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CAMBRIDGE TECHNICALS LEVEL 3 (2016)

Examiners' report

SPORT AND PHYSICAL ACTIVITY

Cambridge TECHNICALS

05826–05829, 05872

Unit 1 January 2020 series

Version 1

Contents

Introduction

Our examiners' reports are produced to offer constructive feedback on candidates' performance in the examinations. They provide useful guidance for future candidates. The reports will include a general commentary on candidates' performance, identify technical aspects examined in the questions and highlight good performance and where performance could be improved. The reports will also explain aspects which caused difficulty and why the difficulties arose, whether through a lack of knowledge, poor examination technique, or any other identifiable and explainable reason.

Where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report. A full copy of the question paper can be downloaded from OCR.

You can now find the results awarded in 2018/19 for your Cambridge Technical subject area

As a centre approved to offer our Cambridge Technicals qualifications, we wanted to let you know we have now published the results awarded for 2018/19 Level 2 and 3 Cambridge Technicals (2016 suite). This information is helpful in allowing you to compare your centre achievements alongside national outcomes.

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ExamBuilder

Remember to keep your eye on ExamBuilder as we continue to update the bank of questions post exam series in line with our past paper policy. Therefore, you can be assured that new assessment material will continually be fed into ExamBuilder on an annual basis.

Online post series external feedback

Keep an eye out for updates on our post series feedback on Exams for Cambridge Technicals Webinars available in the autumn term.

Paper Unit 1 series overview

In this examination series, candidates were generally well prepared for questions on most aspects of the specification, although many candidates found Question 14(a) on the action of an antagonistic pair difficult to answer accurately.

The majority of candidates managed their time effectively with only a few seemingly running out of time to complete the paper, few candidates scored full marks.

Some candidates do not identify the requirements of every question and the meaning of the command word/s in questions and consequently show misunderstanding about what is required and show inaccuracy in their response. For example, in Question 16, candidates were asked to explain the changes in heart rate illustrated by a graph. Those that scored few if any marks, merely described rather than explained the changes shown in the graph.

Most candidates showed good knowledge of the benefits of regular exercise on the skeletal system in Question 13.

The extended question (Question 21) was answered well by those candidates who addressed all aspects of the question and showed good detail in their descriptions and explanations of the three different muscle fibre types.

The most demanding parts of the paper for many candidates were Questions 3, 6, 9, 12(a), 14 and 16.

Section A

Question 1

1 Which one of the following is the correct definition for minute ventilation?

(a) The volume of oxygen inspired per minute ☐

(b) The volume of oxygen inspired per breath ☐

(c) The volume of air inspired per minute ☐

(d) The volume of air inspired per breath ☐

[1]

Many candidates correctly identified (c) as the correct definition with the most common mistake being (a).

Question 2

2 Which one of the following heart valves prevents blood flowing back into the left atrium?

(a) Bicuspid valve ☐

(b) Tricuspid valve ☐

(c) Pulmonary valve ☐

(d) Aortic valve ☐

[1]

Many candidates correctly identified (a) as the correct valve with the most common mistake being (d).

Question 3

3 Which one of the following muscles contracts to cause plantar flexion at the ankle?

(a) Rectus femoris ☐

(b) Tibialis anterior ☐

(c) Soleus ☐

(d) Semitendinosus ☐

[1]

Many candidates incorrectly identified (b) as the correct muscle.

Question 4

4 Which one of the following is an effect of a cool down on the respiratory system?

(a) Prevents blood pooling in muscles ☐

(b) Quicker removal of lactic acid ☐

(c) Increases residual volume in the lungs ☐

(d) Maintains elevated ventilation rate ☐

[1]

Many candidates correctly identified (d) as the correct effect with the most common mistake being (c).

Question 5

5 Which one of the following describes the function of white blood cells?

(a) Aids clotting ☐

(b) Transports nutrients and hormones ☐

(c) Fights infections ☐

(d) Transports oxygen ☐

[1]

Most candidates correctly identified (c) as the correct function.

Question 6

6 Which one of the following movements is an example of horizontal adduction?

(a) Preparing to serve in tennis ☐

(b) Throwing a discus ☐

(c) Performing a sit up ☐

(d) Turning the head to look for a team mate to pass to ☐

[1]

Most candidates struggled with the correct horizontal adduction movement (b), and many gave incorrectly (a) or (d).

Question 7

7 Which one of the following activities is most reliant on the lactic acid energy system?

(a) 200m breaststroke swimming race ☐

(b) Tennis match ☐

(c) Spin bowling in cricket ☐

(d) Triple jump in athletics ☐

[1]

Many candidates correctly identified (a) as the correct activity with the most common mistake being (d).

Question 8

8 Which one of the following processes is part of the alactic recovery system?

(a) Replenishment of glycogen stores ☐

(b) Removal of lactic acid ☐

(c) Restoration of pyruvate stores ☐

(d) Restoration of phosphocreatine stores ☐

[1]

Some candidates correctly identified (d) as the correct process with the most common mistake being (b).

Question 9

9 State the typical value of the stroke volume of an untrained individual at rest.

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

Many candidates did not score the mark available because of either giving an incorrect value or because no units were included. Candidates are reminded that if they give a value it must include the units involved.

Question 10

10 Differences in the partial pressures of oxygen and carbon dioxide at the lungs allow what process to take place?

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

The most common mistake here was to give 'respiration' as the answer – it should be diffusion or gaseous exchange.

Section B overview

This section often demands candidates' explanations and asks for the application of theory to sports examples. Candidates generally scored well on anatomical aspects but less well on the functional characteristics involved.

Question 11 (a)

11 (a) Complete the table below to identify the types of bone described.

Description	Type of bone
These bones are found in tendons, and assist with movement at a joint.	.....
These bones act as levers and are essential for movement.	.....
These bones protect internal organs and provide attachments for muscles.	.....
These bones are compact and designed for strength and weight-bearing.	.....

[4]

Many candidates scored well with the identification of the correct types of bone. Common mistakes were made for the first response – often giving irregular rather than sesamoid.

Question 11 (b)

(b) The paragraph below describes slightly movable joints.
Complete the paragraph by filling in the missing words.

Bones are joined by tough, fibrous discs of ..... .

This helps with stability as well as acting as a ..... absorber.

A small amount of movement occurs at these joints.

They are also known as ..... joints.

An example of a slightly movable joint can be found between the

..... .

[4]

The first part of this paragraph was completed well by many candidates, but many were unaware of cartilaginous joints and could not give an example of a slightly moveable joint – a significant number of candidates merely gave the name of a bone or bones rather than naming an appropriate joint.

Question 12 (a)

12 **Fig. 12** shows a typical synovial joint.

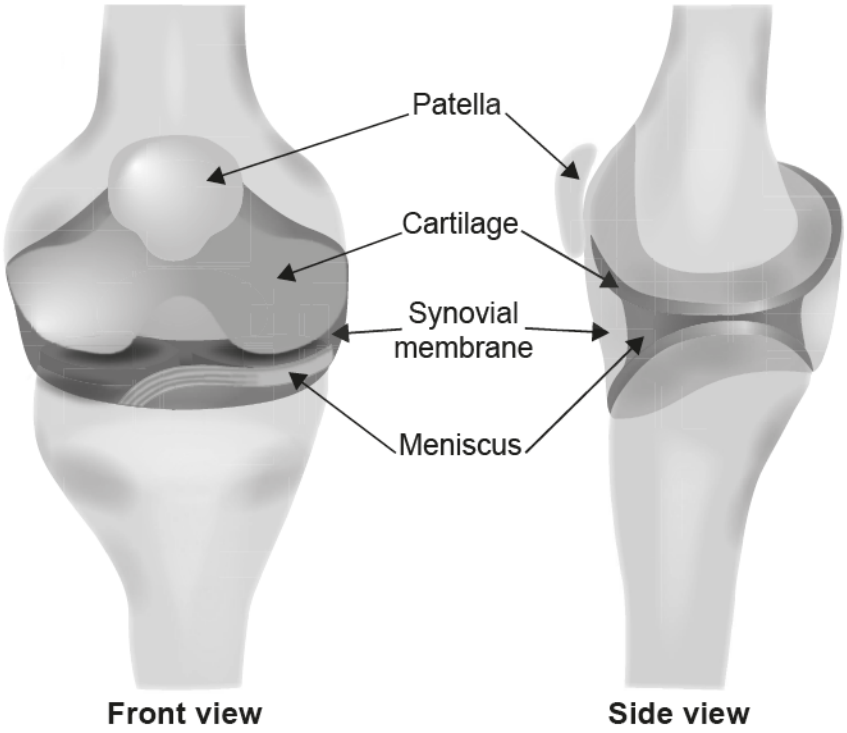

Fig. 12

(a) Draw **one** ligament on **Fig. 12** in its correct position. **[1]**

Although the question clearly asks the candidates to draw one ligament, many candidates either did not draw at all on the diagram or drew an arrow towards a structure already labelled on the diagram.

Question 12 (b)

(b) Describe the function of the synovial membrane.

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

Many candidates incorrectly stated that the function of the synovial membrane was to cover an area rather than to secrete synovial fluid.

Question 12 (c)

(c) Explain the structure and functions of the meniscus.

.....

.....

.....

.....

.....

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

Most candidates could give a function of the meniscus but did not explain the structure or give enough detail on the functions.

Question 13

13 Describe **three** long-term benefits of regular exercise on the skeletal system.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

This was answered well by the majority of candidates. Those that gave incorrect responses gave long term benefits that were not related to the skeletal system.

Question 14 (a)

14 **Fig. 14** shows the performance of a press up.

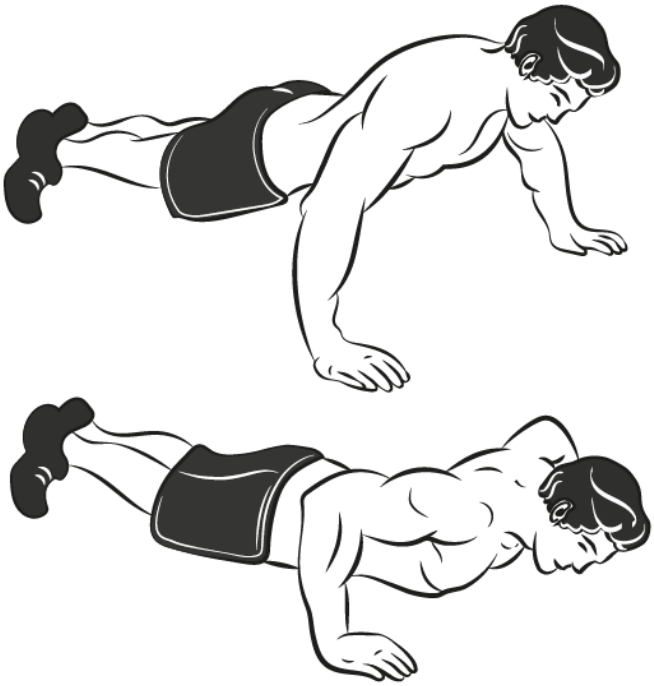

Fig. 14

(a) Explain how the biceps brachii and triceps brachii work together as an antagonistic pair during **one** complete press up.

.....

.....

.....

.....

.....

.....

.....

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

This proved the most difficult question for candidates on the paper. Candidates struggled to explain how the biceps brachii and the triceps brachii work together as an antagonistic pair during one complete press up. Many got confused between the upward and downward phases or confused the agonist with the antagonist.

Question 14 (b)

(b) Name **one** fixator muscle that stabilises the vertebral column during the press up, and identify the type of muscle contraction it produces.

Fixator.....

Type of muscle contraction.....

[2]

Again, knowledge of muscle action/contraction seemed to be lacking for many candidates. Many simply left this part of the question unanswered or gave an incorrect muscle contraction eg eccentric – instead of isometric.

Question 15 (a)

15 **Fig. 15** shows a picture of an artery and a vein.

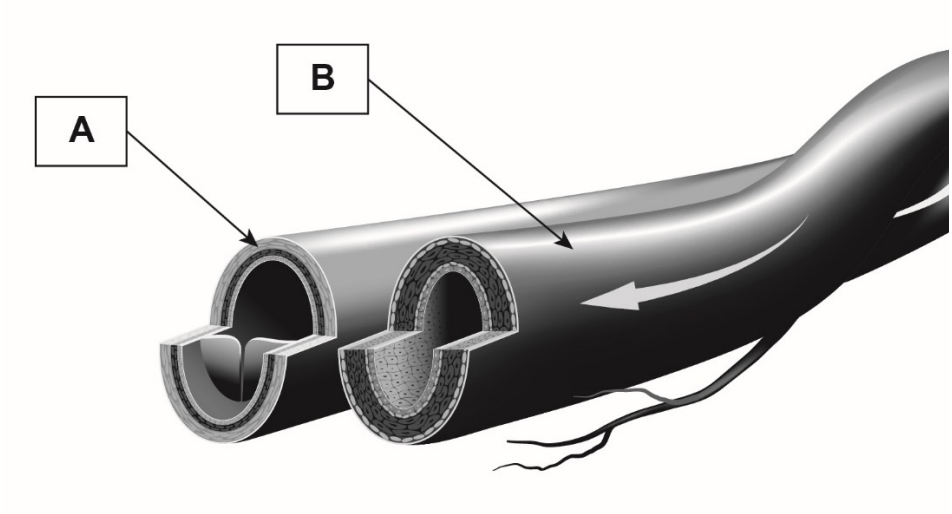

Fig. 15

(a) Identify which of blood vessels **A** or **B** is the vein.

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

Most candidates could identify A as the vein.

Question 15 (b)

(b) Describe **one** structural characteristic of each of the following blood vessels.

Artery .....

.....

Capillary .....

.....

Vein .....

.....

[3]

The word 'structural' was misunderstood by some candidates who gave detailed descriptions of function which gained no marks. Some candidates confused the structures and had little idea of the correct differences between the three types of blood vessels.

Question 15 (c)

(c) Explain the specific roles of the pulmonary artery and pulmonary vein in the transport of blood.

Pulmonary artery .....

.....

.....

.....

Pulmonary vein .....

.....

.....

.....

[4]

Many scored full marks for this, although some got their answers the wrong way round showing some confusion between the artery and the vein.

Question 16

16 **Fig. 16** is a graph showing how heart rate responds to sub-maximal exercise.

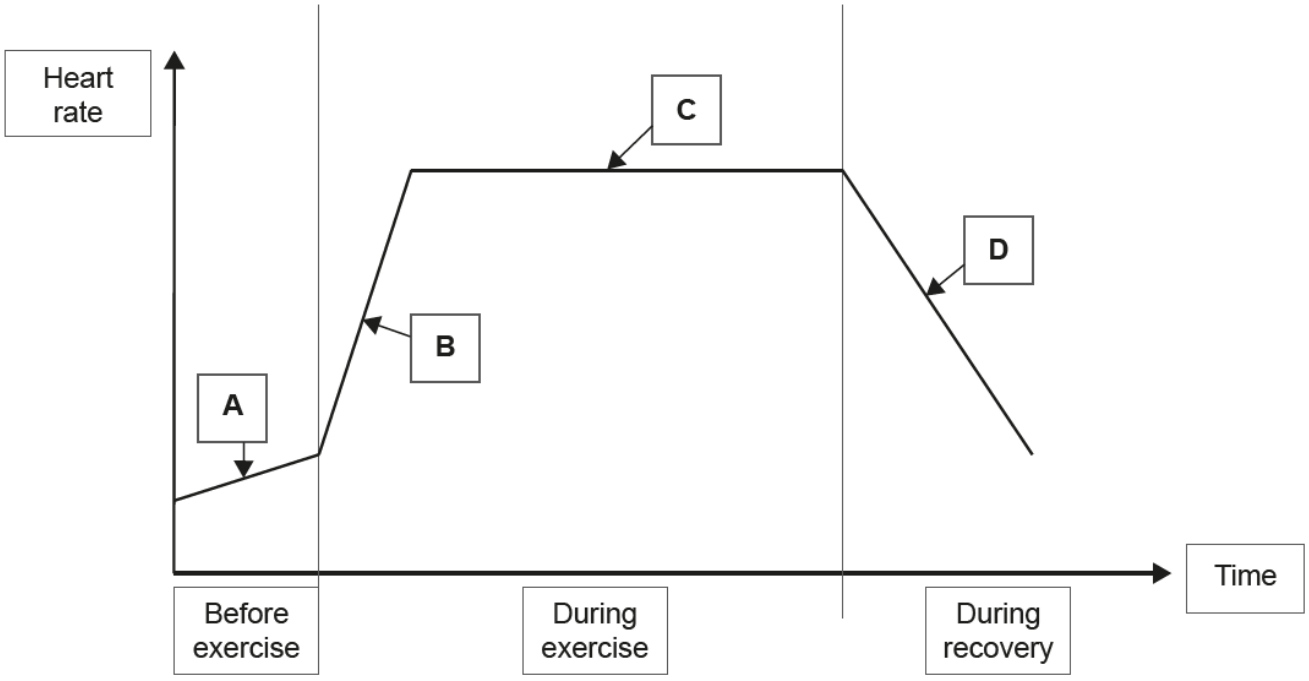

Fig. 16

Explain the changes in heart rate at A, B, C and D.

A.....

.....

B.....

.....

C.....

.....

D.....

.....

[4]

This was poorly answered by many candidates, most of whom gave a description of the graph rather than an explanation of the changes shown. For example, for A candidates often wrote 'the heart rate gradually rose', rather than an explanation 'the heart rate rose gradually because of the effect of adrenaline.'

Question 17 (a)

17 **Fig. 17** shows a diagram of the respiratory system.

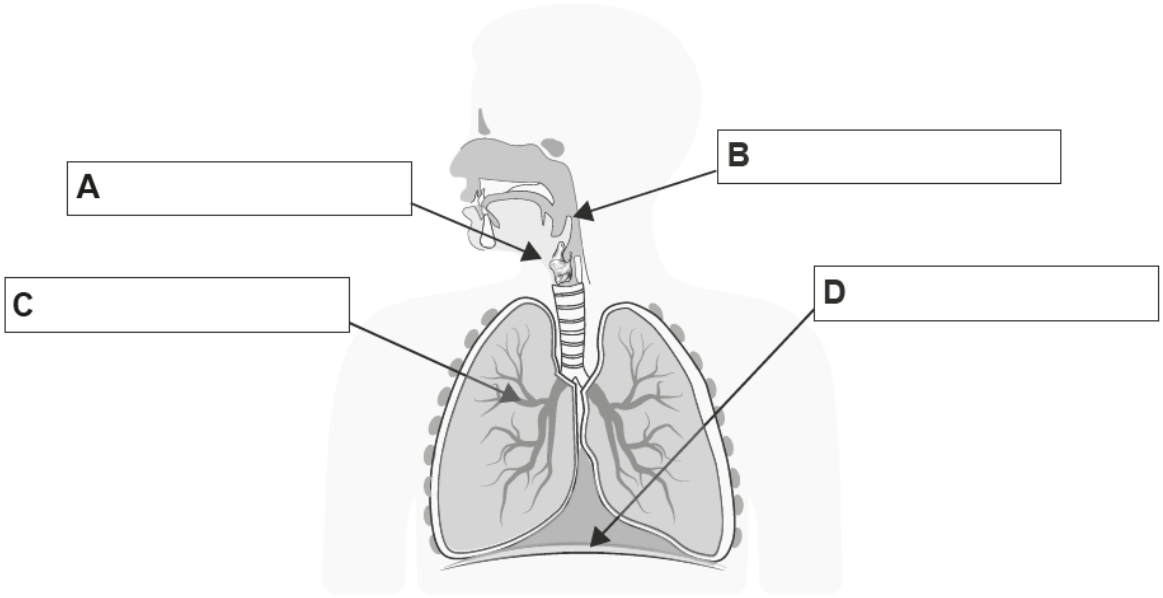

Fig. 17

(a) Label structures A - D in the boxes provided above. **[4]**

Candidates scored well for this question, many of whom scored the full 4 marks available. Others who did less well showed some confusion over the terms used. The standard of spelling of the structures was generally quite poor, although examiners allowed for recognisable/phonetic attempts.

Question 17 (b)

(b) Describe the structure and function of the trachea.

Structure .....

.....

Function .....

.....

.....

[2]

Here candidates showed that they understood the differences between structure and function and most scored a mark for structure with fewer scoring the second mark for function.

Question 18

18 Explain how the sternocleidomastoid muscle assists respiration during exercise.

.....

.....

.....

.....

.....

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

The muscle action during respiration has in past series been answered poorly. This series showed a better understanding of the specific sternocleidomastoid muscle, although many did not make it clear that during exercise the action of this muscle results during inspiration as an increase in air inspired and an increase in the volume of the chest cavity.

Question 19

19 Describe **three** short-term effects of exercise on the respiratory system.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

Too many candidates gave long term adaptation effects, rather than short term or in some cases gave effects that had nothing to do with the respiratory system eg an increase in stroke volume.

Question 20

20 Complete the table below by stating whether each statement is true or false.

Statement	True or False
The lactic acid system is an aerobic reaction.	.....
Carbohydrates and fats fuel the aerobic system.	.....
The energy continuum can show how aerobic or anaerobic an activity is.	.....
The ATP-PC system requires an hour for full recovery.	.....

[4]

Most candidates scored very well for this question showing a good understanding of energy systems.

Section C

Question 21

21* Describe the structures and functions of the **three** different muscle fibre types.

Explain how the mix of muscle fibre types a person has affects their performance in different physical activities.

[10]

.....

.....

.....

.....

This 10 mark question is marked using a levels response mark scheme with descriptors that enable examiners to pinpoint a mark from the responses they read.

Only a small minority of candidates were awarded 0 marks for this question for this series.

This extended question also assesses the quality of written communication. The better responses had very few spelling errors and had clear sentences, divided well into distinguishing paragraphs. Lower ability candidates showed poor planning and poor accuracy in spelling.

Many candidates were able to describe the functions of slow and fast twitch muscle fibres and could apply this knowledge to practical examples. The higher ability candidates stuck to answering each variable in the question, giving a good account of the function and the structure of each of the three different muscle fibre types.

Some candidates showed confusion over the functions of each fibre type and many did not give much information on structure. Most candidates could give good practical examples if they had correctly identified the appropriate muscle fibre type.

The higher scoring candidates were particularly effective in giving an accurate explanation of how the mix of muscle fibre types a person has can affect their performance in different types of physical activity.

The lower scoring candidates rarely went beyond recognising fast and slow twitch muscle fibre types and giving a practical example of how they affect particular physical activities.

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