Modified Enlarged 18pt

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Tuesday 24 May 2022 – Afternoon

GCSE (9–1) Physical Education

J587/01 Physical factors affecting performance

Time allowed: 1 hour
plus your additional time allowance

No extra materials are needed.

Please write clearly in black ink.

Centre number | | | | | |

Candidate number | | | | |

First name(s) _____

Last name _____

READ INSTRUCTIONS OVERLEAF

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INSTRUCTIONS

Use black ink. You can use an HB pencil, but only for graphs and diagrams.

Write your answer to each question in the space provided. If you need extra space use the lined pages at the end of this booklet. The question numbers must be clearly shown.

Answer ALL the questions.

INFORMATION

The total mark for this paper is 60.

The marks for each question are shown in brackets [ ].

Quality of extended response will be assessed in questions marked with an asterisk (*).

ADVICE

Read each question carefully before you start your answer.

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SECTION A

Answer ALL the questions.

1 Other than sprinting, give an example of an athletic event that is anaerobic.

_____ **[1]**

2 (a) Name the fitness component that is measured using the 'wall throw' test.

_____ **[1]**

(b) Describe a practical example to show the importance of this fitness component in a sport of your choice.

_____

_____ **[1]**

3 A weightlifter who performs one repetition of a 50 kg bench press uses muscular endurance.

Is this statement true or false? Draw a circle around your answer. [1]

TRUE **FALSE**

4 (a) **Using FIG. 1, draw a line through the centre of the body that represents the transverse axis of rotation.**

FIG. 1

[1]

(b) **Give a practical example from physical activity or sport where movement takes place around the transverse axis of rotation.**

_____ **[1]**

5 FIG. 2 shows a diagram of the lungs.

FIG. 2

(a) Draw on FIG. 2 to indicate the position of the diaphragm during inhalation. [1]

(b) Describe the role of the diaphragm during exhalation.

_____ [1]

6 **Name the artery that carries deoxygenated blood to the lungs.**

_____ [1]

7 **Using FIG. 3, state the muscle group A. [1]**

FIG. 3

8 **Other than the surface, identify ONE hazard in an artificial outdoor area.**

_____ [1]

9 **Explain how the risk of injury to a performer is reduced by wearing an appropriate type of sports footwear.**

Type of footwear: _____

Explanation: _____

_____

_____

_____

[2]

10 **Which ONE of the following practical examples is FALSE?**
Put a tick (✓) in the box next to the correct answer. [1]

A **The clavicle is an articulating bone at the shoulder when serving in tennis** ☐

B **A marathon runner can assess their tidal volume by measuring the volume of air that is exhaled per breath** ☐

C **Bowling in cricket is an example of circumduction at the shoulder** ☐

D **The nasal passage warms and moistens air breathed in when cycling** ☐

11 Describe the role of the intercostal muscles during expiration.

_____

_____ [1]

12 FIG. 4 shows a diagram of the heart.

FIG. 4

(a) Using FIG. 4, draw an X to indicate the location of the bicuspid valve. [1]

(b) Valves help prevent the backflow of blood.

The bicuspid valve prevents blood flowing back into which chamber of the heart?

_____ [1]

13 FIG. 5 shows the performance of a spin by an ice skater.

FIG. 5

Complete the following statements using words from the list below:

(a) The axis of rotation during the spin is

_____ [1]

(b) The plane of movement during the spin is

_____ [1]

Transverse

Frontal

Longitudinal

Sagittal

14 FIG. 6 shows the performance of the downward phase of a weight training exercise.

FIG. 6

Before **After**

(a) Name ONE agonist and ONE antagonistic muscle used in FIG. 6 during the downward phase of the exercise.

Agonist: _____

Antagonist: _____

[2]

(b) State the type of movement that occurs at the elbow during the downward phase of the exercise.

_____ **[1]**

15 **Name the main bone that is protected when a hockey player wears shin pads.**

_____ **[1]**

16 **Which ONE of the following is the correct distance for one shuttle of the multistage fitness test?**
Put a tick (✓) in the box next to the correct answer. [1]

A **15 m** ☐

B **20 m** ☐

C **25 m** ☐

D **30 m** ☐

17 (a) Which ONE of the following is the bone that articulates at the hip and the knee?
Put a tick (✓) in the box next to the correct answer. [1]

A Patella ☐

B Tibia ☐

C Fibula ☐

D Femur ☐

(b) Other than protecting the bones by preventing friction, explain the importance of cartilage when taking part in physical activity.

_____

_____ **[1]**

18 Mobility and dynamic movements are components of a warm up.

Give a practical example for each.

Mobility: _____

_____

Dynamic movement: _____

_____

[2]

19 A long-term effect of exercise is hypertrophy of cardiac and skeletal muscle.

Is this statement true or false? Draw a circle around your answer. [1]

TRUE **FALSE**

20 At rest, Raheem has a heart rate of 70 bpm and a stroke volume of 80 ml.

Which ONE of the following is Raheem's cardiac output at rest?
Put a tick (✓) in the box next to the correct answer. [1]

A 600 ml / min ☐

B 800 ml / min ☐

C 5 600 ml / min ☐

D 11 200 ml / min ☐

SECTION B

Answer ALL the questions.

21 TABLE 1 shows a set of results for muscular hypertrophy recorded before, half-way through, and at the end of a 6-month specialised training programme.

TABLE 1

Name	Biceps (cm)		
	Before	Halfway	After
Harry	49 cm	51 cm	53 cm
Olivia	22 cm	23 cm	24 cm
Muhammad	33 cm	33 cm	35 cm
Noah	27 cm	30 cm	33 cm
Mia	28 cm	30 cm	29 cm

(a) Use the data in TABLE 1 to answer the following questions:

(i) Which participant has made the greatest increase in muscle hypertrophy?

_____ **[1]**

(ii) **Which participant has made the smallest increase in muscle hypertrophy?**

_____ **[1]**

(iii) **Which participant experienced reversibility during their training programme?**

_____ **[1]**

(b) **An increase in muscular hypertrophy usually means an increase in muscular strength.**

Explain how the long-term benefits of hypertrophy will make Harry's muscles stronger than Olivia's.

_____

_____

_____

_____

_____

_____

_____

_____

_____ **[3]**

(c) (i) **Name the lever system for each of the following examples.**

The elbow during a biceps curl:

_____ [1]

The neck when heading a ball:

_____ [1]

The take-off foot in the long jump:

_____ [1]

(ii) **Second class levers always give mechanical advantage.**

Is this statement true or false? Draw a circle around your answer. [1]

TRUE **FALSE**

22 (a) (i) FIG. 7 shows the pathway of air through the respiratory system.

Put the following words in the correct order to complete FIG. 7.

Bronchiole

Nose

Bronchi [1]

FIG. 7

(ii) Describe the function of the alveoli.

_____

_____

_____

_____ [2]

(b) Explain the impact of lactic acid production on the muscles and the quality of performance during a long-distance swim.

_____

_____

_____

_____

_____

_____

_____

_____

_____ [3]

(c) **Describe TWO long-term effects of a 6-month training programme on the cardiovascular system.**

Explain how these effects can benefit a long-distance swimmer.

Long-term effect 1:

_____

_____

Benefit 1:

_____

_____

Long-term effect 2:

_____

_____

Benefit 2:

_____

_____

[4]

23 (a) Complete the table below about ways to minimise the risk of injury when participating in a training session. [4]

Way to minimise risk	Practical example
Wearing correct clothing	1
2	Gentle stretches and breathing exercises
Appropriate level of activity	3
4	Induction programme or supervision during training session

(b)* Describe TWO different types of training a games player may use as part of their fitness programme.

Explain how different social factors can encourage participants to take part in training programmes to improve their fitness. [6]

_____

_____

_____

_____

_____

END OF QUESTION PAPER

ADDITIONAL ANSWER SPACE

If additional space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s).

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