



ASSESSMENT and  
QUALIFICATIONS  
ALLIANCE

# Mark scheme

# June 2003

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## GCE

## Sport and Physical Education

### Unit PED4

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## Unit 4

### 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 A= lack of talent/ability;  
 2 B= Unlucky track/environment/task difficulty/level of coaching/equiv  
 3 C= Lack of concentration/effort/practice/form/relates to the person;  
 4 D= Delayed in traffic/ bad luck/false started/stumble/ weather /equiv. (4 marks)

- (ii) 1 A= this will be difficult to change in a short period of time  
 2 B= if it is at the same venue the same level of task difficulty;  
 3 C= this one aspect the competitor can change in training/competition;  
 4 D= Again this may be limited by planning before and trying to avoid traffic  
 Jams/example of application;  
 5 Can change C & D.

*Maximum of 3 marks explanations –3 different  
 (3 marks)*

- (b) 1 A= Type II b (Fast twitch Glycoyltic//FTG);  
 2 B= Type II a (Fast twitch – oxidative Glycoyltic/FOG);  
 3 C= Type 1 (Slow twitch/oxydative glycoyltic) *1 mark for each correct  
 (3 marks)*

- (c) 1 (Increasing) the number of motor units recruited for the activity;  
 2 (Increasing) the frequency of discharge.

(Weightlifter)

- 3 Weight lifter will use a Synchronous pattern of motor firing-recruited  
 simultaneously/Wave summation/tetanic;  
 4 The synchronous/equiv firing (weight lifter) aids the generating force quickly for  
 the desired lift;  
 5 The accumulation of contractions contribute to an overall contraction/equivalent;  
 6 Or Muscles fatigue is reached (power);  
 7 Weight lifters will predominantly use fast twitch motor units.

(Endurance Runner)

- 8 Endurance runner will use an asynchronous firing pattern. Some units are firing whilst others are recovering/spatial summation.
- 9 The asynchronous firing pattern (endurance runner) provides a recuperative period to permit performance to continue with a minimal fatigue as fibres share the burden of the exercise;
- 10 Fatigue is spread throughout the muscle(endurance);
- 11 Endurance runner will use predominantly slow twitch motor units. (5 marks)

- 2 (a) 1 When young, leader/coach must be directive/task orientated/authoritarian/autocratic/command style teaching;
- 2 As they become older, leader/coach acquires in-depth knowledge of performers;
  - 3 Depending on level of success/favourableness;
  - 4 If moderately favourable it is person orientated;
  - 5 If successful/favourable/unsuccessful/unfavourable it is task orientated;
  - 6 Must remain responsive to changing needs of the group. (3 marks)

- (b) 1 Required behaviour;
- 2 Appropriate or required by the situation/make critical decisions at appropriate times;
  - 3 Preferred behaviour;
  - 4 Demand different things from a leader/ positions within team will demand different things;
  - 5 Actual leader behaviour;
  - 6 what happens/ what actually happens in a situation and whether it is the correct decision;
  - 7 The closer the leader's behaviour is that of what is expected by group of the leader;
  - 8 Greater probability of desired outcomes being met/ performance will be of a high quality;
  - 9 Awareness of opposition/situational /decisions made/characteristics/ experience;
  - 10 Having all three behaviours is the ideal. (5 marks)

- (c) Increased testosterone/male (Do not award mark)
- 1 Increased bone formation;
  - 2 Increased muscle size/mass;
- Increased Estrogen/female (Do not award mark)
- 3 Broadening of the pelvis.
  - 4 Increasing fat deposition in hips and thighs/more body fat. (NB: Only credit if specify gender) (2 marks)

- (d) 1 Ranges overlap between both groups of non-athletes/ranges overlap between both groups of athletes;  
 2 Male non-athletes overlap female athletes/female athletes have substantially higher levels than non-athletic males;  
 3 Male athletes have higher  $\dot{V}O_2$  than non male athletes/Female athletes have higher  $\dot{V}O_2$  than non athletic females.

*Sub max 2 marks*

- 4 Females/untrained have lower levels of haemoglobin/red blood cells/eurthocytes/males have higher levels of haemoglobin;  
 5 Lower cardiac output/smaller heart volume/smaller heart/higher heart rate/smaller thorax cavity/lung volumes;  
 6 Work at higher percentage of  $\dot{V}O_2$  max;  
 7 Lactate levels are higher;  
 8 Greater amounts of  $O_2$  to remove lactate;  
 9 Therefore the ability to transport oxygen to muscles reduced;  
 10 Larger muscles/more mitochondria/myoglobin;

(Credit points above if they refer to comparisons between trained and untrained)

*Sub max 4 marks*

*(5 marks)*

- 3 (a) (i) 1 One would have the motive to achieve success (NACH) and;  
 2 the other to avoid failure (NAF);  
 3 They would view the penalty in terms of task difficulty and/or  
 4 Incentive value of success/importance of task to the individual;  
 5 One who accepts would enjoy the challenge /not afraid of failure/50-50 chance of success/equiv;  
 6 Use feedback to improve performance;  
 7 One who declines would be preoccupied with failure/ dislike others evaluating, possibly bringing shame/50-50/too high a risk/equiv. *(4 marks)*
- (ii) 1 Person who accepts (NACH) would not afraid of failure/put failure to internal factors;  
 2 Person who declines (NAF) would be preoccupied with failure/avoid the challenging if at all possible/failure was because goalkeeper was too good;  
 3 But the person who declines (NAF) could readily accept as he was destined to fail;  
 4 Learned helplessness;  
 5 The person who accepts (NACH) would also relish the challenge to see if they meet the challenge. *(3 marks)*
- (b) 1 Body can not readily meet the demands of exercise/ $O_2$  supply does not meet demands;  
 2 Heart and breathing mechanism are initially failing;  
 3 Muscles use myoglobin/oxygen stores;  
 4 Energy requirements met by anaerobic processes. *(3 marks)*

- (c) (i) 1 Essentially replacing ATP and PC;  
 2 (Muscle) myoglobin are replenished with oxygen;  
 3 Breakdown of foodstuffs for energy to resynthesise ATP/aerobic respiration;  
*Sub max 2 marks*
- 4 Heart rate remains high;  
 5 Breathing rate remains high/elevated;  
 6 Performer remains active- cool down/increase in temperature;  
*Sub max 2 marks*  
*(3 marks)*
- (ii) 1 Duration of exercise;  
 2 Intensity/strenuous of exercise;  
 3 Training programme/getting fitter leads to improved recovery rate;  
 4 Active warm/cool down. *(2 marks)*
- 4 (a) 1 Definition, somatic physiological effects and cognitive is psychological effects/accept eg's.

**Somatic state anxiety**

- 2 Starts off low but rises quickly a few hours before the event;  
 3 Decreases during the competition;

**Cognitive state anxiety**

- 4 Increases during he days before competition;  
 5 But does not increase just before competition;  
 6 During competition will fluctuate due to success or failure.  
 7 Athletes that are experienced/positive/confident may experience lower levels of these anxieties.

*(3 marks)*

- (b) 1 The manner the performer interprets the performance/reduces the importance of the task;  
 2 Helps maintain attention and focus on task in hand;  
 3 Optimism - aids motivation and self esteem;  
 4 Aids concentration levels.  
 5 Ensure high self efficacy/previous success/more confident through training/preparation/goalsetting.

*Sub max 3 marks*

- 6 Self talk needs to be positive in order to break bad habits;  
 7 Mental imagery/rehearsal/visualisation/selective attention;  
 8 Breathing control/meditation;  
 9 Thought stopping.

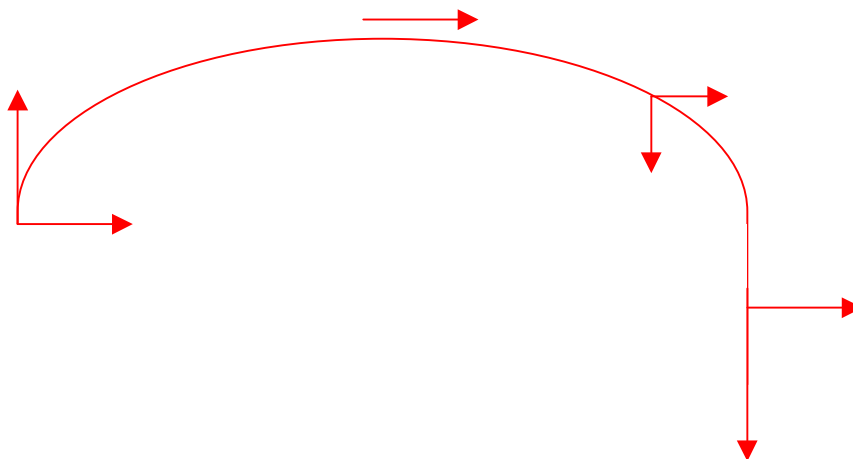
*(4 marks)*

- (c) 1 Height of release;  
2 Speed of release;  
4 Angle of release

*0 marks for 1, 1 mark for 2 and 2 marks for all 3  
(2 marks)*

- (d) (i) 1 Parabolic shape rising from release point;  
2 Landing lower than release point.

*(2 marks)*



- (d) (ii) 3 Positive vertical component at release;  
4 No vertical component at top of flight;  
5 Negative vertical component equal in magnitude to that at release at same height as release on downward phase of flight;  
6 Increased negative vertical component immediately prior to landing;  
7 Equal horizontal component at all four points in flight *(4 marks)*

- 5 (a) 1 Self efficacy is a person's belief that they have the necessary ability/skill to meet the demands of the situation/situation specific;  
2 Self confidence - is more general/global/equiv. *(2 marks)*

- b) 1 Performance accomplishments;  
2 Success from previous performances/equiv;  
3 Avoid failure this can hinder self efficacy;  
4 Organise successful events;  
5 Vicarious experiences  
6 Watching successful performances, gives more confidence in performing skill;  
7 More successful when like for like;  
8 Verbal persuasion  
9 Self talk;  
10 Encouragement/positive feedback/reinforcement from coach/assistants;  
11 Emotional arousal;  
12 Positive perceptions of arousal will boost confidence;  
10 Encourage participation with others teams or pairs competition.

*Accept relevant examples  
(6 marks)*

**(c) Period A**

- 1 The puck is at rest since it was placed on the ice;
- 2 Because it has experienced no(horizontal)force/acceleration/velocity.

**Period B**

- 3 The puck is accelerating change in (horizontal) velocity;
- 4 In the direction of the impact of the stick;
- 5 Because of the force exerted on the stick/stick in contact with puck.

**Period C**

- 6 The puck remains at constant velocity as it travels along the ice;
- 7 Because it is experiencing zero horizontal force/ice/ friction free;
- 8 And because it possesses velocity.

**Period D**

- 9 The puck is accelerating;
- 10 In the direction of the reaction force;
- 11 Resulting from the collision with the wall/hit the wall;
- 12 Which changes the direction of the travel.

**Period E**

- 13 The puck maintains constant velocity;
- 14 Because it is experiencing zero horizontal force;/ice – friction free;
- 15 The velocity is in the opposite direction from that before the collision;
- 16 And of changed magnitude;
- 17 Due to the momentum absorbed during the collision.

*(7 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.

*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*