



Cambridge International AS & A Level

PHYSICAL EDUCATION

9396/12

Paper 1

May/June 2023

2 hours 30 minutes



You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

- Answer **all** questions.
- Follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 90.
- The number of marks for each question or part question is shown in brackets [].

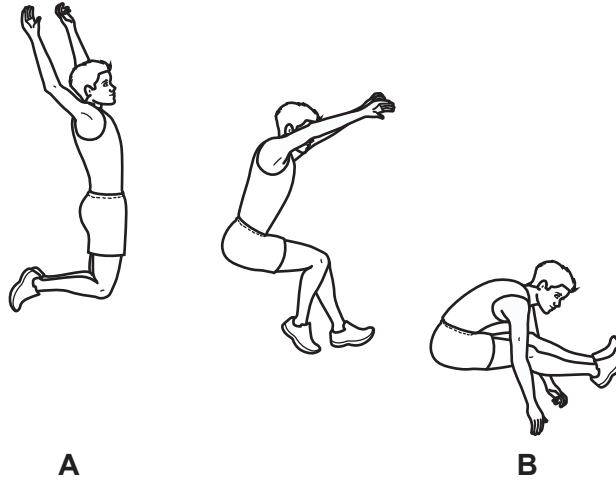
This document has **8** pages. Any blank pages are indicated.

Answer **all** questions.

Section A: Applied anatomy and physiology

- 1 (a) State the **two** different types of synovial joint located in the spine. For each type of synovial joint in the spine, identify a type of movement that is possible. [4]

- (b) The diagram shows a performer during the flight phase of a long jump.



Identify the items 1–4 in the table to describe a movement analysis of the shoulder joints and the hip joints from position **A** to position **B**. Your analysis should include the type of movement occurring and the main agonist.

	type of movement occurring	main agonist
shoulder joints from A to B	1	2
hip joints from A to B	3	4

[4]

- (c) Describe the function of:

- synergists
- antagonists.

[2]

- (d) (i) During exercise heart rate increases.

Suggest typical values, with appropriate units, for a 17-year-old physical education student for each of the following:

- heart rate during intense exercise
- stroke volume during intense exercise
- cardiac output during intense exercise.

[3]

- (ii) Describe the conduction system of the heart.

[5]

- (e) The vascular shunt mechanism increases the volume of blood flowing to working muscles during exercise.

Explain how this is achieved. [3]

- (f) Describe factors that cause blood pressure to increase during intense exercise. [3]

- (g) Describe the effect of each of the following on the mechanics of breathing during exercise:

- the diaphragm relaxing
- the sternocleidomastoids contracting
- the internal intercostals contracting.

[3]

- (h) Describe the short-term effects of lower partial pressures of oxygen at high altitude on the respiratory system. [3]

[Total: 30]

Section B: Acquiring, developing and performing movement skills

- 2 (a) Skilful performances can be seen as fluent and efficient by coaches.
Identify **three** other characteristics of skilful performance that coaches could see. [3]
- (b) Other than being underlying, state **two** characteristics of abilities. [2]
- (c) Explain how a coach could use the shaping of behaviour in operant conditioning to assist the learning of a skill. [4]
- (d) (i) Closed-loop control of motor programmes involves the use of feedback during the performance of a skill.
Describe other aspects of closed-loop control. [3]
- (ii) Suggest limitations of closed-loop control. [2]
- (e) (i) Use the example of a goalkeeper saving a penalty to describe what is meant by each of the following:
 - reaction time
 - movement time
 - response time.
[3]
- (ii) Explain how the psychological refractory period can affect response time when performing a movement skill. [3]
- (f) Transfer of learning can be either proactive or retroactive.
Describe proactive transfer of learning and retroactive transfer of learning. Give an example of each type of transfer. [4]
- (g) Justify why a named type of feedback is important for a performer in the autonomous phase of learning. [2]
- (h) Explain, using the inverted-U theory, how the performance of a skill may be affected by different levels of arousal. [4]

[Total: 30]

Section C: Contemporary studies in physical education and sport

- 3 (a) Physical education, sport and physical recreation have some similarities and some differences.
- (i) Basketball and netball can be played as sports and included as part of a physical education programme.
- Outline **four** differences between sport and physical education. [4]
- (ii) Describe the characteristics of recreational basketball or recreational netball. [4]
- (b) (i) Many elite performers receive prize money.
- Suggest other ways that elite performers may be funded. [4]
- (ii) Other than funding, suggest the provision required by an elite performer to achieve Olympic success in their chosen sport. [4]
- (c) Apart from increased health and fitness, describe other benefits of increased regular participation in sport for:
- individuals
 - society.
- [6]
- (d) Outline some of the negative effects of commercialism on spectators. [4]
- (e) Describe the potential disadvantages of sponsorship for performers. [4]

[Total: 30]

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