 1. For diffusion to take place a difference in partial pressures needs to be present/higher to lower/concentration gradient;
2. Oxygen (O₂) diffuses into pulmonary artery from alveolus;
3. Because of the difference of 103mmHg and 35mmHg;
4. Carbon dioxide (CO₂) diffuses from Pulmonary artery to alveolus;
5. Because of the difference of 44mmHg and 38mmHg.
(Do not credit blood) *3 marks*
- (ii) 1. Reduced concentration of PO₂ in (pulmonary) artery;
2. Reduced concentration of PO₂ in alveolus;
3. Increased concentration of PCO₂ in (pulmonary) artery;
4. Increased concentration of PCO₂ in alveolus;
5. Reduced transit time in (pulmonary) capillary.
(Do not credit blood) *3 marks*
- (iii) 1. Correct description of a simplistic circulatory pathway e.g. heart, arteries, muscles;
2. Oxygen is carried to muscles as oxyhaemoglobin in blood;
3. Strenuous exercise will increase metabolic rate/temperature increase;
4. Increased production of Carbon Dioxide (CO₂) affecting blood pH/increased acidity of blood;
5. Both factors will increase the release of oxygen from haemoglobin at muscle site;
6. Bohr shift/oxygen dissociation curve. *4 marks*

- (b) (i) 1. The process used which increases the probability of behaviour re-occurring in the future/strengthen SR bond;
2. Positive – use of stimulus to create satisfaction to encourage repetition of the action/equiv.
3. Negative – withdrawing of an unpleasant stimulus when the desired response occurs/equiv;
4. Appropriate positive example/praise;
5. Appropriate negative example. *3 marks*
- (ii) 1. Learning is based on the relationship between stimulus and response/equiv;
2. Trial and error learning;
3. The environment can be manipulated to get the desired action response/shaping/equiv;
4. Appropriate example of the environment being manipulated – target areas for racket sports/use of mechanical feeders/equipment/e.g's;
5. Use of reinforcement;
6. Positive/negative example praise after successful completion of the event/self-satisfaction;
7. To bring about desired response;
8. Use of punishment to decrease probability of desired response;
9. Example of punishment - unpleasant. *5 marks*

5

- (a) (i) A – Arteries, B – Arterioles, C – Capillaries, D – Venules, E – Veins.
- 3 marks for 5 correct*
2 marks for 4 correct
1 mark for 3 correct
- (ii) 1. Blood velocity is related to cross sectional area;
2. The smaller the area, the faster the blood flow;
3. But capillaries are the smallest blood vessel. Their cross-sectional area is greater than the aorta (blood slows down);
4. The cross sectional area is less than that of the capillaries therefore the velocity (speed) of the blood increases;
5. Also assisted by muscle pump/respiratory pump;
6. Blood pressure is related to resistance to flow (and cardiac output);
7. Resistance to flow is due to the friction between the blood and the walls of the blood vessel;
8. Friction is determined by the length/diameter and/the smoothness of the lining of the vessel and the viscosity of the blood;
9. Arteries have involuntary muscle fibres in their walls that can constrict. *3 marks*
- (iii) 1. Veins have one way pocket valves;
2. Muscle contractions compress veins and push blood towards heart/muscle pump;
3. Breathing movements/respiratory pump alters pressure in thorax/abdomen and assist flow back to the heart;
4. Sympathetic nerves cause venous tone/veins contract to aid return of blood during exercise;
5. Suction pump of heart. *3 marks*

- (b) (i) 1. Skills learnt in one activity affect another;
 2. Positive – enhances the learning of a new skill;
 3. Negative – previously learned skills hinders the learning of a new skill;
 4. Bi-lateral – transfer of skill from one limb to other;
 5. Zero – no influence on skill;
 6. Pro-active – skill being learned has an effect on a future skill;
 7. Retro-active – skill being learned has an effect on a past skill.
(Only credit if correct example is given) 4 marks
- (ii) 1. Negative transfer has occurred in Group 3/practice on the mini golf/putting action;
 2. No practice is better than practice on mini golf course/referring to group 2;
 3. Playing round of golf - practice, therefore improvement because they have actually played. 2 marks
- (iii) 1. Use golf driving range/non golf examples/equiv;
 2. The tasks are very similar/equiv;
 3. Performer is motivated/confidence/equiv;
 4. Performer understands the principles of the shot/equiv;
 5. Plenty of repetition of strokes/equiv;
 6. Planned progression/equiv;
 7. Ensure performer understands the process of transfer of learning/application to game situation;
 8. Make sure the original skill is well learnt. 3 marks

Quality of Written Communication

The GCSE and GCE A/AS Code of Practice requires the assessment of candidates' Quality of written communication wherever they are required to write in continuous Prose. In this unit, this assessment will take place for the candidates' script as a whole by means of the following marking criteria.

The candidate expresses moderately complex ideas clearly and reasonably fluently, through well linked sentences and paragraphs. Arguments are generally relevant and well structured. There may be occasional errors of grammar, punctuation and spelling. 3 marks

The candidate expresses straightforward ideas clearly, if not always fluently. Sentences and paragraphs may not always be well connected. Arguments may sometimes stray from the point or be weakly presented. There may be some errors of grammar, punctuation and spelling, but not such as to suggest a weakness in these areas. 2 – 1 marks

Ideas are expressed poorly and sentences and paragraphs are not connected. There are errors of grammar, punctuation and spelling showing a weakness in these areas. 0 marks

Total 3 marks