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OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Thursday 19 May 2022 – Morning

Level 3 Cambridge Technical in Sport and Physical Activity

05826/05827/05828/05829/05872

Unit 1: Body systems and the effects of physical activity

Time allowed: 1 hour 30 minutes plus your additional time allowance

**You can use:
a calculator**

Please write clearly in black ink.

**Centre
number**

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Candidate
number

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First name(s)

Last name

Date of birth

D	D	M	M	Y	Y	Y	Y
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READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS

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

Answer ALL the questions.

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.

Where appropriate, your answer should be supported with working. Marks might be given for using a correct method, even if your answer is wrong.

INFORMATION

The total mark for this paper is 70.

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

Quality of written communication will be assessed in the question marked with an asterisk (*).

ADVICE

Read each question carefully before you start your answer.

SECTION A

Answer ALL the questions. Put a tick (✓) in the box next to the ONE correct answer for each question.

1 Which one of the following components of blood transports oxygen around the body? [1]

(a) Red blood cells

☐

(b) White blood cells

☐

(c) Arterioles

☐

(d) Plasma

☐

2 Which one of the following describes the movements possible at the radio-ulnar joint? [1]

(a) Flexion and extension

☐

(b) Medial and lateral rotation

☐

(c) Pronation and supination

☐

(d) Adduction and abduction

☐

3 Which one of the following describes the role of an antagonist muscle? [1]

(a) Muscle that causes movement

☐

(b) Muscle that assists the agonist

☐

(c) Muscle that stabilises a joint

☐

(d) Muscle that opposes movement

☐

4 Which one of the following is NOT a by-product of energy production? [1]

(a) Pyruvic acid

☐

(b) Lactic acid

☐

(c) CO₂

☐

(d) H₂O

☐

5 Which one of the following carries deoxygenated blood into the right atrium? [1]

(a) Right ventricle

☐

(b) Vena cava

☐

(c) Pulmonary vein

☐

(d) Pulmonary artery

☐

6 Which one of the following is the full name for ATP? [1]

(a) Adrenaline triphosphate

☐

(b) Adrenaline triphosphorus

☐

(c) Adenosine triphosphorus

☐

(d) Adenosine triphosphate

☐

7 Consider the following statements:

A The patella is a sesamoid bone.

B The scapula is a flat bone.

C Phalanges are short bones.

Which one of the following statements is correct? [1]

(a) A and B are true.

☐

(b) A and C are true.

☐

(c) B and C are true.

☐

(d) A, B and C are true.

☐

8 Give a typical value for breathing frequency at rest per minute.

[1]

9 Define the term 'cardiac output'.

[1]

10 Which energy system can break down fats to produce energy?

[1]

SECTION B

Answer ALL the questions.

- 11 (a) Complete the table to state whether each bone is part of the axial or appendicular skeleton. [3]**

Bone	Axial or Appendicular
Ribs	
Clavicle	
Sternum	

- (b) Describe how the skeleton performs each of the following functions:**

Mineral storage _____

Movement _____

Protection _____

Support _____

12 Joints are classified according to the amount of movement that they allow.

(a) State the THREE classifications of joint and give an example of each in the human body.

1 _____

Example: _____

2 _____

Example: _____

3 _____

Example: _____

[3]

- (b) FIG. 12 shows an athlete preparing to throw a javelin.

FIG. 12

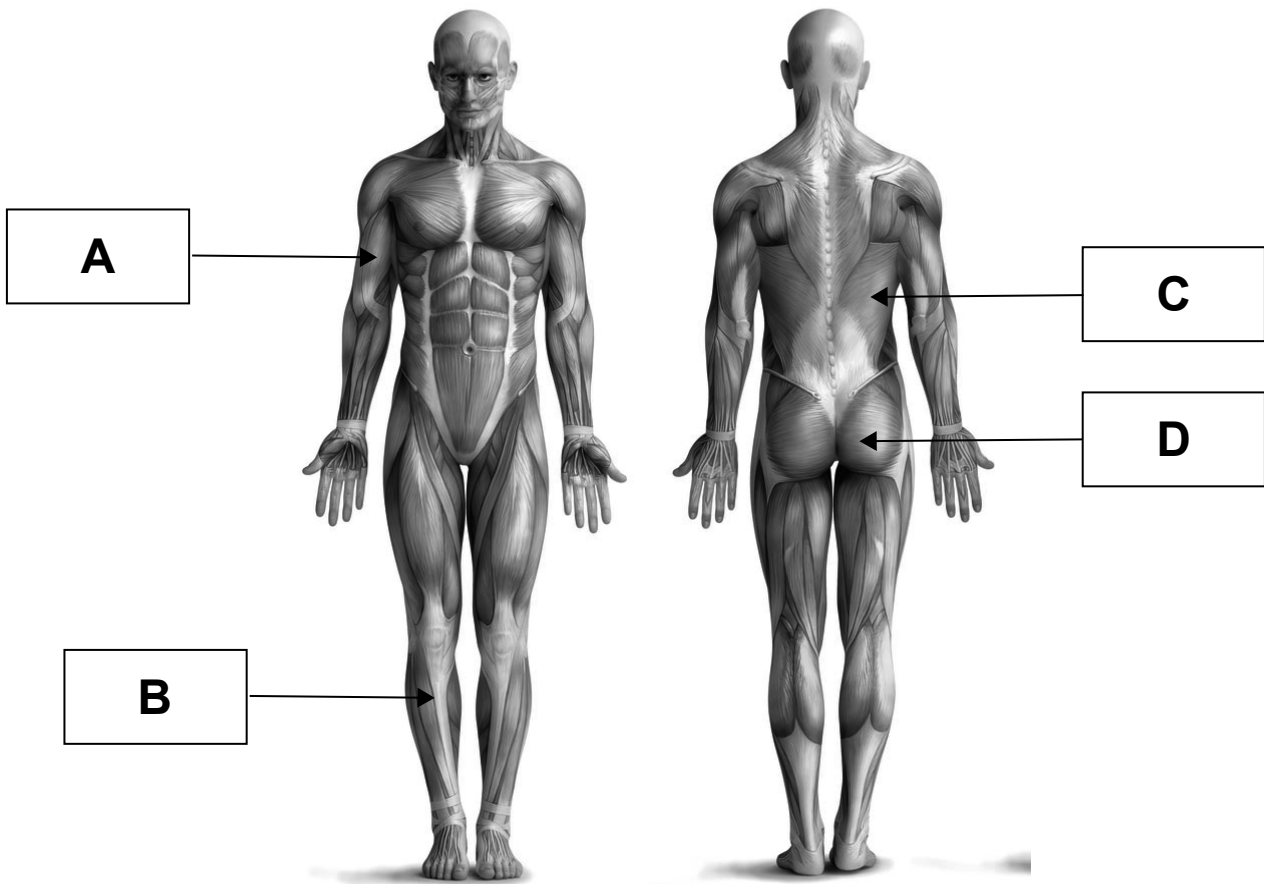


Complete the table to identify the type of movement that has occurred to achieve the joint positions shown in FIG. 12. [3]

Joint	Joint movement
Right elbow	
Right shoulder	
Lumbar vertebrae	

13 (a) FIG. 13 shows the major skeletal muscles of the body.

FIG. 13



Identify the muscles labelled A, B, C and D.

A _____

B _____

C _____

D _____

[4]

(b) Describe what happens to a muscle during each of the following types of muscle contraction:

Concentric _____

Isometric _____

Eccentric _____

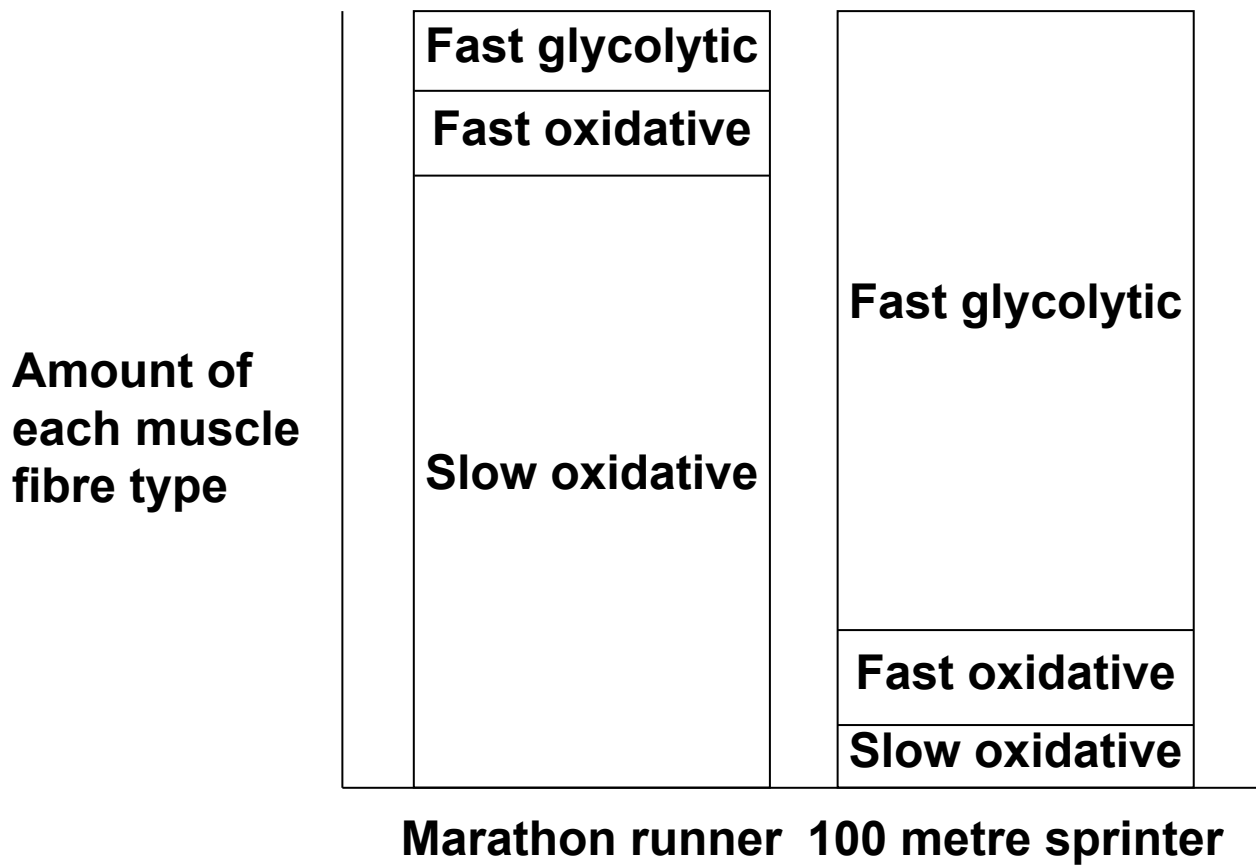
[3]

14 Describe the effects of a warm up on the muscular system.

[3]

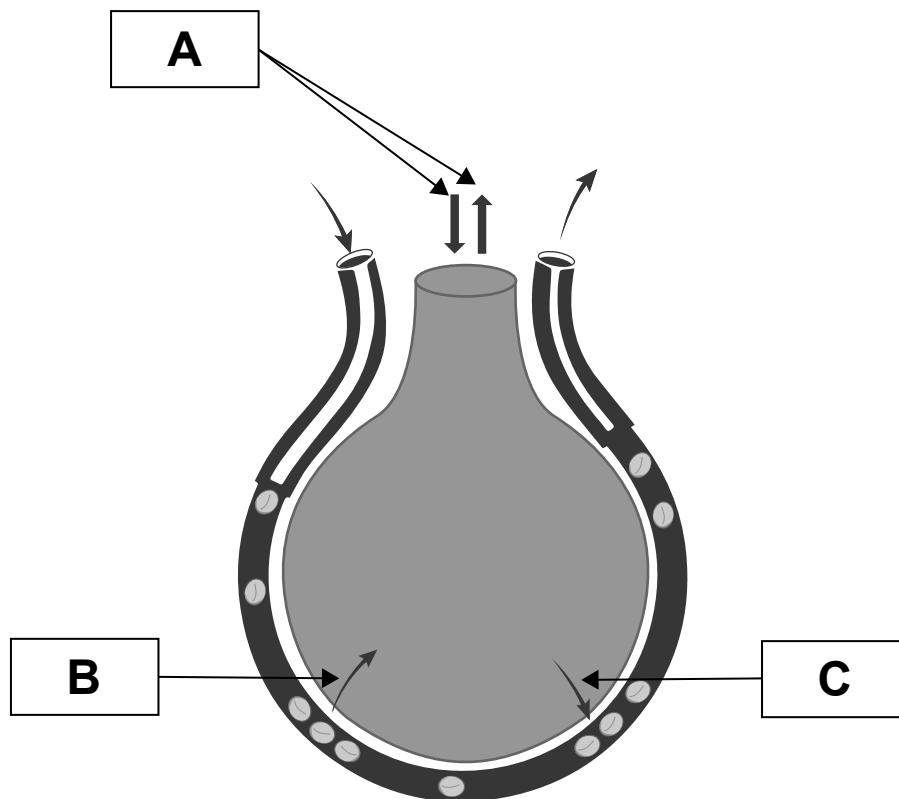
15 FIG. 15 shows the amount of each muscle fibre type in the muscles of two elite athletes.

FIG. 15



16 FIG. 16 shows the process of gaseous exchange at one alveolus (air sac) within the alveoli.

FIG. 16



(a) Identify the gases labelled A, B and C.

A _____

B _____

C _____

[3]

- (b) Explain how differences in partial pressures allow gaseous exchange to take place at the alveoli.**

[4]

17 Complete the paragraph below about part of the respiratory system. [5]

Air enters the _____
where mucus membranes _____
the air. It then enters the _____
which is a passage to the larynx and digestive system.
The _____ prevents food
entering the airways. After passing through
the larynx, air enters the _____
which has rings of cartilage that keep the airway open
at all times.

18 Describe the long-term effects of regular physical activity on the following:

Tidal volume _____

Breathing frequency _____

Resting minute ventilation _____

[3]

19 Describe the ATP-PC energy system, also known as the alactic system.

[4]

20 The recovery process for each energy system involves different processes and timescales.

Outline ONE process involved in the recovery of the ATP-PC system and state how long it takes for full recovery.

Process

Timescale _____

[2]

SECTION C

21* Explain how and why blood is redistributed around the body during exercise.

Your answer should include:

Vascular shunt mechanism

Role of arterioles

Role of pre-capillary sphincters. [10]

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