

GCE 2005  
*January Series*



# Mark Scheme

## Sport & Physical Education

### PED1 Physiological & Psychological Factors which Improve Performance

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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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*Dr Michael Cresswell Director General*

# 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) 1 The ability of a muscle or group of muscles to sustain repeated contractions (against a resistance)/work without fatigue/continuous;  
2 Over a period of time. 2 marks
- (ii) 1 NCF Abdominal conditioning test/Sit-up ‘Bleep’ Test;  
2 Increasing speed/beeps get faster/progressive;  
3 Maximal/unable to maintain the pace/as long as you can;  
4 Comparison Norms/standards used for score/tables/National Averages;  
Or  
5 Press-ups/sit-ups/squat thrusts;  
6 In a minute/set-time period;  
7 Maximal;  
8 Comparison with Norms/standards for score/tables/National Averages;  
Or  
9 Bent arms hang/pull ups/dips/appropriate weight exercise/ski set;  
10 Maximum number/length to time;  
11 Comparison to Norms/standards/National Averages/tables. 3 marks

(iii)

*Credit points even if they have chosen the wrong test in (ii)*

	<b>Advantages</b>		<b>Disadvantages</b>
1	Easy to administer with little equipment/simple	5	The test is maximal and could reduce motivation
2	Large groups can participate at once	6	Technique has to be correct at all times
3	Muscle group can be isolated	7	Physically fatiguing/possibility of injury
4	Norms available – easy comparison	8	Reliability is limited due to variability of test conditions
		9	Not sport specific/activity

*(Sub max 3 marks for either advantages or disadvantages)*

*4 marks*

- (b) (i) 1 The will/desire to learn/achieve success/drive/equiv;  
2 (Intrinsic/Internal) - within the performer;  
3 Internal satisfaction/feel good factor;  
4 (Extrinsic/External) – outside the performer/from a coach;  
5 Tangible – prize/trophy/equiv;  
6 Intangible rewards/praise/equiv. 4 marks

- (ii) 1 Make it fun/variation in training/more interesting; (*accept reverse*)  
2 Use of external rewards – certificates/prizes;  
3 Allow success;  
4 Alter environment to favour players/small numbers/feel competent;  
(*To credit must be linked to point 3*)  
5 Use role models;  
6 Positive feedback/e.g.;  
7 Set more (demanding/achievable) goals/targets/more competition;  
8 Use reinforcement/praise/verbal encouragement (video)/equiv;  
9 Emphasise personal improvement;  
10 Attribute success internally. 5 marks

2 (a) (i) Perceptual Mechanism

- 1 Information is received from/STSS;  
2 By the sensory organs;  
3 Discriminates information/selective attention/filters out of information;  
4 Coding of important information/interpretation of data/identify the stimulus/making sense of the information/realise the importance/equiv;  
5 Pass information into translatory mechanism. 3 marks

(ii) Translatory Mechanism

- 1 Developed/adapts to information;  
2 Compares information with LT memory/past experience  
3 Decision making process;  
4 Selects the appropriate motor programme. 3 marks

- (b) 1 Perceptual Mechanism/STSS and short term memory;  
2 Responsible for selecting relevant information (*credit appropriate examples*);  
3 From irrelevant information (*credit appropriate examples*);  
4 Allows to focus/concentrate on relevant information/allows to keep information in the STM for longer/prevents it from fading;  
5 To prevent information overload/equiv;  
6 Short term memory can hold 7+/-2/limited capacity; 3 marks

(c) (i) Rest period immediately prior to the start of the 400m

- 1 Heart rate increases/anticipatory rise;  
2 (Prior to exercise) adrenaline/noradrenaline released (by the sympathetic nervous system);  
3 Parasympathetic (Vagus) system decreases in activity/impulses. 2 marks

(ii) The 400m (exercise period)

- 1 Heart rate rapidly/equiv increases;  
2 (During exercise) proprioceptors/mechanoreceptors/sense organs detect movement;  
3 Production of carbon dioxide/increased blood acidity/lactic acid/ph falls;  
4 Stimulates chemoreceptors (in aorta/carotid body/carotid artery);  
5 Stimulates cardiac accelerator/medulla (in brain);  
6 (Increased) sympathetic stimulations/release of noradrenaline/norepinephrine;  
7 Sino Atrial Node (SAN) stimulated/excited. 4 marks

- (iii) Five minute recovery period after the 400m
- 1 Increased heart rate raises blood pressure;
  - 2 Stimulates baroreceptors (in aorta/carotid body/carotid artery);
  - 3 (Increases) Parasympathetic/Vagus system;
  - 4 Decreases Sympathetic stimulation;
  - 5 Release of Acetylcholine;
  - 6 Heart rate is high/maintained and then drops/decreases.
- 3 marks

- 3 (a) (i) 1 The majority is carried as Hydrogen Carbonate ions in the plasma;
- 2 Some is combined haemoglobin with/proteins/red blood cells;
  - 3 Some as Carbonic acid;
  - 4 Some as a simple solution (dissolved) in the plasma.
- 2 marks

- (ii) 1 At lungs, high partial pressure of O<sub>2</sub>/blood arrives at lungs with low partial pressure;
- 2 Haemoglobin saturated with Oxygen;
  - 3 Due to pressure gradient/high to low diffusion;
  - 4 At muscles low partial pressure of Oxygen/O<sub>2</sub>/high partial pressure of O<sub>2</sub> in the blood;
  - 5 Hence oxygen dissociates from haemoglobin;
  - 6 Released to the muscle/diffuses to muscle/myoglobin.
- 3 marks

- (iii) 1 An increase carbon dioxide concentration (PCO<sub>2</sub>);
- 2 An increase in acidity;
  - 3 Exercise produces an increase in blood/body temperature;
  - 4 Bohr shift/curves moves to the right;
  - 5 Resulting in less saturation of haemoglobin with oxygen;
  - 6 And increase in oxygen release/oxyhaemoglobin dissociation (to the working muscles);
  - 7 Higher PO<sub>2</sub> haemoglobin is fully saturated;
  - 8 Lower PO<sub>2</sub> haemoglobin is only partially saturated.
- 4 marks

- (b) (i) 1 Pre-planned/well learnt movement/without conscious control;
- 2 Once initiated no modification;
  - 3 No feedback (no kinethesis feedback during the movement);
  - 4 Ballistic;
  - 5 Very quick/limited time;
  - 6 Carried out in a stable environment;
  - 7 Relevant example/kicking/throwing/striking/catching
- 3 marks

- (ii) Closed loop motor programmes
- 1 Feedback is essential/has feedback;
  - 2 Error adjustment until perfection is achieved;
  - 3 Comparison of KR and KP to achieve model of correctness;
  - 4 Adjust performance;
  - 5 Kinethesis performance;
  - 6 Memory trace initiates the movement;
  - 7 Comparison of perceptual and memory trace.
- 3 marks
- (Accept reverse or opposites)

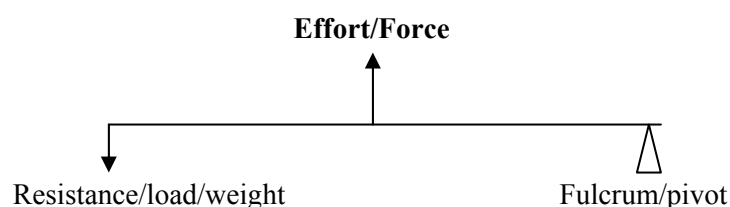
- (iii) 1 Too many stored movements required for memory capacity;  
 2 Not all environments are predictable or stable;  
 3 Cannot accommodate new or novel skills;  
 4 Cannot accommodate flexible movement pattern;  
 5 Not applicable to open skills;  
 6 Some skills have no time/too quick/discreet/ballistic;  
 7 No corrections. 3 marks

- 4 (a) (i) 1 Manual/physical/mechanical;  
 2 Verbal. 2 marks

- (ii) 1 Make sure the learner understands the importance and relevance to the final performance/demonstration accurate/meaningful;  
 2 Use of a role model/significant other;  
 3 Get someone to demonstrate of similar/appropriate to age/ability (self efficacy);  
 4 Ensure that the audience can see and hear the demonstration well/clear;  
 5 Show complex skills from different angles and at different speeds/slow motion;  
 6 Highlight the main aspects/cues of the demonstration/break down skill into components;  
 7 Focus the attention of beginners/cognitive on a few points rather than the whole performance/simple/specific/short;  
 8 Minimum delay between instruction and demonstration;  
 9 Allow time for mental rehearsal;  
 10 Repeat the demonstration if necessary;  
 11 Reinforce successful demonstrations. 4 marks

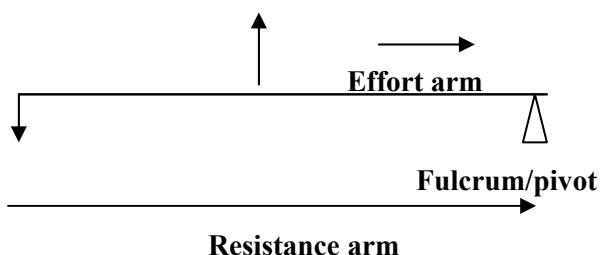
- (b) 1 Insight learning – understanding the process to achieve the result;  
 2 Experiences the ‘whole’ activity rather than skills in isolation;  
 3 Helps to identify role in the game;  
 4 Allows learners to develop their own strategies and/or routes of understanding/learn own corrections;  
 5 Poses questions **but** not ‘trial and error’ learning;  
 6 Better for the performer rather than being told what to do all the time. 3 marks

- (c) (i)



- 1 Correct order;  
 2 Correct labels (*do not credit F, R, E*);  
 3 Bicep curl/racquet/throwing action/hamstrings and quad at the knee joint/equiv.  
 (*Take first answer only*) 3 marks

(ii)



2 marks

(iii)

Advantages

- 1 Wide range of movements are possible;
- 2 Because the length of the resistance arm (distance from joint to end of bone) is long;
- 3 Speed of movement rather than force;
- 4 Small movement of effort = large movement of arm. sub max 3 marks

Disadvantages

- 5 But because force arm is short;
  - 6 Unable to move much/great resistance;
  - 7 Effort required is greater than resistance;
  - 8 Known as ‘Mechanical Disadvantage’.
- sub max 3 marks  
4 marks

5 (a) (i)

	Preparatory Phase		Kicking Phase	
	Main Agonist	Joint Action	Main Agonist	Joint Action
<b>Hip</b>	<i>Gluteals</i>	<i>(Hyper)extension</i>	<i>Hip Flexors</i>	<i>Flexion</i>
<b>Knee</b>	<i>Hamstring</i>		<i>Quadriceps</i>	<i>(Flexion) Extension</i>

*(Credit first answer only) (Do not credit gluts, squads)* 7 marks

(ii)

- 1 Saggital/median plane;
- 2 Transverse/frontal-horizontal/medial-lateral axis. 2 marks

(b) (i)

- 1 Teacher’s philosophy/personality;
- 2 Level of experience/level of knowledge of skill;
- 3 Teaching style – command/problem-solving/equiv;
- 4 Demands on learner/classification/nature/practice length/dangerous;
- 5 Learner/Group characteristics/personality;
- 6 Age/skill/ability/fitness/knowledge;
- 7 Interest/motivation/behaviour;
- 8 Environmental factors/situation;
- 9 Resources/facilities/equipment/time;
- 10 Nature of activity/size of group/safety issues. 4 marks

(ii)

**Command style***Sub max 3 marks*

	<b>Advantages (<i>Sub max 3 marks</i>)</b>		<b>Disadvantages (<i>Sub max 3 marks</i>)</b>
1	Effective way of teaching a new skill/beginners/time aspect	6	Discourages thinking or questioning/become clones of teachers
2	Clear information on skills/tactics/skill is learnt correctly	7	Learners do not take responsibility for learning
3	Establishes clear relationships/routines	8	Limited use with open skills (decision making)/appropriate e.g.'s
4	Teacher/coach can monitor/maintain safety	9	Difficult to supply individualised feedback/no differentiation
5	Control behaviour/large groups	10	Difficult to solve their own problems when performing
		11	Learners become bored/lose interest/demotivated

**Problem-solving style***Sub max 3 marks*

	<b>Advantages</b>		<b>Disadvantages</b>
1	Increases understanding	5	Requires learners who are confident and able and can express themselves
2	Performer learns to make their own decisions/more challenging/independent	6	Can be time consuming/slower
3	Interesting/variety of approaches/exciting/self satisfaction	7	Difficult to know what has been learnt/could learn incorrectly
4	Better experienced performer	8	Extensive knowledge of the topic

*Credit first teaching style only**5 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*