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PHYSICAL EDUCATION

0413/12

Paper 1 Theory

October/November 2024

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 **16** pages. Any blank pages are indicated.



1 Fitness is important for sports performance.

(a) Define fitness.

.....
..... [1]

(b) A coach may carry out fitness tests to identify the strengths and weaknesses of a performer.

Suggest **three** other reasons why a coach may carry out fitness tests.

1
.....
2
.....
3
.....
[3]

[Total: 4]

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2 The arousal level of a performer can affect how well they can perform skills.

(a) Describe what is meant by arousal.

.....
..... [1]

(b) (i) Sketch the Yerkes–Dodson law. Label both axes.



..... [3]

(ii) State the other recognised name for the Yerkes–Dodson law.

..... [1]

(c) Using a named physical activity, explain how each of the following levels of arousal may affect the performance of a named skill.

physical activity

skill

underarousal

.....

.....

optimal arousal

.....

.....

overarousal

.....

.....

[3]

[Total: 8]

[Turn over]





3 The photograph shows performers in a table tennis match.

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- (a) Coordination is needed in table tennis so that the performer can see the ball and hit it with the bat.
- (i) Other than coordination, explain how **three** named components of fitness may benefit performance in table tennis.

component of fitness 1

explanation

.....

component of fitness 2

explanation

.....

component of fitness 3

explanation

.....

[6]





(ii) Describe how to carry out a named fitness test to measure coordination.

name of test

description

.....

.....

.....

.....

.....

.....

.....

[4]

(b) Before playing a table tennis match a performer should warm up.

Identify the **three** phases of a warm up.

1

2

3

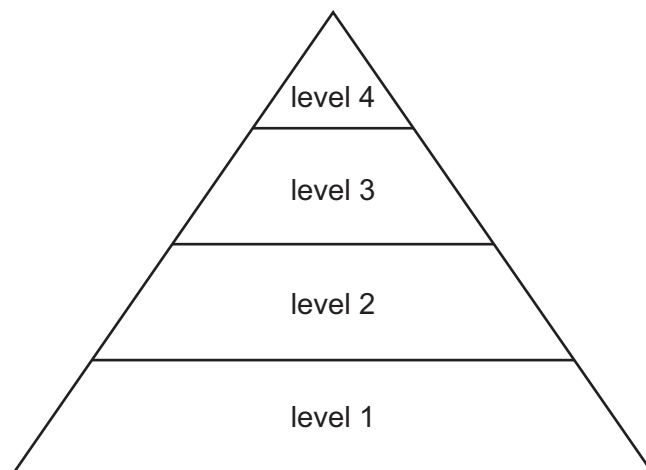
[3]

[Total: 13]





4 The sports development pyramid has four levels.



(a) Level 4 of this sports development pyramid is the elite level.

Identify the other **three** levels.

level 3

level 2

level 1

[3]

(b) Describe **three** characteristics of the lowest level of the sports development pyramid.

1

.....

2

.....

3

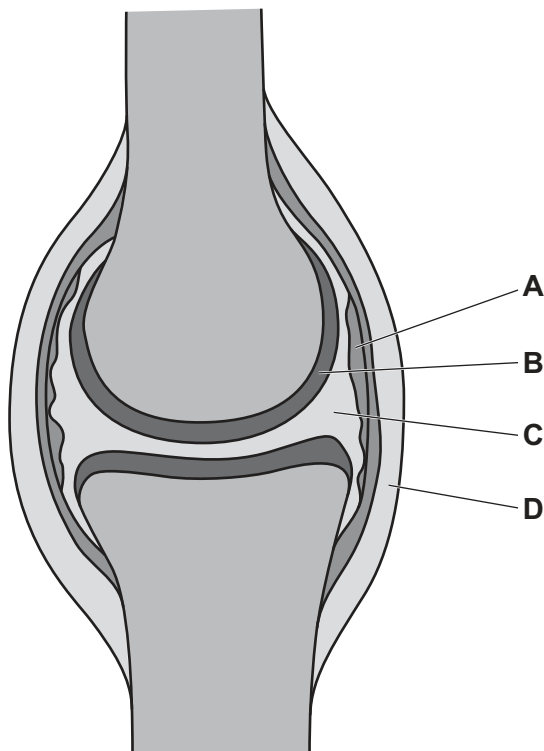
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[3]

[Total: 6]



5 (a) The diagram shows a typical synovial joint.



Complete the table to identify the labelled structures in the synovial joint. State a different function for each structure.

| label | name of structure | function |
|----------|-------------------|----------------------|
| A | synovial membrane | |
| B | | |
| C | | lubricates the joint |
| D | ligament | |

[5]

(b) The knee joint is a synovial joint.

Identify **two** types of movement that can occur at the knee joint.

1

2 [2]

(c) Compare the range of movement and stability at the knee joint with the range of movement and stability at the hip joint.

.....

.....

.....

..... [2]

[Total: 9]

[Turn over]





6 The photograph shows performers playing football.



Access to facilities and equipment can affect participation in football.

Explain how **four** other named factors can affect participation in football.

factor 1

explanation

.....

factor 2

explanation

.....

factor 3

explanation

.....

factor 4

explanation

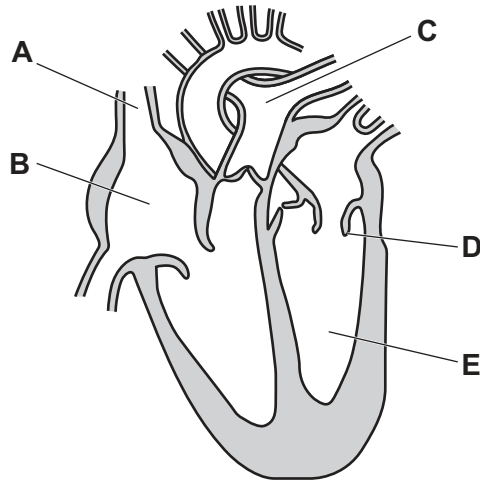
.....

[8]





7 (a) The diagram shows the structure of the heart.



Identify the following structures:

- A
- B
- C
- D
- E. [5]

(b) A performer has a resting heart rate of 60 beats per minute and a cardiac output of 4.2 litres per minute.

(i) Calculate the stroke volume of the performer. Include appropriate units.

..... [2]

(ii) The performer uses regular continuous training.

Describe how this affects the stroke volume of the performer.

..... [1]

[Total: 8]





- 8 (a) Use examples from a named physical activity to describe how a coach may provide **three** named types of guidance to a performer.

physical activity

type of guidance 1

description

.....

.....

type of guidance 2

description

.....

.....

type of guidance 3

description

.....

.....

[6]

- (b) Coaches often provide guidance to help performers in the cognitive stage of learning.

Suggest benefits for cognitive performers of receiving guidance.

.....

.....

.....

.....

[2]

[Total: 8]





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- 9 Prohibited performance-enhancing drugs (PEDs) may be used by performers in different physical activities.

(a) Complete the table to identify a different type of prohibited PED that may be used for each physical activity. Justify each of your answers.

| physical activity | different type of prohibited PED | justification |
|--|----------------------------------|---------------|
| <p>Content removed due to copyright restrictions.</p> <p>javelin</p> | | |
|  <p>judo</p> | | |
| <p>Content removed due to copyright restrictions.</p> <p>swimming</p> | | |
| <p>Content removed due to copyright restrictions.</p> <p>golf</p> | | |

[8]





(b) Performers are regularly tested to check for the use of prohibited PEDs.

Other than facing public humiliation, describe **three** different disadvantages for a performer of using prohibited PEDs.

1

2

3

[3]

[Total: 11]

10 Describe a different function of each of the following nutrients:

carbohydrates

.....

fats

.....

proteins.

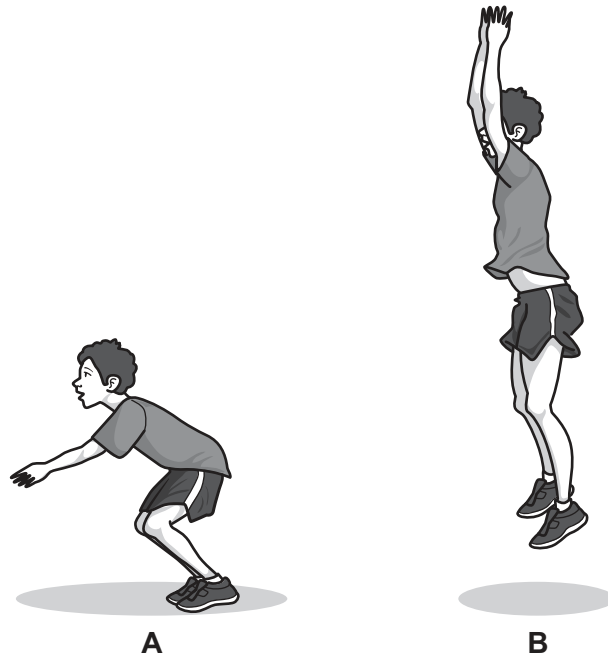
.....

[3]





11 The diagram shows part of the performance of a Vertical Jump Test.



(a) Identify the component of fitness measured by the Vertical Jump Test.

..... [1]

(b) (i) Identify the type of movement at each of the following joints from position **A** to position **B**:

hip joint

shoulder joint.

[2]

(ii) Identify an agonist and an antagonist at the hip joint during the movement from position **A** to position **B**.

agonist

antagonist

[2]

(iii) Identify the type of isotonic muscle contraction in the agonist at the hip joint during the movement from position **A** to position **B**. Describe this type of muscle contraction.

type of isotonic muscle contraction

description

.....

[2]

[Total: 7]





12 Deep breathing is a relaxation technique that can be used to control arousal levels.

Describe **two** other named relaxation techniques that a performer can use to control arousal levels.

relaxation technique 1

description

.....

relaxation technique 2

description

.....

[4]

13 The Olympic Games is an example of a global event.

Explain how a nation may benefit from hosting a global event.

.....

.....

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.....

.....

.....

.....

[5]





14 Muscles need a good supply of oxygen.

(a) Explain how the following characteristics of the alveoli assist gaseous exchange:

large surface area

.....

walls with a thickness of one cell.

.....

[2]

(b) Identify **two** named muscles of the respiratory system that contract when breathing in. Describe how each muscle increases the volume of the chest cavity.

muscle 1

description

.....

muscle 2

description

.....

[4]

[Total: 6]

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