



**GCE**

**Sport and Physical Education  
5581**

**PED1**

**Physiological and Psychological Factors  
which Improve Performance**

**Mark Scheme**

*2008 examination - January series*

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.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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**Sport and 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) (i)

	<b>Movement from position A to B</b>	
	Joint Action	Main agonist
Hip	Extension	Gluteals/Gluteusmaximus
Knee	Extension	Quadiceps/rectis femoris
Ankle	Plantar Flexion	Gastrocnemius

6 marks

- (ii) 1. 2<sup>nd</sup> class lever;  
 2. Correct order (resistance in middle);  
 3. Correct labels. 3 marks

- (b) (i) 1. Movement time – the time taken from the initiation/completion of the movement from start to finish to perform the action;  
 2. Executing the dive from blocks to entry into water;  
 3. Response time = the total time to complete a response to a given stimulus/reaction time + movement time/time taken from the onset of the stimulus to the completion of the movement;  
 4. Hearing the command/go to taking the first stroke/equiv. 4 marks

- (ii) 1. Concentration/pay attention/selective attention/focus on cues;  
 2. Practice reacting to the gun/command/improve reaction time;  
 3. Improve physical fitness/improve movement time;  
 4. Be at optimum arousal level/increased arousal/increased alertness;  
 5. Anticipation/prediction of the gun/command;  
 6. Mental rehearsal. 3 marks

- (iii) 1. Simple reaction time.  
 2. Specific reaction to a specific stimulus/one stimulus = one reaction. 2 marks

- 2 (a) (i) 1. Fitness – the ability to meet the demands of the environment/lifestyle/daily activities without fatigue;  
 2. Health – free from mental and/or physical disease and/or social well being. 2 marks

- (ii) 1. Identify strengths/weaknesses of the athlete/base line assessment/how fit they are;  
 2. Monitor progress against previous test score or other athletes/compared to norms/national averages;  
 3. Enhance Motivation/encouragement to improve;

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4. Provide information about the design and/or modification of a training programme/feedback linked to programme;
5. Talent identification/predict potential;
6. Set goals for fitness development/target specific areas. *4 marks*
- (iii) 1. Validity/reliability;
2. They are not sport specific/to the environment;
3. They do not replicate the movements required in many sports/does not use same muscle groups;
4. They do not replicate competition conditions, and therefore may not be a relevant measure of fitness for competition conditions;
5. Many fitness tests do not require direct measurements/predictive;
6. There can be an operating error by subjects taking fitness tests, which may lead to inaccuracies. Some tests require self-administration (eg taking pulse rates) which may lead to error/suitable example;
7. Motivation of the performer impacting on the scores. *3 marks*
- (b) 1. Plateau;
2. Learner needs time to assimilate before moving onto next stage;
3. Targets set too low/high/lack of challenge;
4. Fatigue/lack of fitness/lack of rest period;
5. Lack of variety of practice methods;
6. Lack of motivation/interest/boredom/low level of aspiration/low confidence/belief. *5 marks*
- (c) 1. Distributed sessions/rest periods;
2. Resetting of goals/tasks more challenging;
3. Offering extrinsic rewards/encouragement/praise/positive reinforcement/operant conditioning;
4. Using mental rehearsal;
5. Provide feedback/visual guidance;
6. Competition against opposition;
7. Use of whole-part-whole/part method/breaking the skill down;
8. Ensure performer focuses on appropriate cues;
9. Enjoyment;
10. Changing role/responsibility;
11. Make performer fitter;
12. Make practices more varied/more interesting;
13. Discuss lack of progress/explain the plateau effect;
14. Better quality coaching/new coach. *4 marks*
- 3** (a) (i) 1. Interpretation of information;
2. Selective attention occurs;
3. Part of DCR (Detection-Comparison-Recognition);
4. (Detection) – the identification of a stimulus;
5. (Comparison) – the stimulus is compared to one stored in memory store;
6. (Recognition) – the stimulus is matched to one in the memory stores. *3 marks*
- (ii) 1. Unlimited/vast/indefinite/infinite capacity/duration/lifetime;
2. Store of past experiences/suitable e.gs;
3. Requires some kind of structural and or chemical change in the brain for information to be stored in the long term memory store;
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4. Store of Motor Programmes;  
 5. Only rehearsal information enters long term store;  
 6. Meaningful information enters long term store;  
 7. Supports part of the DCR process/information recalled from long term memory. *3 marks*
- (b) 1. Feedback;  
 2. How successful the action was;  
 3. Allowing modifications to be made;  
 4. Motivation/reinforcement;  
 5. Can be internal/intrinsic/kinaesthesia/knowledge of performance/suitable example;  
 6. Or external/knowledge of results/extrinsic/suitable example/from coach or team mates. *3 marks*
- (c) (i) 1. Brain function needs to be maintained during exercise and at rest/working all the time;  
 2. Brain (cognitive thought) requires nutrients/oxygen. *2 marks*
- (ii) 1. Muscles and nutrients/oxygen to generate energy/work;  
 2. Rise/more in carbon dioxide levels/drop in pH levels/increases acidity;  
 3. Detected by chemoreceptors/message to Vasomotor control centre/medulla oblongata.  
 4. Stimulation by sympathetic nervous system;  
 5. Or adrenaline/noradrenaline is produced;  
 6. Controlled through arterioles;  
 7. (By contraction of) precapillary sphincters (control blood into capillaries);  
 8. Narrowing of blood vessels to the liver/kidneys/abdominal organs/gut/areas not needed;  
 9. Opening of vessels to the skeletal muscle/skin/coronary circulation;  
 10. Vasoconstriction/vasodilation;  
 11. Vascular shunt/blood shunting. *4 marks*
- (iii) 1. Contraction of the heart/stroke volume/ejection fraction;  
 2. Blood flow/cardiac output/Q;  
 3. (Peripheral) resistance/friction/elasticity;  
 4. Blood viscosity;  
 5. Blood vessel length;  
 6. Blood vessel diameter/vasoconstriction/vasodilation/cross sectional area/lumen size;  
 7. Health factor equiv atherosclerosis/diet/stress/age/level of fitness. *3 marks*
- 4** (a) 1. Massed – involves the repeated practice with little or no rest;  
 2. Distributed practice involves the repeated practice of skills with a recovery/rest period before the repetition of the skill. *2 marks*
- (b) (i) 1. Massed – group shows little improvement;  
 2. Both groups reach a plateau/accept description;  
 3. Distributed group show more improvement/climbed more rungs than massed;  
 4. Distributed learned quicker;  
 5. Distributed group had subjects with better ability/fitter/more motivated/less fatigued. *3 marks*
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- (ii) 1. Learning has taken place;  
 2. Massed practice has not affected learning;  
 3. Fatigue has not affected learning;  
 4. Massed practice affects performance at the time of performing. *2 marks*
- (c) 1. Skill is learned;  
 2. Ability is genetic/inherited/born with it. *2 marks*
- (d) (i) 1. Agility – the ability to change direction under control/effective;  
 2. Flexibility – the range of movement possible at a joint. *2 marks*
- (ii) 1. Initially subject lies down;  
 2. Gets up and down through a series of cones;  
 3. Measurement – time to run/as fast as possible/equiv.  
 4. Subject sits down/static position/start position;  
 5. Reach forward/round and push hands long top of box and hold/move to max range and hold;  
 6. Measure distance stretched/range of movement/equiv. *4 marks*
- (e) 1. Objective – physical measure, time or distance;  
 2. Valid – measure what it claims to do;  
 3. Reliable – consistency and repeatable results with the same method. *3 marks*
- 5** (a) 1. C – Haemoglobin during exercise;  
 2. A – myoglobin;  
 3. B – Haemoglobin at rest. *2 marks*
- (b) 1. Increased carbon dioxide produced;  
 2. Increased blood acidity;  
 3. Detected by chemoreceptors/mechanoreceptors;  
 4. Increase in body temperature;  
 5. Impulses to medulla/respiratory centre;  
 6. Impulses breathing muscles/diaphragm/intercostals. *4 marks*
- (c) 1. Arterial-venous diff = is the difference between the oxygen content of the arterial blood and the venous blood/how much O<sub>2</sub> is extracted and utilised by the muscle;  
 2. More oxygen is being required by the muscles/energy production;  
 3. More oxygen extracted by the muscles;  
 4. Therefore leads to improved endurance/aerobic performance;  
 5. More oxygen diffuses from lungs to blood/blood able to carry more oxygen. *3 marks*
- (d) (i) 1. Age of learner/maturation age;  
 2. Motivation of learner/attention/behaviour;  
 3. Fitness of learner/physical demand of activity;  
 4. Nature/type of skill;  
 5. Complexity of skill/cognitive involvement;  
 6. Organisation of the skill/coherence;  
 7. Open/closed skill;
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- 8. Level of experience/stage of learning/ability/skill level;
- 9. Time constraints. *3 marks*

- (ii)
  - 1. Performer can develop kinaesthetic awareness/feel of the skill;
  - 2. Understand the relationship between difficult subroutines;
  - 3. Experience the timing needed to execute the skill/flow of movement;
  - 4. Develop their own schema;
  - 5. Appreciate the end product/see the entire skill;
  - 6. Transfer in to the game more easily;
  - 7. Time efficient. *3 marks*

- (iii)
  - 1. Performer attempts the skill in stages/broken down;
  - 2. Novice students may achieve success/good for beginners;
  - 3. Performers with limited attention span can remain on task/maintain motivation/cognitive demanding;
  - 4. Specific aspects of the technique can be focussed on;
  - 5. Develops confidence;
  - 6. The physical demand of the skill is reduced/less demanding.

### 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. *4 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. *3 – 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** *4 marks*