Cambridge Assessment International Education

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5371036373

PHYSICAL EDUCATION **0413/12**

Paper 1 Theory **May/June 2023**

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages. Any blank pages are indicated.

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[Turn over

1 Identify each type of blood vessel described.

type of blood vessel 1: thick elastic walls; transports oxygenated blood away from the heart

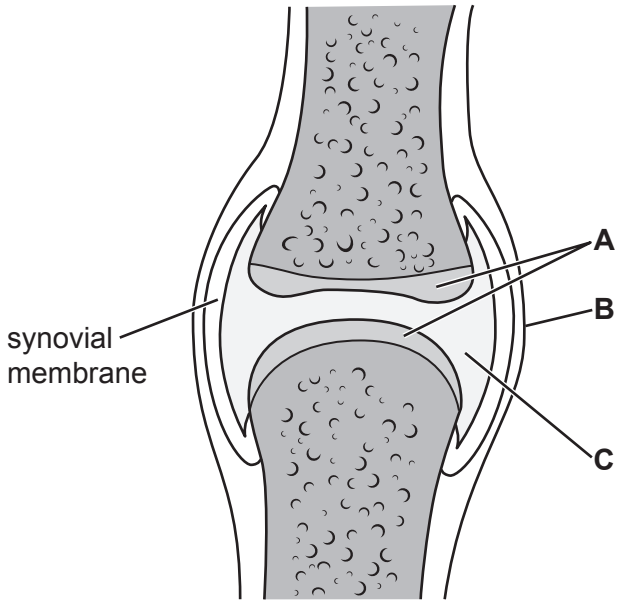
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type of blood vessel 2: walls are one cell thick; allows certain substances to pass into and out of cells

.....

[2]

2 The diagram shows a typical synovial joint.



(a) Identify the components of the joint labelled **A**, **B** and **C**.

A .....

B .....

C .....

[3]

(b) Describe a function of the synovial membrane.

.....

..... [1]

(c) **(i)** Identify the type of synovial joint found at the knee.

..... [1]

(ii) Identify **two** bones that form the joint at the knee.

1 .....

2 .....

[2]

[Total: 7]

3 Some performers choose to use blood doping to gain an unfair advantage.

(a) Describe how blood doping is carried out.

.....

.....

.....

.....

.....

..... [3]

(b) Describe the potential side effects of blood doping on a performer.

.....

.....

.....

..... [2]

[Total: 5]

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[Turn over

4 A sprinter has set themselves the following goal:
'To improve my personal best time for 100 metres by 0.2 seconds by the end of the season.'

(a) Identify **three** named SMARTER goal-setting principles. Explain how each principle has been applied to this goal.

principle 1 .....

application .....

.....

principle 2 .....

application .....

.....

principle 3 .....

application .....

.....

[6]

(b) Identify a goal-setting principle that has **not** been applied in setting this goal.

Suggest how **not** applying the named principle could cause the sprinter **not** to achieve their stated goal.

principle .....

cause .....

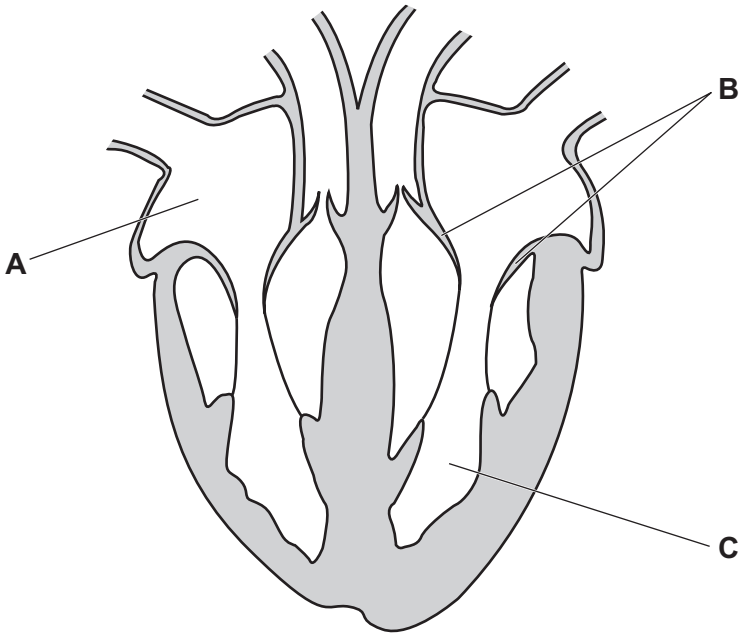
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[2]

[Total: 8]

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5 The diagram shows the human heart with structures labelled **A**, **B** and **C**.



(a) Identify the structures labelled **A** and **C**.

A .....

C .....
[2]

(b) Identify the structure labelled **B** and describe its function.

B .....

function .....

.....
[2]

(c) Describe a function of the pulmonary vein in the pathway of blood through the heart.

.....

..... [1]

[Total: 5]

6 For each of the following suggest a different disadvantage of sponsorship:

a professional football team .....

.....

an international athletics event .....

.....

a sponsor. .....

.....

[3]

7 Complete the table to show the agonist muscle (prime mover), the antagonist muscle, the movement created by the agonist muscle and an example of when the movement is used in a physical activity.

agonist muscle (prime mover)	antagonist muscle	movement	example of movement
	triceps	flexion	
	hamstring group		straightening the leg when kicking a ball in football
gastrocnemius			standing on tip toes when preparing to dive into a swimming pool

[6]

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8 Circuit training is a method of training often used by games players.

(a) Suggest **three** advantages for a games player of using circuit training.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(b) Suggest **two** different disadvantages for a games player of using each of the following methods of training:

plyometric training

1 .....

.....

2 .....

.....

continuous training.

1 .....

.....

2 .....

.....

[4]

(c) Describe **three** mental health benefits a performer might gain from playing in a sports team.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 10]

9 A performer may adjust their diet to suit their physical activity.

(a) Compare the energy needs of teenagers with the energy needs of young children. Justify your answer.

energy need .....

justification .....

.....

[1]

(b) Describe, using a named physical activity, **two** possible negative physical effects for a performer if they do **not** achieve a balanced diet.

physical activity .....

negative effect 1 .....

.....

negative effect 2 .....

.....

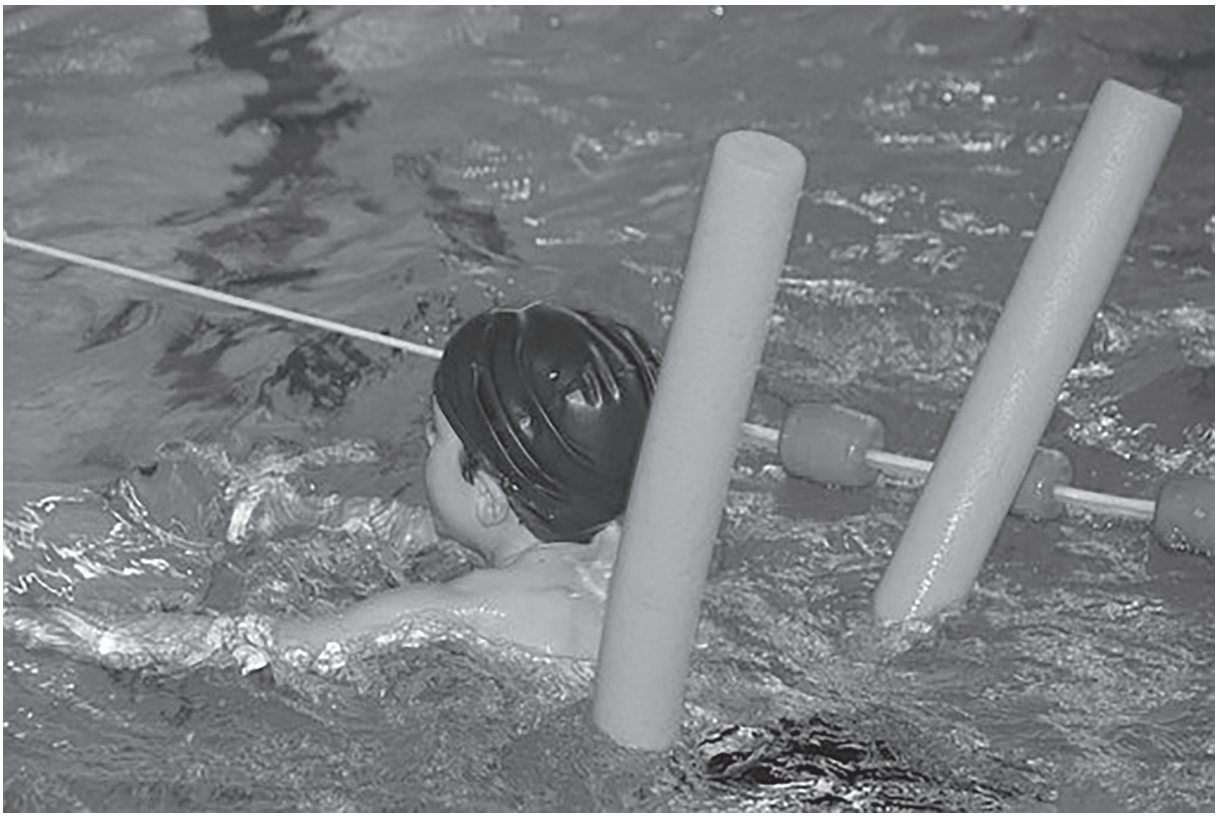
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[Total: 3]

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10 The photograph shows a swimmer using a flotation aid to help them to learn to swim safely.



(a) (i) Describe what is meant by a perceived risk.

.....

..... [1]

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(ii) Identify **three** real risks that could occur when swimming in a pool. Describe a different strategy, other than using a flotation aid, to reduce each risk.

risk 1 .....

.....

strategy .....

.....

risk 2 .....

.....

strategy .....

.....

risk 3 .....

.....

strategy .....

.....

[6]

(b) When learning how to swim, a performer may become anxious.

Explain how a relaxation technique can help reduce a performer's level of anxiety.

method .....

explanation .....

.....

[2]

[Total: 9]

11 (a) Describe **two** features of play.

1 .....

.....

2 .....

.....

[2]

(b) Explain how **two** named factors, other than a person's age and interests, can influence the recreational activities they take part in.

factor 1 .....

explanation .....

.....

factor 2 .....

explanation .....

.....

[4]

[Total: 6]

12 When learning a skill, a performer may go through three stages of learning.

(a) Identify the first and third stages of learning. Using examples from a named physical activity describe **two** different characteristics of a performer at each stage.

physical activity .....

first stage of learning .....

characteristic 1 .....

.....

characteristic 2 .....

.....

third stage of learning .....

characteristic 1 .....

.....

characteristic 2 .....

.....

[6]

(b) The diagrams show skills that are performed in rugby.

skill **A**
throwing the ball into the lineout



skill **B**
running with the ball



On the basic and complex continuum shown, place the letters **A** and **B** to represent the skills. Justify the placement of each skill.

basic _____ complex

justification .....

.....

.....

.....

[2]

(c) Feedback is important when learning skills.

Describe how **two** named types of feedback could benefit a performer at the first stage of learning.

type of feedback 1 .....

benefit .....

.....

type of feedback 2 .....

benefit .....

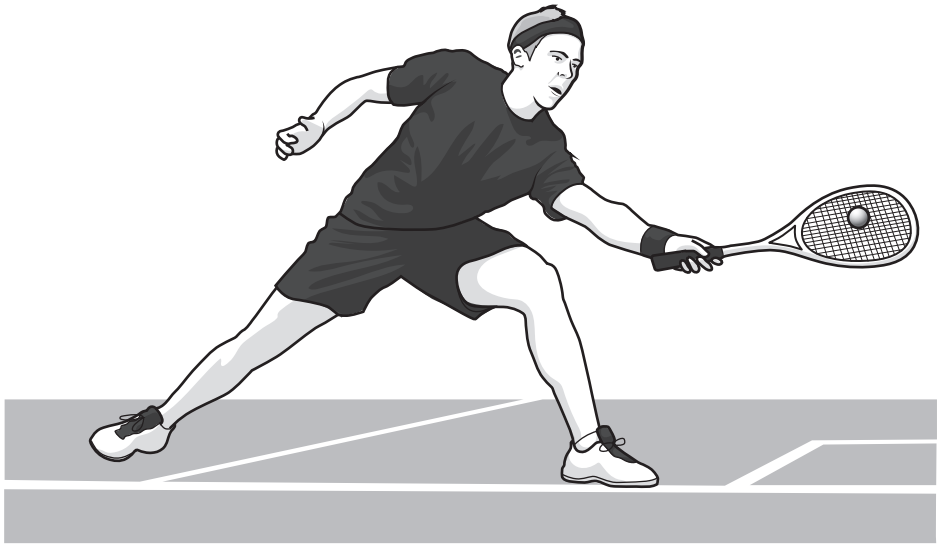
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[4]

[Total: 12]

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13 The diagram shows a performer hitting the ball during a squash match.



When the performer hits the ball, a force is applied.

(a) Define the **two** named concepts used to calculate force.

concept 1 .....

definition .....

.....

concept 2 .....

definition .....

.....

[4]

(b) Identify **two** forces that act on the ball as it is hit by the performer.

1 .....

2 .....

[2]

[Total: 6]

14 Energy can be released aerobically or anaerobically.

(a) Complete the equation that outlines how energy is released aerobically.

glucose + ... ⟶ water + carbon dioxide [1]

(b) A sprinter may experience fatigue in their muscles caused by lactic acid.

(i) Explain why lactic acid forms in a sprinter's muscles.

.....

.....

.....

..... [2]

(ii) Describe how a performer may assist the removal of lactic acid from their muscles.

.....

.....

.....

..... [2]

[Total: 5]

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15 The photograph shows a rower during a rowing (sculling) race who requires a high level of cardiovascular endurance / stamina and muscular endurance to perform well.



Explain the importance of **two** other named components of fitness for a rower.

component of fitness 1 .....

explanation .....

.....

component of fitness 2 .....

explanation .....

.....

[4]

16 (a) Define VO_2 max.

.....

..... [1]

(b) (i) Four track and field athletes are listed.

400-metre runner **100-metre sprinter** **marathon runner** **discus thrower**

From this list, state the athlete that is likely to have the highest VO_2 max. Justify your answer.

athlete likely to have the highest VO_2 max value .....

justification .....

.....

[2]

(ii) Suggest how an athlete's lifestyle may reduce their VO_2 max level.

.....

.....

.....

..... [2]

(c) One characteristic of the alveoli is their walls are one cell thick which allows for gaseous exchange to take place quickly.

Identify **two** other characteristics of the alveoli and describe how each enables gaseous exchange to take place.

characteristic 1 .....

description .....

.....

characteristic 2 .....

description .....

.....

[4]

[Total: 9]

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