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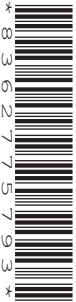
**Tuesday 24 May 2022 – Afternoon**

**GCSE (9–1) Physical Education**

**J587/01 Physical factors affecting performance**

**Time allowed: 1 hour**

No extra materials are needed.



Please write clearly in black ink. **Do not write in the barcodes.**

Centre number

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Candidate number

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First name(s)

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Last name

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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 (\*).
- This document has **16** pages.

### ADVICE

- Read each question carefully before you start your answer.



- 4 (a) Using Fig. 1, draw a line through the centre of the body that represents the transverse axis of rotation. [1]

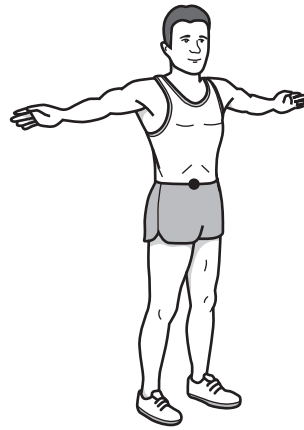


Fig. 1

[1]

- (b) Give a practical example from physical activity or sport where movement takes place around the transverse axis of rotation. [1]

..... [1]

- 5 Fig. 2 shows a diagram of the lungs.

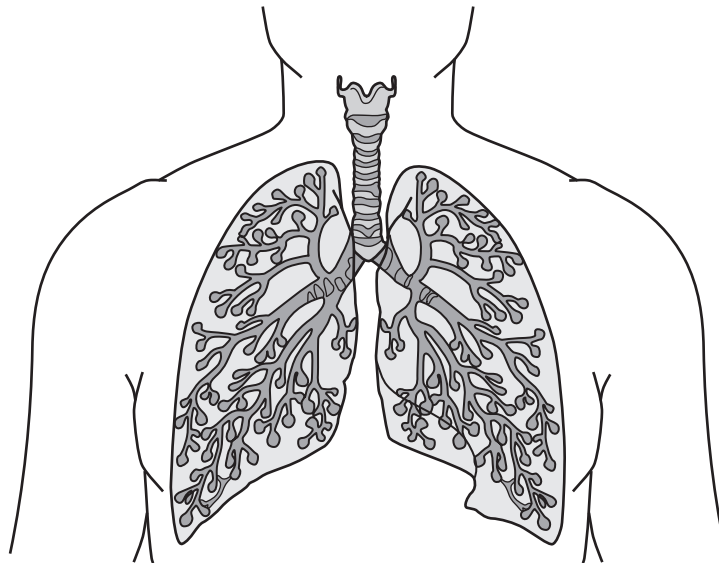


Fig. 2

- (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]

..... [1]

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

..... [1]

7 Using Fig. 3, state the muscle group A.

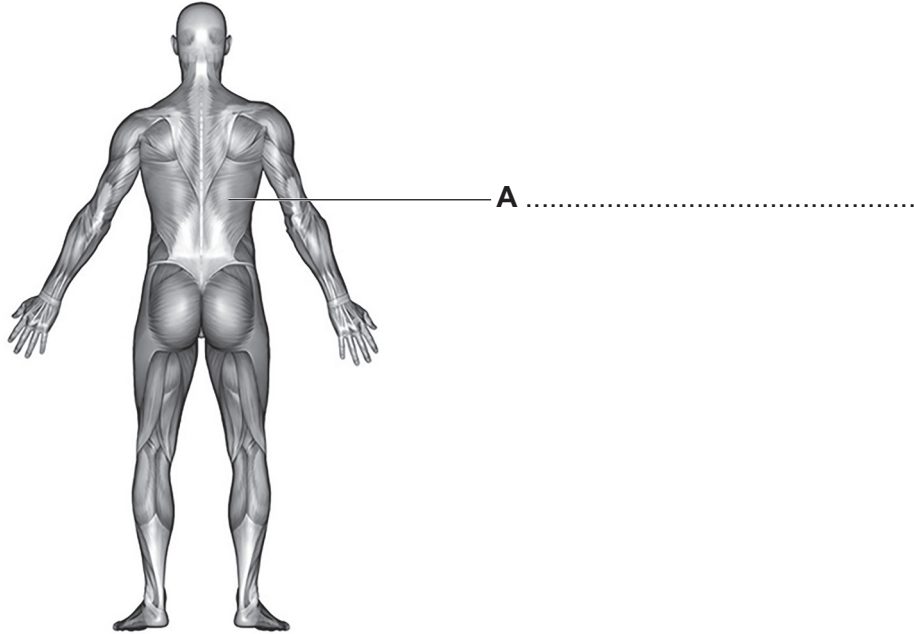


Fig. 3

[1]

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.

- 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

<input type="checkbox"/>
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[1]

11 Describe the role of the intercostal muscles during expiration.

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

12 Fig. 4 shows a diagram of the heart.

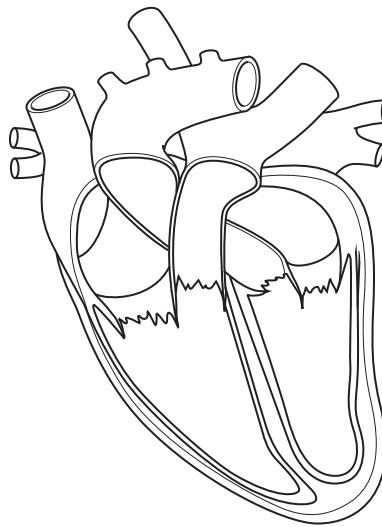


Fig. 4

(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 box 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.

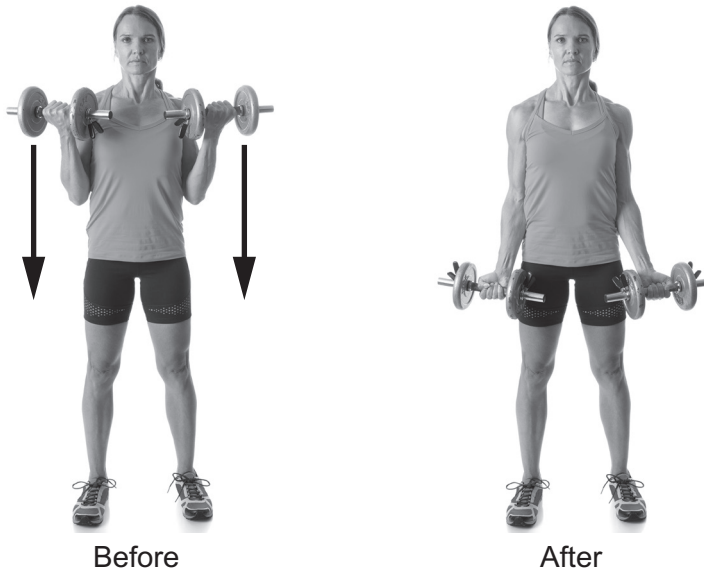


Fig. 6

(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.

- A 15m
- B 20m
- C 25m
- D 30m

[1]

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.

- A Patella
- B Tibia
- C Fibula
- D Femur

[1]

(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.

True False

[1]

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.

- A 600 ml/min
- B 800 ml/min
- C 5600 ml/min
- D 11200 ml/min

[1]



## 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.

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

**Table 1**

- (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]



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

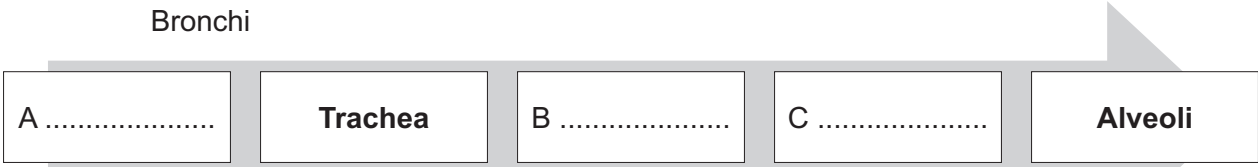


Fig. 7

[1]

(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]



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**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).

A large rectangular area with a solid vertical line on the left side and horizontal dotted lines across the rest of the page, providing space for writing answers.



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