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PHYSICAL EDUCATION

0413/12

Paper 1 Theory

October/November 2022

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 Identify **three** functions of the skeleton.

1

2

3

[3]

- 2 (a) (i) Describe differences between arteries and veins in terms of their structure and function.

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

[4]

- (ii) Describe how red blood cells carry oxygen.

.....
.....

[1]

- (b) Describe each of the following:

cardiac output

stroke volume

heart rate.

[3]

[Total: 8]

- 3 (a) The Multi-Stage Fitness Test is often used to predict the VO_2 max of a performer.

- (i) Describe VO_2 max.

.....
.....
.....
..... [2]

- (ii) Suggest why cross-country running requires a high VO_2 max.

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

- (iii) Gender is one factor that can affect VO_2 max.

Describe how **two** other named factors can affect a performer's VO_2 max.

factor 1

description

.....
factor 2

description

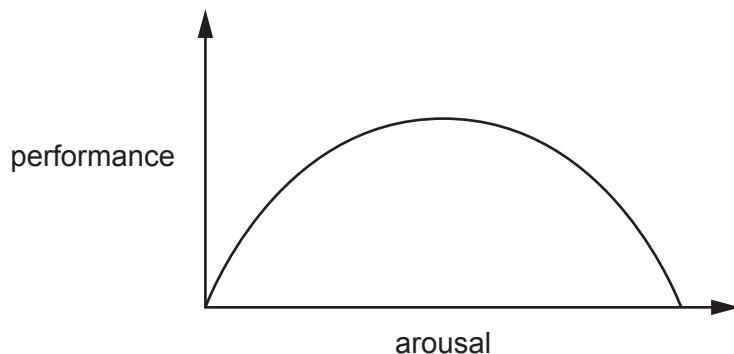
..... [4]

- (b) Describe how the Multi-Stage Fitness Test is carried out.

.....
.....
.....
.....
.....
.....
..... [3]

[Total: 10]

- 4 (a) The diagram shows the inverted-U theory.



- (i) Label the inverted-U line using the letters **A**, **B** and **C** to identify the following:

- A** optimal arousal
- B** overarousal
- C** underarousal.

[3]

- (ii) Using different examples from a named physical activity, explain how each of the following may affect performance.

physical activity

optimal arousal

.....

overarousal

.....

underarousal

.....

[3]

- (b) Visualisation is one relaxation technique that a performer can use to control their level of arousal before a competition.

- (i) State the name of **one** other relaxation technique.

..... [1]

- (ii) Suggest **one** physiological effect and **one** psychological effect of using relaxation techniques.

physiological effect

.....

psychological effect

.....

[2]

[Total: 9]

- 5 The photographs show performers playing cricket.



Agility is one component of fitness that is required by a performer in a game of cricket.

- (a) Explain how **three** other named components of fitness could benefit performers in a game of cricket.

component 1

benefit

.....

component 2

benefit

.....

component 3

benefit

.....

[6]

- (b) State the name of a recognised fitness test to measure agility.

..... [1]

[Total: 7]

6 (a) Circuit training is a method of training.

(i) Suggest **one** advantage and **one** disadvantage of circuit training.

advantage

.....
disadvantage

[2]

(ii) Describe a named method of training other than circuit training.

method of training

description

.....
[2]

(b) Before training, many performers will stretch as one phase of their warm up.

Describe, using examples from a named physical activity, **two** other named phases of a warm up.

physical activity

phase of warm up 1

description

.....
phase of warm up 2

description

.....
[4]

[Total: 8]

- 7 Describe **three** characteristics of a performer at each of the following stages of learning. Give an example of each characteristic from a named physical activity.

physical activity

cognitive

characteristic 1

example

.....
characteristic 2

example

.....
characteristic 3

example

.....
autonomous

characteristic 1

example

.....
characteristic 2

example

.....
characteristic 3

example

[6]

- 8 (a) Explain, using different examples from **one** named physical activity, how each of the following injuries can be caused.

physical activity.....

bruises

cause

.....
cuts/grazes

cause

.....
blisters

cause

.....
winding

cause

[4]

- (b) Ice is one part of the RICE method of treatment.

Identify the other parts of the RICE method of treatment. Describe how to carry out each part.

R

description

.....
C

description

.....
E

description

[6]

[Total: 10]

- 9 The photograph shows a performer hitting a golf ball.



- (a) Describe what is meant by force.

..... [1]

- (b) Identify **three** forces acting on the golf ball as it is hit and moves through the air. Explain how each force affects the flight of the ball.

force 1

explanation

.....

force 2

explanation

.....

force 3

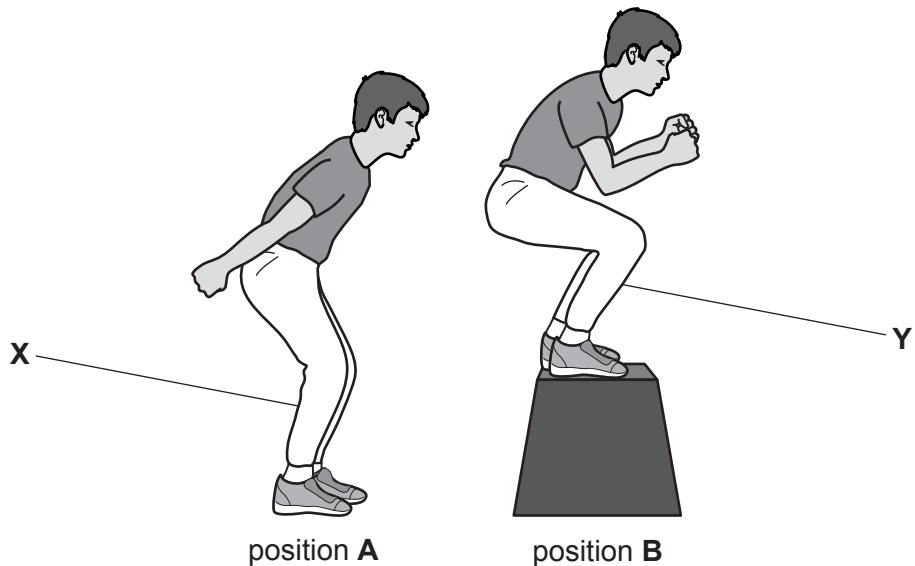
explanation

.....

[6]

[Total: 7]

- 10 The diagram shows a 100-metre sprinter training by jumping onto a box. They move from position A to position B.



- (a) Identify the muscles located at X and Y.

X

Y

[2]

- (b) State the name of the type of isotonic muscle contraction occurring in the muscle located at X as the 100-metre sprinter moves from position A to position B.

..... [1]

- (c) Identify the main muscle fibre type used when jumping onto a box. Explain how characteristics of this muscle fibre type may affect the performance of a 100-metre sprinter.

muscle fibre type

explanation

.....

.....

.....

[3]

[Total: 6]

- 11 Describe, using a different example for each, how technology in sport has benefited:

performers

.....

spectators

.....

officials.

.....

[3]

- 12 Describe the advantages for a nation of hosting a major global sporting event.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[6]

- 13 Other than gradually decreasing pulse rate, suggest physiological reasons for using gentle jogging as part of a cool down.

.....

.....

.....

[2]

- 14 Aerobic respiration and anaerobic respiration are two processes used to release energy in the body.

(a) Outline how energy is released in each of these processes:

aerobic respiration

.....
.....
.....

anaerobic respiration.

.....
.....
.....

[4]

(b) Describe, using examples from a named physical activity, when a performer might use each of the following processes. Justify each of your answers.

physical activity

aerobic respiration

example

.....
.....

anaerobic respiration

example

.....
.....

justification

[2]

[Total: 6]

- 15 A performer wants to improve their health and well-being by taking part in a physical activity during their leisure time.

Explain how **three** named factors may influence the performer's choice of physical activity.

factor 1

explanation

.....
factor 2

explanation

.....
factor 3

explanation

[6]

- 16 Describe how each of the following stages of a simple information-processing model can be used by a performer when passing a ball in a games activity:

input

.....
decision making

.....
feedback

[3]

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