OCR
RECOGNISING ACHIEVEMENT

**ADVANCED SUBSIDIARY GCE UNIT** **2562**

# PHYSICAL EDUCATION

The Application of Physiological and Psychological Knowledge to Improve Performance

**THURSDAY 24 MAY 2007** Morning

Time: 1 hour 30 minutes

Additional materials: None.

*CUP/T39011*

Candidate Name

Centre Number

Candidate Number

**INSTRUCTIONS TO CANDIDATES**

- Write your name, Centre number and Candidate number in the boxes above.
- Answer **all** the questions.
  **Two** questions from Section A (Application of Anatomical and Physiological Knowledge to Improve Performance).
  **Two** questions from Section B (Acquiring and Performing Movement Skills).
- Write your answers, in blue or black ink, in the spaces provided on the question paper.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- Do **not** write in the bar code.
- Do **not** write outside the box bordering each page.

**INFORMATION FOR CANDIDATES**

- The number of marks for each question is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **60**.

| For Examiner's Use | |
|---|---|
| 1 | |
| 2 | |
| 3 | |
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| Total | |

This document consists of **14** printed pages and **2** blank pages.



**[Turn over**

Section A

Application of Anatomical and Physiological Knowledge to Improve Performance

1 (a) (i) Fig. 1 shows a performer completing a pull up exercise.

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Details:

An image of a performer completing a pull up exercise

Fig. 1

Use Fig. 1 to help you complete the following movement analysis for the elbow joint during the flexion phase of the pull up.

Type of joint: ..... .....

Articulating bones: .....

Agonist muscle: .....

Antagonist muscle: ..... [4]

(ii) During the pull up exercise carbon dioxide is transported to the lungs.
Identify two ways in which carbon dioxide is carried in the blood during this exercise.

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..... [2]

(b) (i) Fig. 2 shows a back raise exercise.

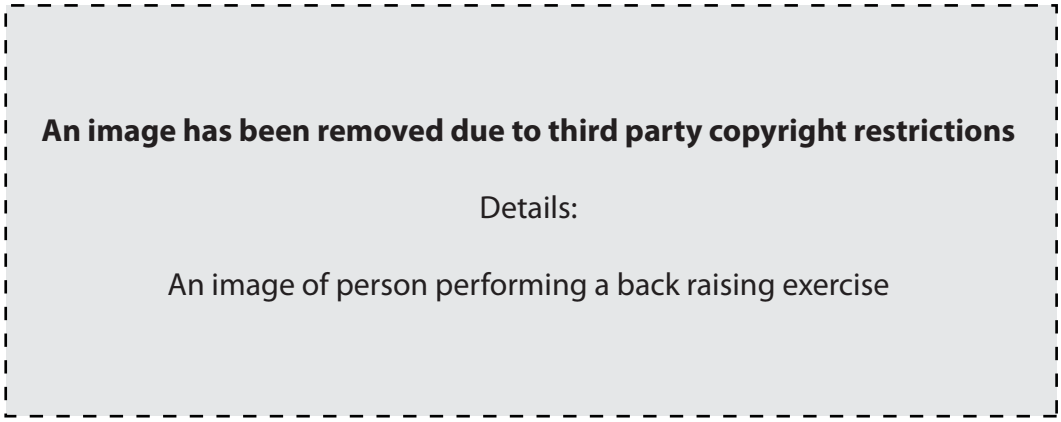


Fig. 2

Use Fig. 2 to help you complete the following movement analysis of the spine during extension.

Agonist .....

Antagonist .....[2]

(ii) Identify an exercise for each of the following muscles which could be included in a strength training programme.

Biceps Femoris: .....

Gastrocnemius: ..... [2]

(iii) The muscle fibre type that would be used during a maximal strength contraction is fast glycolytic (type 11b). Give one structural and one functional characteristic of this muscle fibre type.

Structural characteristic .....

Functional characteristic ..... [2]

**(iv)** Apply Newton's 3 Laws of Motion to a strength training exercise.

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..... [3]

[Total: 15]

2 Fig. 3 shows a cyclist completing a 10 mile training ride.


Fig. 3

(a) With reference to the mechanics of breathing describe how the cyclist is able to inspire greater amounts of oxygen during the training ride.

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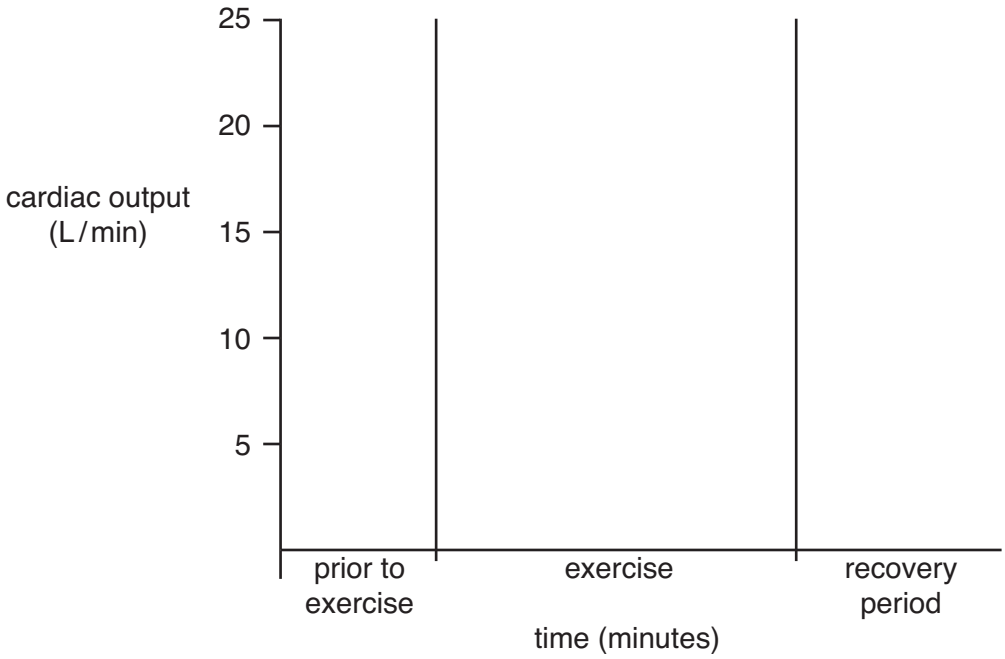
..... [2]

**(b)** Draw a graph to show how the cyclist's cardiac output changes in the following phases of the aerobic training session.

- Prior to Exercise
- Exercise Session
- Recovery Period




[4]

**(c)** Draw and label a diagram to show how blood flows through the pulmonary and systemic networks of the cyclist's body during the training ride.

[4]

**(d)** Describe how carbon dioxide is diffused from the blood into the alveoli during the training ride.

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..... [3]

**(e)** Give reasons why the cyclist's performance would decrease when performing at altitude.

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..... [2]

[Total: 15]

## Section B

### Acquiring and Performing Movement Skills

**3** **(a)** The continuity continuum contains three elements; discrete, serial and continuous.

Use practical examples to explain each of these elements.

Discrete .....

.....

.....

Serial .....

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Continuous .....

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..... [3]

**(b)** Movement skills can be learned through the formation of a stimulus-response bond (S-R bond).

**(i)** Use a practical example to explain what is meant by an S-R bond.

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.....

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..... [2]

**(ii)** Reinforcement can have an effect on the formation of an S-R bond.
What is positive reinforcement?

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..... [1]

**(iii)** Thorndike suggested that the stimulus-response bond can be reinforced by the application of three laws:

- the law of exercise (repetition)
- the law of effect (satisfaction)
- the law of readiness (physical/mental preparedness).

Use practical examples to explain each of these laws.

Law of exercise .....

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Law of effect .....

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Law of readiness .....

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..... [3]

**(c)** Practice conditions may need to be different for each activity or skill.

**(i)** What is variability of practice?

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..... [1]

**(ii)** Describe massed practice.

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..... [2]

**(iii)** Give the advantages of using distributed practice with a sports performer.

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..... [3]

[Total: 15]

**4** **(a)** Feedback plays an important role in the learning and performance of movement skills.

Describe **three** functions of feedback.

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..... [3]

**(b)** Learning can be said to pass through three phases.

**(i)** Identify the characteristics of the cognitive phase of learning.

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**(ii)** Use practical examples to describe **two** different types of guidance that can be used during the cognitive phase of learning.

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..... [2]

**(c)** Bandura suggested that the model below (Fig. 4) could be applied to the learning of movement skills.

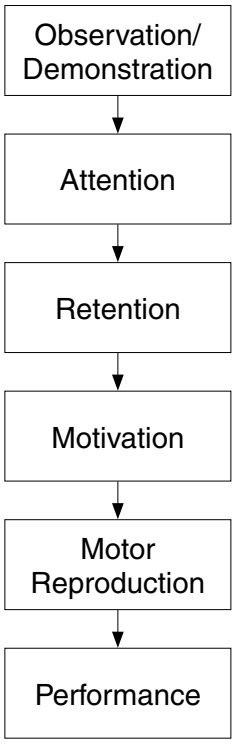


**Fig. 4**

Use practical examples to explain the stages; Attention, Retention and Motor Reproduction.

Attention .....

.....

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Retention .....

.....

.....

Motor Reproduction .....

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..... [3]

**(d)** The positive transfer of learning from one skill to another can save time in the learning process.

Explain how performers and teachers can ensure that positive transfer occurs between physical skills.

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..... [4]

[Total: 15]

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