OCR
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 8 January 2018 – Morning
Time allowed: 1 hour 30 minutes

You may use:
- a calculator

First Name						Last Name				
Centre Number						Candidate Number				
Date of Birth	D	D	M	M	Y	Y	Y	Y		

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.
- If additional answer space is required, you should use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.

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 (*).
- This document consists of **16** pages.

FOR EXAMINER USE ONLY	
Question No	**Mark**
Section A: 1-10	/10
Section B: 11	/3
12	/3
13	/5
14	/3
15	/5
16	/8
17	/4
18	/5
19	/8
20	/6
Section C: 21	/10
Total	**/70**

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 is a normal value for cardiac output at rest?

(a) 2 litres/minute ☐

(b) 5 litres/minute ☐

(c) 8 litres/minute ☐

(d) 10 litres/minute ☐

[1]

2 Which one of the following muscles contracts to cause knee extension?

(a) Vastus medialis ☐

(b) Tibialis anterior ☐

(c) Adductor magnus ☐

(d) Semimembranosus ☐

[1]

3 Which one of the following types of joint allows no movement between the articulating surfaces of its bones?

(a) Fixed ☐

(b) Cartilaginous ☐

(c) Synovial ☐

(d) Condyloid ☐

[1]

4 Which one of the following is **not** a short term effect of exercise on the cardiovascular system?

(a) Heart rate increases ☐

(b) Arterioles dilate ☐

(c) Blood pressure increases ☐

(d) Amount of haemoglobin increases ☐

[1]

5 Which one of the following is the correct definition of tidal volume?

(a) The volume of oxygen inspired per breath ☐

(b) The volume of carbon dioxide expired per breath ☐

(c) The volume of air inspired per breath ☐

(d) The volume of air inspired per minute ☐

[1]

6 Which one of the following muscle fibre types would be most beneficial to a 400 metre hurdler?

(a) Fast glycolytic fibres ☐

(b) Slow glycolytic fibres ☐

(c) Fast oxidative fibres ☐

(d) Slow oxidative fibres ☐

[1]

7 Which one of the following is the correct order of respiratory passages that air would pass through during expiration?

(a) Bronchi – trachea – nasal cavity - epiglottis ☐

(b) Bronchi – alveoli – bronchioles - epiglottis ☐

(c) Bronchioles – trachea – epiglottis - larynx ☐

(d) Bronchioles – bronchi – trachea - larynx ☐

[1]

8 Which one of the following is a pair of bones that are both part of the axial skeleton?

(a) Cranium and ribs ☐

(b) Ilium and cranium ☐

(c) Scapula and ilium ☐

(d) Scapula and ribs ☐

[1]

9 State what happens to breathing frequency after exercise is completed.

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

10 What feature in the veins of the legs prevents the backflow of blood and allows blood to travel upwards towards the heart?

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

Section B

Answer **all** the questions.

11 **Fig. 11.1** shows a diagram of the bones of the lower leg.

Fig.11.1

Identify A, B and C on the diagram.

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

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

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

12 **Fig. 12.1** shows a performer doing a tuck jump.

Fig. 12.1

Complete the table below to identify the joint types and movements during the tuck jump.

Joint	Joint type	Movement
Hip	.....	Flexion
Elbow	.....	.....

[3]

13 **Fig.13.1** shows a pike jump.

Fig. 13.1

Complete the paragraph by filling in the missing words using the box below.

agonist	extension	iliopsoas	eccentric
deltoid	fixator	antagonist	gluteus maximus
concentric	latissimus dorsi	isometric	flexion

When performing a pike jump, the gymnast causes ……..…..at the hip joint with a ……..…..... contraction of the ……..……... muscle. This muscle is the ……..... during this movement. On landing, the gymnast returns to an upright position by contracting the ……..…..muscle.

[5]

14 A cyclist will use all three muscle fibre types at different times during a race.

State which muscle fibre type would be used in the following stages of a race:

During a long hill climb .....

.....

Maintaining a steady pace mid-race .....

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Sprinting for the finish line .....

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[3]

15 **(a)** Outline **three** long term benefits of regular physical activity on the muscular system.

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

(b) Describe how a warm up improves the efficiency of the muscles.

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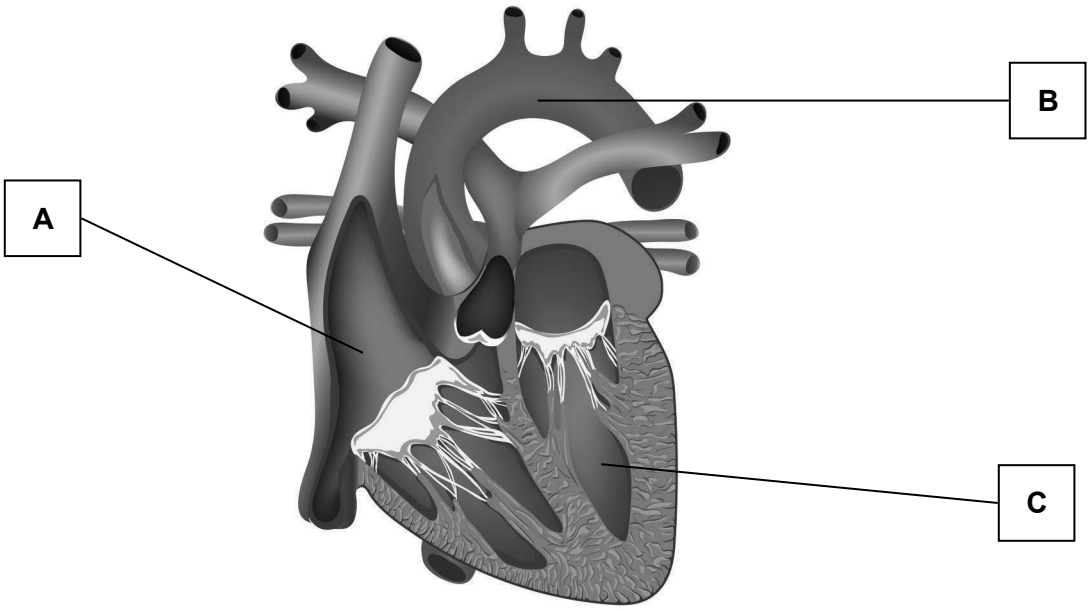
.....**[2]**

16 (a) **Fig. 16.1** shows a diagram of the heart.



Identify A, B and C and describe the role of each in the circulation of blood.

A .....

Description.....

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B .....

Description.....

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C .....

Description.....

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[6]

(b) Describe the role of arterioles during exercise.

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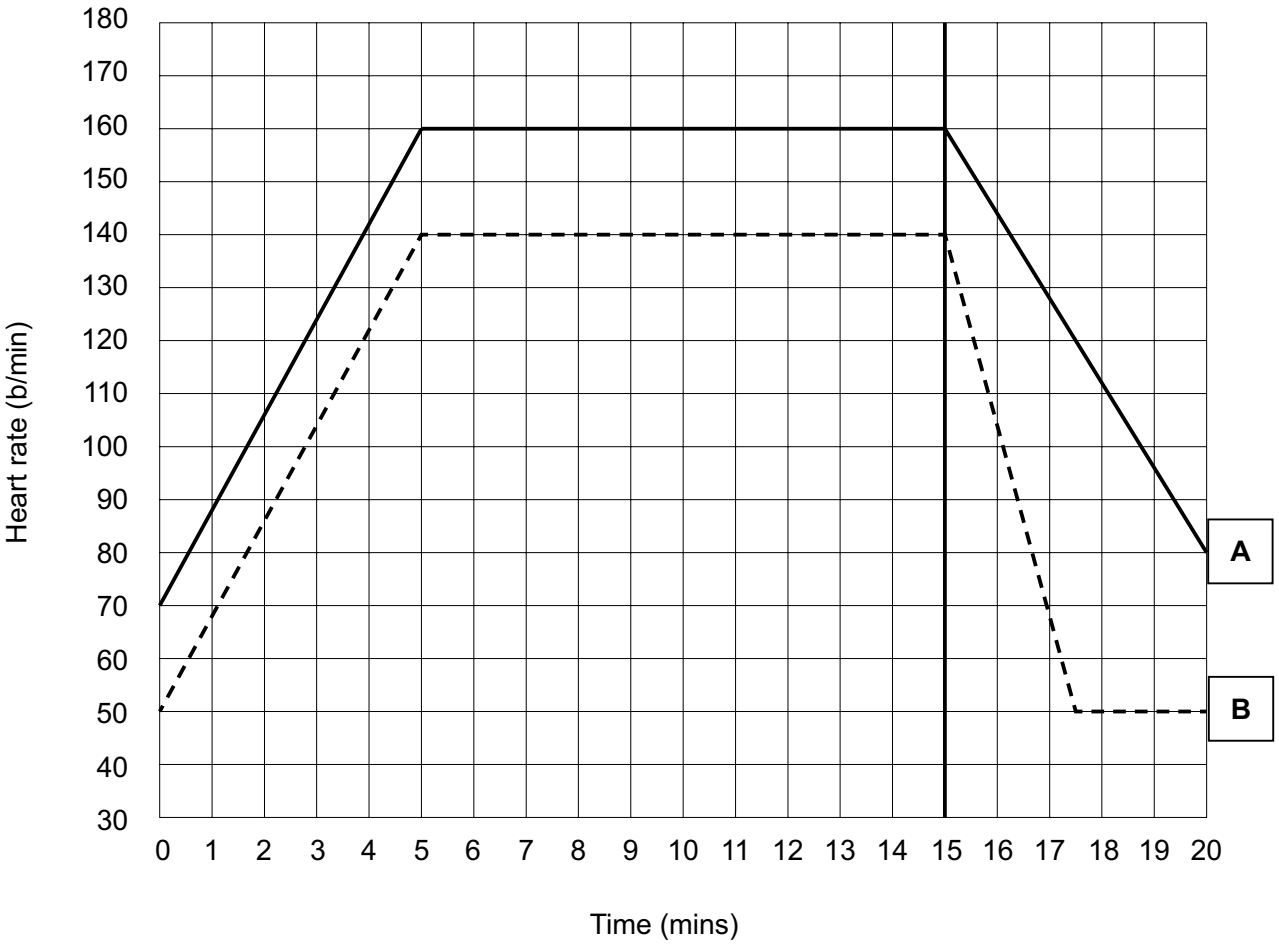
.....**[2]**

17 The graph below shows the heart rate of two performers, A and B, performing the same sub-maximal exercise for 15 minutes, followed by a 5 minute recovery period.



Describe and account for the differences between the two performers.

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.....**[4]**

18 Explain the mechanics of breathing during inspiration using the following terms:

External intercostals	**diaphragm**	**rib cage**	**thoracic cavity**	**pressure**

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

19 Describe gaseous exchange at the alveoli by filling in the missing words below:

In the alveoli the partial pressure of oxygen is ……..... and the partial pressure of carbon dioxide is ……..... , whereas in the blood capillaries at the alveoli the partial pressure of oxygen is ……..... and the partial pressure of carbon dioxide is …….. . Gases move from areas of ……..….. to ……..….. pressure. Therefore ……..... diffuses into the alveoli and ……..... diffuses into the capillaries surrounding them.

[8]

20 There are three stages to the aerobic system. In the first stage glucose is converted to pyruvic acid. In the second stage hydrogen is released, and in the third stage a very large amount of ATP is produced.

(a) Name the **three** stages of the aerobic system.

1st stage .....

2nd stage .....

3rd stage .....

[3]

(b) State how much ATP the aerobic system produces from the complete breakdown of **one** glucose molecule.

1st stage .....

2nd stage .....

3rd stage .....

[3]

Section C

21* Describe the positive and negative impacts of physical activity and sport on the skeletal system, using practical examples to support your answer. **[10]**

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END OF QUESTION PAPER

ADDITIONAL ANSWER SPACE

If additional answer space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s) – for example 15(a) or 16(b).