SPORTS, EXERCISE AND HEALTH SCIENCE

Overall grade boundaries

Standard level

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 17	18 - 33	34 - 43	44 - 54	55 - 65	66 - 77	78 - 100

Standard level paper one

Component grade boundaries

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 7	8 - 11	12 - 14	15 - 17	18 - 20	21 - 24	25 - 28

General comments

Each session teachers are invited to submit comments about each examination. These forms can be downloaded from the OCC. These comments provide some of the evidence used by the senior examining team during the Grade Award meetings; it is hoped that more will be submitted in future sessions. Only one G2 form was submitted during this session, stating that this paper was of a similar standard in comparison with last year's paper, with an appropriate the level of difficulty. The syllabus coverage was rated as satisfactory. The clarity of wording and the presentation of the paper were good. There were a good number of discriminating questions on this paper, with a smaller number that did not seem to discriminate well.

The following topics/sub topics were done really well:

1.1 The skeletal system; 1.2 The muscular system; 3.2 Carbohydrate and fat metabolism; 3.3 Nutrition and energy systems; 5.3 Principles of skill learning; 6.3 Components of fitness;

In general, the following areas were good but could be improved upon:

4.1 Neuromuscular function; 4.3 Fundamentals of biomechanics; 5.2 Information processing.

The following areas evidenced some weaknesses and should/need to be improved upon:

2.1 Structure and function of the ventilatory system; 2.2 Structure and function of the cardiovascular system 3.1 Nutrition; 4.2 Joint and movement type; 5.1 The characteristics and classification of skill.

The strengths and weaknesses of candidates in the treatment of individual questions

The candidates were very well prepared for the following for the following questions: 1(1.1.2 Distinguish between the axial and appendicular skeleton in terms of function); 2 (1.1.4 Draw

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and annotate the structure of a long bone); 4 (1.2.4 Define the terms *origin* and *insertion* of muscles); 7 (2.1.1 List the principal structures of the ventilator system); 12 (3.1.2 Outline the role of macronutrients and micronutrients); 15 (3.2.6 Outline the functions of glucagons and adrenaline during fasting and exercise); 17 (3.3.6 Describe the re-synthesis of ATP by the ATP-PC system); 23 (5.1.5 Define the term *ability*); 26 (5.3.9 Outline the spectrum of teaching styles); 30 (6.3.2 Outline the major components of fitness).

The candidates were NOT well prepared for the following questions: 6 (2.1.6 Outline the role of haemoglobin in oxygen transportation); 9 (2.2.6 Describe the relationship between heart rate, cardiac output and stroke volume at rest and during exercise); 14 (3.1.7 Distinguish between saturated and unsaturated fatty acids); 18 (4.1.1 Label a diagram of a motor unit); 20 (4.2.1 Outline the types of movement of synovial joints); 22 (5.1.2 Describe the different types of skill).

Question 13

Option A was a good distractor. This question had a zero discrimination index.

Question 14

This question was discounted as the examining team felt the inclusion of the word “true” in the stem misled candidates.

Question 20

Option ‘A’ proved to be a good distractor.

Standard level paper two

Component grade boundaries

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 6	7 - 13	14 - 18	19 - 24	25 - 30	31 - 36	37 - 50

General comments

Only one G2 form was received for paper 2 and this means that one should be cautious about drawing any firm conclusions. The paper was rated of a similar standard in comparison with last year’s paper. The level of difficulty was reported as appropriate. The syllabus coverage was described as poor. The clarity of wording and the presentation of the paper were rated as good.

The areas of the programme that proved difficult for the candidates

In section A the following areas seem to have proved difficult for several candidates:

4.3.8 Explain how Newton’s three laws of motion apply to sporting activities Q1(d); 1.2.1 Outline the general characteristics common to muscle tissue (Q2(a)); 1.2.4 State the origins and insertions of named muscles (Q2(b)); 2.2.4 Describe the intrinsic and extrinsic regulation of heart rate and the sequence of excitation of the heart muscle (Q3(a); 2.2.8 Explain

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cardiovascular drift (Q3(b)); 3.1.12 Discuss how the recommended energy distribution of the dietary macronutrients differs between endurance athletes and non-athletes (Q4).

In section B most candidates answered question 5 though a very small number attempted questions 6 and 7. Part questions 5(a), (b) and (c) were answered quite well by the candidates. Candidates found Question 5 (d) challenging (4.1.3). Responses to questions 6 (c) and (d) suggested that candidates do not have a firm grasp of statistical analysis (6.1.7, causal relationship between two variables), and the process of gaseous exchange at the alveoli (2.1.7).

The levels of knowledge, understanding and skill demonstrated

On the whole, the candidates seemed to have an understanding of what was expected of them in this paper. However, it was anticipated candidates would have a firmer grasp of: Newton's three laws of motion apply to sporting activities; movements in relation to joint action and muscle contraction; the general characteristics common to muscle tissue; the origins and insertions of named muscles; the sequence of excitation of the heart muscle; cardiovascular drift.

The strengths and weaknesses of candidates in the treatment of individual questions

Question 1

Parts (a), (b) and (c) were generally done well, but (d) and (e) could be improved upon. The examining team felt that perhaps (d) should have been more focused i.e. focus the question more on the force generated off the blocks rather than swimming through the first five metres. It was surprising that candidates appeared to have struggled with (e), when it was considered a fairly straightforward question by the examining team.

Question 2

Question 2(c) was sound, with candidates demonstrating solid conceptual knowledge and understanding of the role of ATP and the re-synthesis of ATP by the ATP-PC system (3.3.6). It was disappointing that most candidates struggled with questions (a) and (b) on the muscular system which were not conceptually difficult questions.

Question 3

Questions 3(a) and (b) (based on the structure and function of the cardiovascular system: 2.2.4 & 2.2.8) were not done well by some candidates, whilst others had no difficulty at all with these questions.

Question 4

Question 4 (a)(i) & (ii) were answered quite well and this seems to have been a good question for the majority of candidates. The examining team felt that candidates might have done better if the question 1(a)(ii) read 'Outline……for *the performance of* many athletes'. Question 4(b) was not answered well by most candidates.

Question 5

Parts (a) & (b) were answered well by most candidates. The level of knowledge and understanding evidenced in the quality/depth of answers by some candidates was impressive,

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especially for the application aspect of this question [part (c)]. However, question (d) could have been answered much better, with some candidates lacking focus in their response.

Question 6

Part (b) was answered to high standard. The candidates really struggled with (c) and (d), and this gives some cause for concern (especially the lack of understanding around 'causality in experimental results').

Question 7

Question 7(b), (c) and (d) all included an 'application' aspect to the question and answered well by the single candidate who chose this question.

The type of assistance and guidance teachers should provide for future candidates

There were a low number of candidates for this session, so one should be careful about drawing firm conclusions.

Try to improve the candidates' knowledge and understanding of:

- how Newton's three laws apply to sporting activities
- the muscular system (general characteristics common to muscle tissue & the origins and insertions of named muscles)
- the sequence of excitation of the heart muscle; cardiovascular drift
- the sliding filament theory of muscle contraction
- how to demonstrate causality in experimental results through appropriate study design
- the process of gaseous exchange at the alveoli

and teach drafting/planning with specific focus on the command term associated with the question.

Standard level paper three

Component grade boundaries

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 7	8 - 15	16 - 18	19 - 22	23 - 25	26 - 29	30 - 40

General comments

A single G2 form was received for paper 3 and this means that one should be cautious about drawing any firm conclusions. This paper was rated a similar standard in comparison with last year's paper. The level of difficulty was reported as appropriate. The syllabus coverage was described as good, the clarity of wording was rated satisfactory and the presentation of the paper was rated as good. The G2 form further commented that this was a 'very good paper'

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The areas of the programme that proved difficult for the candidates

All candidates answered option A or option D.

A.3.6 (non-nutritional ergogenic aids, harmful effects of anabolic steroids, EPO & beta blockers (Question A4)) seems to have been difficult for some of the candidates.

The levels of knowledge, understanding and skill demonstrated

In general the candidates demonstrated a sound knowledge and understanding of their options. Most candidates have a grasp of the expectations for this options paper. In particular, candidates answered the data questions well and evidenced a sound understanding of: environmental factors & physical performance (A.2), the significance of humidity in relation to body heat loss [A.2.4], indicators of overtraining (A.1.3), reasons for using cross training (A.1.2), the association between body composition and athletic performance (D.3.4), and the functions of water in the body (D.2.1).

The strengths and weaknesses of candidates in the treatment of individual questions

Option A

This option was generally answered well by many of the candidates.

Question A3(b) was not answered as well as anticipated by the examining team.

Some of the responses to question A4, which was not conceptually difficult, were disappointing.

Option D

Marks for this option suggest that candidates are slightly less secure in their knowledge and understanding of Option D compared to Option A.

Some candidates struggled with 2(b) [D.2.8], and some could improve their answers for 2 (c) [D.2.9]. Most candidates had real difficulty answering question D3(b) [D.4.3].

The type of assistance and guidance teachers should provide for future candidates

Try to ensure candidates have a firmer grasp of:

- health risks to exercise in the cold [A.2.16]
- harmful effects of anabolic steroids/EPO/beta blockers [A.3.6]
- why endurance athletes require a greater water intake during training and competition [D.2.7]
- the regulation of electrolyte balance during exercise [D.2.8]
- muscle glycogen use in skeletal muscle fibre types during exercise [D.4.3]

Encourage candidates to draft key elements of possible answers, to help improve the quality of answers as well as contribute to clarity of response to questions.

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