



ASSESSMENT and  
QUALIFICATIONS  
ALLIANCE

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# Mark scheme January 2004

## GCE

### Sport & Physical Education

### Unit PED4

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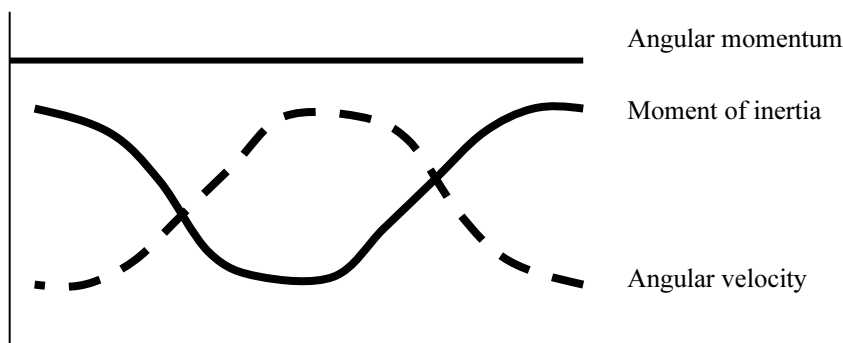
## General Instructions

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

- 1 (a) 1 Lactate threshold correctly identified as between 500 and 800 Watts;  
 2 Lactate from anaerobic (glycolysis)/lack of oxygen (O<sub>2</sub>)/high demand/lack of supply;  
 3 High intensity/workload exercise/equiv. *3 marks*
- (b) 1 Used as respiratory substrate/for respiration/energy/using oxygen (O<sub>2</sub>)/lactate to replenish ATP;  
 2 Converted to pyruvate/pyruvic acid;  
 3 then to Carbon Dioxide (CO<sub>2</sub>) and water;  
 4 In inactive muscle and various tissues/organs;  
 5 Converted to glycogen/glucose;  
 6 In liver;  
 7 Some excreted in sweat/urine/conversion to protein *4 marks*
- (c) 1 Perceived reason/cause/blame/equiv;  
 2 For success/failure performance/result. *2 marks*
- (d) 1 B – (task difficulty)/standard of competition/coaching performer is involved in;  
 2 C – (effort) amount of practice/current form of individual/preparation given for performance;  
 3 D – factors beyond performer’s control – (‘luck’)/weather/refereeing decisions which can affect performance. *3 marks*
- (e) 1 Strong reaction to failure causing performer to feel that failure is inevitable;  
 2 Leading to ‘giving up’ even if success is possible;  
 3 Encourage view that success is due to (stable and internal) factors/ability;  
 4 Encourage view that failure due to unstable factors/external factors/effort/luck. *3 marks*

- 2 (a) 1 Task and person relationship orientated/autocratic and democratic/authoritarian;  
*sub max 1 mark*
- 2 Task/autocratic/better in most and least favourable situations;  
3 Better with (larger) groups/teams;  
4 Better when quick decisions needed;  
5 Dangerous situations;  
6 Better when clear/impersonal goals; *sub max 2 marks*
- 7 Person/democratic – better in moderately favourable situations;  
8 Better with small groups/individuals;  
9 Better when quick decisions not needed/time to discuss *sub max 2 marks*  
*5 marks*
- (b) 1 Group members' characteristics;  
2 e.g. their experience/knowledge/attitudes/needs/age/ability/gender/personalities  
**or**  
3 Performers expectations/preferred behaviour;  
4 What the athlete wants/expects from coach/situation  
**or**  
5 Performance outcomes/satisfaction;  
6 Level of satisfaction that leadership gives to members/athlete. *2 marks*
- (c) 1 A – ATP-PC/phosphocreatine system/ATP system/alactic system;  
2 B – lactate/lactic acid system/anaerobic glycolytic system;  
3 C – aerobic/oxidative system. *3 correct – 2 marks*  
*2 correct – 1 mark*
- (d) (i) 1 Immediate energy supplied/ATP system;  
2 PC/CP (broken down); (*credit equation*)  
3 Energy for ATP formation;  
4 Aerobic system used for recovery/restoration of PC levels. *2 marks*
- (ii) 1 Low intensity – aerobic systems/oxidation;  
2 Fats/glucose/glycogen/carbohydrates (CHO's);  
3 Krebs cycle/mitochondria;  
4 Carbon dioxide (CO<sub>2</sub>) produced; *sub max 2 marks*
- 5 Increasing/high intensity – lack of oxygen (O<sub>2</sub>)/anaerobic;  
6 ATP produced by glycolysis/lactic acid system;  
7 Lactate accumulates/Hydrogen ions (H<sup>+</sup>)/acidity;  
8 Fatigue. *sub max 2 marks*  
*4 marks*

- 3 (a) (i) 1 Correctly drawn angular velocity curve;  
 2 Correct labelling on angular momentum curve;  
 3 Correct labelling of angular velocity curve;  
 4 Correct labelling of moment of inertia curve



4 marks

- (ii) 1 Angular momentum remains constant during flight;  
 2 No net external forces acting;  
 3 Moment of inertia decreases (in tuck phase);  
 4 Because of reduction in distribution/spread of mass;  
 5 Angular velocity increases (during tuck phase);  
 6  $H = I\omega$  / angular momentum = angular velocity x moment of inertia. 4 marks

- (b) (i) 1 Cognitive – feelings of nervousness/apprehension/worrying/psychological;  
 2 Somatic – awareness of arousal – increased heart rate/sweaty palms/butterflies/physiological/equiv. 2 marks

- (ii) 1 Cognitive –negative linear relationship – as cognitive anxiety increases performance decreases; (NB: accept opposites)  
 2 Somatic (inverted U) optimal level of performance when anxiety at moderate level. Low anxiety – low performance, increasing anxiety – higher performance, high anxiety – low performance. 2 marks

- (iii) 1 State – temporary anxiety response to a situation;  
 2 Depends on perceptions of own ability to cope/feel they cannot do it;  
 3 Trait – enduring personality trait concerning anxiety in any situation;  
 4 Trait affects state. 3 marks

- 4 (a) 1 Insufficient glycogen for duration of the race;  
2 Required (aerobic) energy source;  
3 Need to store more than normal/enough for the race/going for longer;  
4a Dietary manipulation – (reduce intake then overcompensate);  
4b Maintain diet;  
5 May be combined with alterations to training programme/maintenance of training programme. *4 marks*
- (b) 1 Thermoregulatory centre/medulla/hypothalamus;  
2 Exercise generates (excessive) heat;  
3 Needs to be lost through radiation;  
4 Vasodilatation/ blood closer to the skin/equiv.;  
5 Conduction/convection; *Sub max 2 marks*
- 6 Evaporation/sweating;  
7 (Sweating) involves loss of water;  
8 Dehydration;  
9 Worse if high temperature/humidity/high solar flux/sunny/windy;  
10 Need for water intake during event. *Sub max 2 marks*  
*3 marks*
- (c) (i) 1 Set of forces/task or social cohesion/tending to keep group together/team work;  
2 Resists disruption;  
3 Commitment to group goals/common tasks; *2 marks*
- (ii) 1 (Type of sport) – cohesion facilitates in interactive sports eg team sports;  
2 (Stability) – more stable gives more time for cohesion to develop;  
3 (Group size) – smaller groups have greater cohesion because of more interaction;  
4 (External threats) – increase cohesion by forcing members to ignore internal divisions;  
5 (Status) similarity of status/age/ability aids cohesion;  
6 Satisfaction with rest of group aids cohesion;  
7 Group success increases cohesiveness;  
*3 marks*
- (iii) 1 Depends on Task cohesion/working for common goals;  
2 Depends on Social cohesion/group members liking/trusting/supporting each other;  
3 Generally cohesion brings success when both task and social cohesion are high;  
4 But exceptions (Redgrave and Pinsent) when task cohesion over-rides social cohesion;  
5 Usually success leads to cohesion rather than cohesion leading to success.  
*3 marks*

- 5 (a) (i) 1 In general the better the players/resources the better the team/how good team should be;  
2 But, the more interactive the sport the less this applies. 2 marks
- (ii) 1 Co-ordination losses;  
2 Player's skills are interwoven into unity/teamwork/communication breakdown;  
3 More interactive the sport the more difficult the co-ordination of skill becomes;  
4 Ringlemann effect – lack of combined effort;  
(NB: only credit if explanation/description is given)  
5 Motivational losses;  
6 Less effort develops in group situations;  
7 Social loafing. 4 marks
- (iii) 1 Clarify individual roles;  
2 (Co-ordination losses) - practice/develop co-ordination/better tactics;  
3 (Motivational losses) – highlight individual contributions to team;  
4 Select players with interactive/team skills;  
5 Give more responsibility/targets/goals;  
6 Improve fitness/techniques. 3 marks
- (b) 1 A = Middle  
B = End  
C = Beginning 1 mark for all three correct
- 2 (Force-time) graphs show impulse;  
3 Of a single footfall/landing and takeoff of a foot;  
4 Landing/heel strike produces negative impulse/braking;  
5 Take off/drive/toe off produces positive impulse/acceleration;  
6 Net impulse is combination of negative and positive impulses;  
7 Mass of the runner is constant.
- (i) C – Early in the sprint  
8 Net impulse is positive;  
9 The performer is accelerating;
- (ii) A – Middle of the sprint  
10 Positive and negative impulses equal/net impulse of zero;  
11 No acceleration/deceleration/running at constant velocity;
- (iii) B – Late in the sprint  
12 Net impulse is negative;  
13 The performer is decelerating. 6 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*