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Oxford Cambridge and RSA

Level 3 Cambridge Technical in Sport and Physical Activity
05826/05827/05828/05829/05872

Unit 1: Body systems and the effects of physical activity

Monday 9 January 2017 - Morning
Time allowed: 1 hour 30 minutes

You may use:
- A calculator

First Name		Last Name	
Centre Number		Candidate Number	
Date of Birth			

INSTRUCTIONS
- Use black ink.
- Complete the boxes above with your name, centre number, candidate number and date of birth.
- Answer **all** the questions.
- Write your answer to each question in the space provided.
- Additional paper may be used if required but you must clearly show your candidate number, centre number and question number(s).

INFORMATION
- The total mark for this paper is **70**.
- The marks for each question are shown in brackets **[ ]**.
- This document consists of **12** pages.

FOR EXAMINER USE ONLY	
Question No	**Mark**
Section A: 1-10	/10
Section B: 11	/4
12	/4
13	/3
14	/3
15	/5
16	/9
17	/5
18	/8
19	/4
20	/5
Section C: 21	/10
Total	**/70**

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Section A

Answer **all** questions. Put a tick (✓) in the box next to the **one** correct answer for each question.

1 Which one of the following is **not** part of the pelvis?

(a) Ischium ☐

(b) Pubis ☐

(c) Femur ☐

(d) Ilium ☐

[1]

2 Which one of the following bones is part of the appendicular skeleton?

(a) Humerus ☐

(b) Sacrum ☐

(c) Cranium ☐

(d) Ribs ☐

[1]

3 Which of the following bones form the elbow joint?

(a) Humerus, femur and ulna ☐

(b) Humerus, tibia and fibula ☐

(c) Humerus, radius and fibula ☐

(d) Humerus, radius and ulna ☐

[1]

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4 Which one of the following describes flexion at a joint?

(a) Elbow movement during the downward phase of a press up ☐

(b) Movement at the shoulder when bowling in cricket ☐

(c) Turning the palms of the hands to face downwards ☐

(d) Lifting the head to look upwards to take a high catch ☐

[1]

5 Which one of the following is an effect of a cool down after exercise?

(a) Reduces adrenaline ☐

(b) Speeds up the removal of lactic acid ☐

(c) Slows down the breathing rate ☐

(d) Reduces oxygen uptake ☐

[1]

6 Which one of the following will benefit most from a high percentage of slow twitch muscle fibres?

(a) Shot put ☐

(b) 800m race ☐

(c) Marathon ☐

(d) 50m swimming race ☐

[1]

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7 Which one of the following components of blood carries oxygen as its primary function?

(a) White blood cells ☐

(b) Red blood cells ☐

(c) Platelets ☐

(d) Plasma ☐

[1]

8 Which one of the following respiratory structures warms and moistens air as it is inhaled?

(a) Larynx ☐

(b) Pharynx ☐

(c) Epiglottis ☐

(d) Nasal cavity ☐

[1]

9 What type of joint is found at the base of the thumb?

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

10 What is meant by the term 'isometric muscle contraction'?

.....

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

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Section B

Answer **all** questions.

11 **Fig. 11.1** shows the major skeletal muscles of the body.

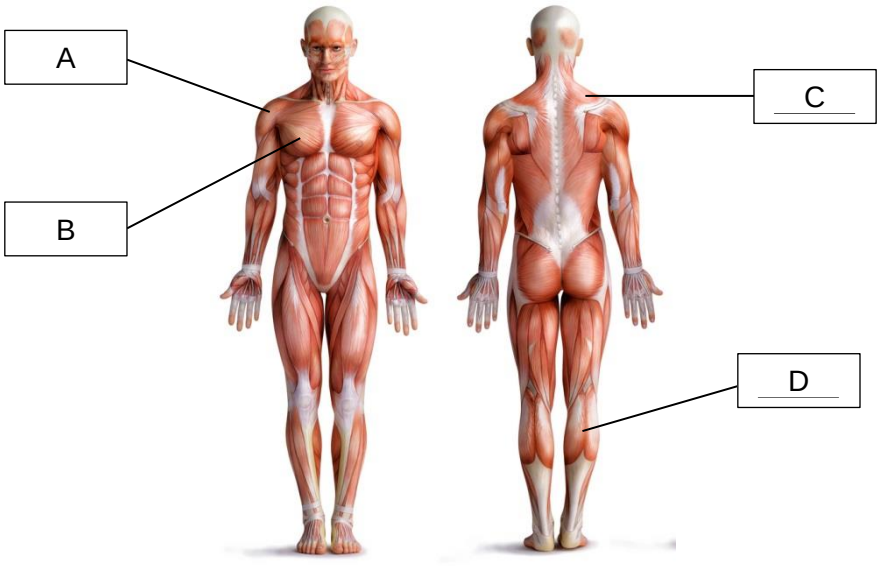

Fig. 11.1

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

A.....

B.....

C.....

D.....

[4]

12 Complete the table by identifying the structural type of each bone below.

Bone	Type of bone
Vertebra	Irregular
Carpals	
Cranium	
Patella	
Phalanges	

[4]

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13 **Fig.13.1** shows the upward phase of an arm curl.

Fig. 13.1

Identify **one** agonist and **one** antagonist during this phase, and state the type of muscle contraction taking place in the agonist.

Agonist: .....

Antagonist: .....

Type of Muscle contraction: .....

.....

[3]

14 In a team game such as volleyball, a player will use different muscle fibre types for different skills and situations.

Using a team game of your choice, identify **three** skills or situations when a player would use their fast glycolytic fibres.

Team game .....

1 .....

.....

2 .....

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3 .....

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[3]

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15. Complete the table below to show the functions of various structures of the heart.

Structure of heart	Function
	Deoxygenated blood enters here from the venae cavae
Tricuspid valve	
Left ventricle	
	Blood vessel that carries deoxygenated blood towards the lungs
	This valve prevents blood flowing back into the left ventricle

[5]

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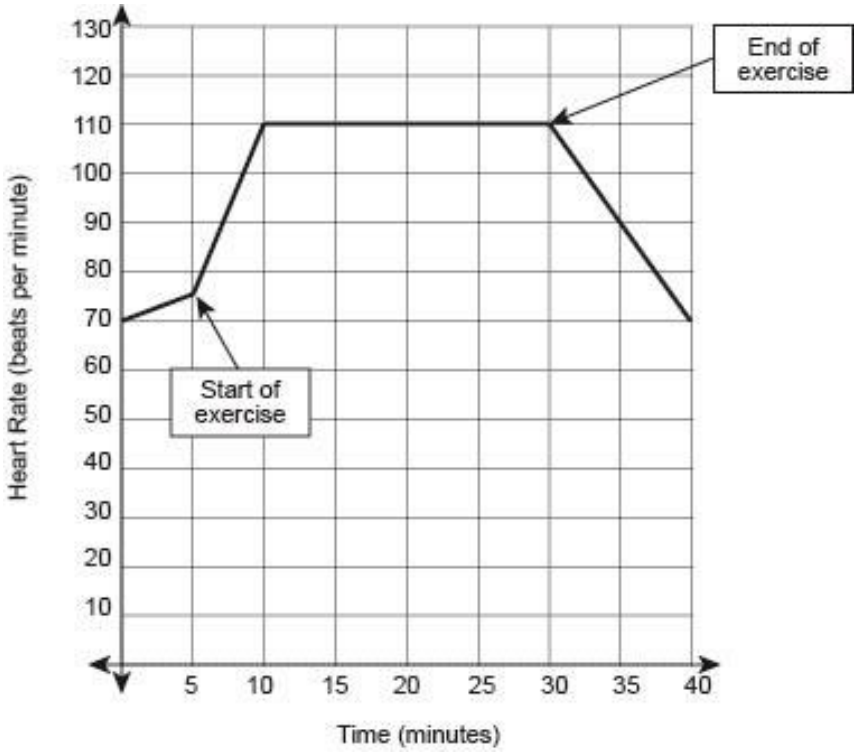
16 The graph below shows the heart rate of a performer before, during and after a period of aerobic exercise.



(a) Using the graph, give the duration of the exercise.

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

(b) Explain the changes in the performer's heart rate before, during and after exercise.

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.....**[6]**

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(c) Assuming a constant stroke volume of 150ml during the exercise, calculate the performer's cardiac output when their heart rate is 110bpm. Show your working.

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

17 The following paragraph describes the mechanics of breathing during expiration.

Complete the paragraph using the word bank below.

contract	**upwards**	**relax**	**decreases**	**increases**
decrease	**downwards**	**inhaled**	**increase**	**exhaled**

The diaphragm and the external intercostal muscles ……

This causes the rib cage to move …….. and in.

The volume of the thoracic cavity …….

This causes the pressure in the lungs to ……., which means that air is

…….. from the lungs. **[5]**

18 **(a)** Explain how the mechanics of breathing change during exercise, including the use of other respiratory muscles.

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.....**[5]**

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(b) Give **three** short-term effects of exercise on the respiratory system.

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

19 Complete the table below to show the characteristics of two of the energy systems.

System	Chemical or food fuel	Type of reaction	Amount of ATP produced
	Phosphocreatine		1
Aerobic		Aerobic	

[4]

20 Identify the dominant energy system used during the following sporting activities:

Gymnastics floor routine ……..

Javelin throw ……..

50km walk ……..

Rugby tackle ……..

400m sprint ……

[5]

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Section C

21 **Fig. 21.1** shows two basketball players jumping for the ball.

Fig. 21.1

Analyse the movements at the knee and ankle as shown in **Fig. 21.1.**

Your answer should include:

- joint types
- articulating bones
- joint movements
- muscles acting
- muscle functions
- types of contraction

[10]

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Total: 70 marks

END OF QUESTION PAPER

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