Qualification Accredited

OCR
Oxford Cambridge and RSA

GCSE (9-1)

Examiners' report

PHYSICAL EDUCATION

J587

For first teaching in 2016

J587/01 Summer 2024 series

Version 1

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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. A selection of candidate answers is also provided. 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 and the mark scheme can be downloaded from OCR.

Paper 1 series overview

J587/01 is one of two examined components for GCSE (9-1) in Physical Education. This component links together the topic areas of applied anatomy and physiology and physical training. To do well on this paper, candidates need to apply knowledge and understanding using practical examples from sports and practical activities, and to show an understanding of data analysis.

J587/01 includes one extended response question that forms part of synoptic assessment, in which the candidates are required to apply knowledge and understanding from J587/02.

Candidates who did well on this paper generally:	Candidates who did less well on this paper generally:
• paid attention to the wording of each question, including the command word • made direct comparisons/differences in the relevant questions • used appropriate examples to support answers • made plans before answering • wrote concisely using correct technical language.	• did not attempt all the questions • did not study the stem and the question carefully to make sure correct instructions were followed • did not use examples when required • showed evidence of poor time management.

Section A overview

Section A consists of 20 questions ranging in size/mark allocation and making 30 marks in total, taken from across the two topics (Anatomy and Physiology; Physical Training). Question formats include multiple choice; true/false; short responses.

Question 1 (a)

1
(a) Describe how the ribs provide protection for the body.

.....

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

More successful responses gave a suitable description of how the ribs provide a framework that covers the heart and lungs. Less successful responses tended to misunderstand the question and identified the vital organs that were protected by the ribs without saying how these organs were protected.

Question 1 (b)

(b) Describe, using a sporting example, how the cranium provides protection.

.....

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

This question asks for a sporting example to support a description of how the cranium provides protection. Many candidates successfully answered this, often using the example of heading in football. Some responses did not identify that it is the brain that is protected. Others did not give a suitable sporting example of a situation where the head may come into contact with an object, a player or the ground.

Question 2 (a)

2
(a) Describe what is meant by the term hypertrophy of muscle.

.....

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

This question was generally well answered. Some responses included an increase in strength. This was not credited unless it was linked to an increase in size of the muscle.

Question 2 (b)

(b) State **two** types of training used to **increase** hypertrophy of muscle.

1 .....

.....

2 .....

.....

[2]

Many candidates were able to state at least one type of training used to increase hypertrophy of muscle. Some candidates identified types of training that are predominantly aerobic and are not chosen specifically to cause muscle hypertrophy.

Question 3 (a)

3

(a) The bicuspid and tricuspid valves are in the heart.

Describe the purpose of these valves.

.....

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

The best responses described the purpose of both valves correctly. Many candidates did not address the specific purpose of these valves and described the role of valves in general. This did not answer the question.

Question 3 (b)

(b) Other than the bicuspid and tricuspid valves, identify another valve in the heart.

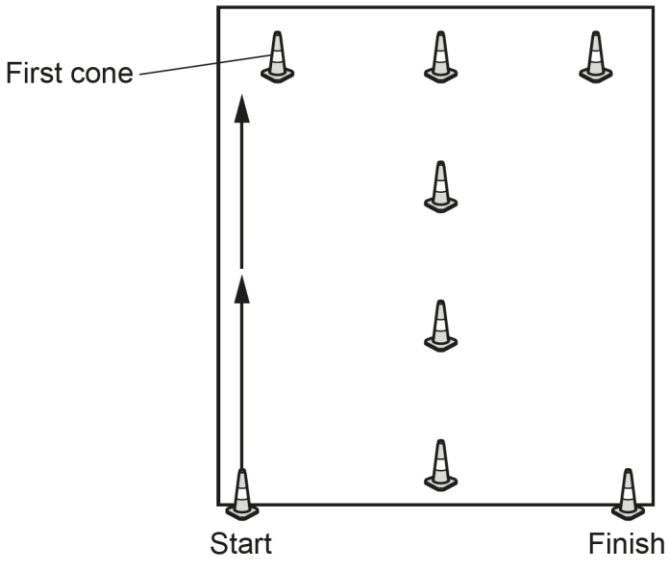
..... **[1]**

This was generally well answered. A few candidates did not attempt this question.

Question 6 (a) (i) and (ii)

6 This diagram shows the Illinois agility test set up.

The arrows show the direction from the start to the first cone.



(a)

(i) Complete the diagram to show the rest of the route of the Illinois agility test. **[1]**

(ii) State the correct distance from the **start** to the **first cone**.

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

The best answers showed an accurate understanding of the route for the Illinois agility test. Some candidates did not make it clear that a performer must run around the first cone. Other mistakes were also seen in the direction to take. Only a few candidates identified that the distance from the start to the first cone is ten metres.

Assessment for learning

Candidates are reminded that they need to understand the correct protocols for all the tests of fitness listed in the specification content.

Question 7

7 Arteries and veins are blood vessels that have different structures and functions.
For example, arteries do **not** have valves but veins do have valves.

Complete the table below to describe another difference between arteries and veins.

Arteries	Veins
.....	.....
.....	.....

[1]

Most candidates described a difference between the structure or function of arteries and veins. Some responses gave two differences. For these answers the second response was not considered.

Question 10

10 Explain, using an example, how the storage of minerals in the skeleton can help a performer during **contact** sports.

.....

.....

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

For this question candidates were required to give a sporting example from a contact sport, or an example of a mineral stored in the skeleton. The question also asked for an explanation. The best responses did this well. Many responses described how calcium strengthens bones but did not develop this into an explanation to show how stronger bones may help a performer during a contact sport.

Question 11

11 State the muscle group involved in rib cage movement during breathing.

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

Many muscles can cause some movement of the rib cage when they contract and any of these muscles, if named, were credited. The mark scheme guidance includes some muscles that are not required to be learned. These muscles were being identified by some candidates. Despite not being part of the specification content they are correct responses to the question so were also credited. Candidates are not tested on knowledge that is beyond the scope of this specification but may choose to extend their knowledge and understanding through wider research.

Question 15

15 Explain what the term **synovial** joint means.

.....

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

This question was generally well answered. Some candidates misread the question and described the role of synovial fluid in a joint. Other candidates missed the word 'synovial' from the question and explained what a joint is.

Question 17

17 The cardiovascular system is a double-circulatory system that involves systemic and pulmonary circulation.

Describe the following types of circulation:

Systemic circulation .....

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

Pulmonary circulation .....

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

To describe each circulatory system accurately, candidates needed to say that blood was being circulated and describe where it comes from and where it goes. More successful responses did this well. Many responses omitted one of these key elements, meaning that the description was ambiguous.

Exemplar 1

Systemic circulation takes oxygenated blood from heart via aorta to body, and deoxygenated blood via vena cava from body to heart. **[1]**

Pulmonary circulation takes deoxygenated blood from heart to lungs and oxygenated blood from lungs to heart **[1]**

This response shows two detailed and accurate descriptions. Each response contains more than enough information to gain credit. The presence or absence of oxygen was not required. Nor were the names of the blood vessels in the systemic system. However, candidates should be encouraged to model their descriptions on this exemplar.

Question 18

18 Marathon running is mainly an aerobic exercise.

Describe, using a practical example, when marathon running becomes **anaerobic** exercise.

.....

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

This question was well answered. Most candidates understood that exercise becomes anaerobic when the intensity is high, and muscles no longer have sufficient oxygen to work aerobically. Some candidates did not use a practical example from marathon running and this was a requirement of the question. Most responses gained credit for describing a sprint finish or sprinting at the start. Examples that did not imply high intensity, such as overtaking another runner, were not credited, as a runner may overtake someone without working anaerobically.

Question 19

19 A hockey player participates in 60-minute fartlek training sessions twice a week.

Which element of FITT is **not** applied in the statement above?

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

This question was generally well answered. Many responses showed good exam technique as candidates listed the FITT principles and matched them to the statement. This allowed them to see which principle was not applied in the statement.

Question 20

20 Hip and Knee are joint types.

Draw a line that connects each joint type with the correct articulating bones.

You should draw **one line** for each joint type.

Joint type		Articulating bones
Hip		Femur and fibula
		Femur and pelvis
		Femur and tibia
Knee		Femur and vertebrae
		Femur, fibula and tibia
		Femur, pelvis and vertebrae

[2]

Most responses identified the correct articulating bones for the hip joint. Successful responses also identified the correct answer for the knee joint. Some responses included more than one line for each joint type. These responses were not credited as the question stipulated one line only for each answer.

Misconception

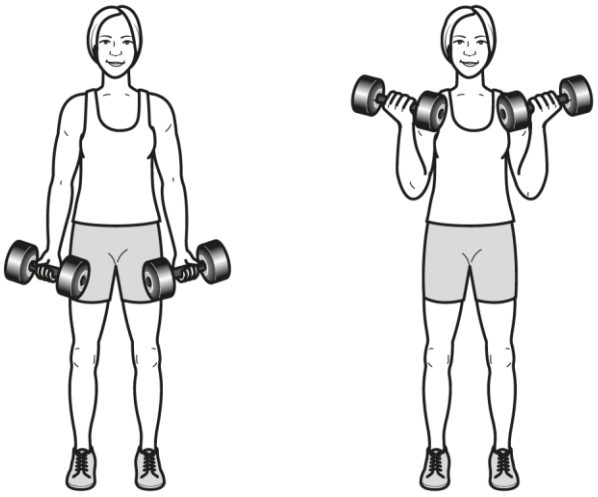
There is a common misconception that the fibula forms part of the knee joint. The specification content gives the names of the articulating bones that candidates need to be able to identify for the elbow, knee, shoulder and hip.

Section B overview

Section B consists of three 10-mark questions each comprised of part-questions. Each question is linked to anatomy and physiology or physical training. One part-question within the three questions is a 6-mark extended response question with a levels of response mark scheme.

Question 21 (a)

21 The diagram below shows a gymnast weight training.



A B

(a) Explain how the pair of muscles at the elbow work together when lifting the weights from A to B.

.....

.....

.....

.....

.....

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

Many candidates showed excellent knowledge of muscles working together to create movement. Some responses explained how the elbows extended to position A. This was not required and was disregarded if responses then explained how the performer's elbows moved from A to B. The best responses included the knowledge that muscles work together as an antagonistic pair.

Question 21 (b)

(b) Describe the role of **fixator** muscles during the movement from A to B.

.....

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

More successful responses understood and described the role of fixator muscles in the movement accurately. Some responses named a fixator muscle. This was not required in the question and was not given marks.

Question 21 (c)

(c) Describe how the ligaments and tendons of a joint help assist the movement from A to B.

Ligaments .....

.....

Tendons .....

.....

[2]

The best responses gave clear and accurate descriptions of the specific roles of ligaments and tendons during the movement from A to B. Many responses were limited to the difference between these two components of a joint. These responses did not address the question in enough detail to gain credit.

Exemplar 2

Ligaments Ligaments connect bone to bone, therefore the ligament connects the humerus and the ulna to create movement

Tendons Tendons connect muscle to bone, therefore when the muscle contracts, it lifts the bone to create movement; In this case, the tendon would attach the Bicep and the ulna **[2]**

This response gives a good description of the role of tendons to assist the movement from A to B. Although the insertion of the biceps muscle is on the radius, not the ulna, this is knowledge that is beyond what is required at this level. Therefore, credit is allowed for stating that it attaches to a bone of the lower arm. Candidates need to understand that when a muscle contracts its tendons pull on the bones to create movement.

The description for the role of ligaments is not accurate enough to be given marks. The response should add that the ligaments stabilise the joint or prevent abnormal movements that cause dislocation.

Question 21 (d)

(d) Weight training has long term effects which can help a gymnast.

For each example below describe a long term effect **and** explain how this effect could help the gymnast when they are performing.

Example 1:

Bone .....

Effect on performance .....

.....

Example 2:

Heart .....

Effect on performance .....

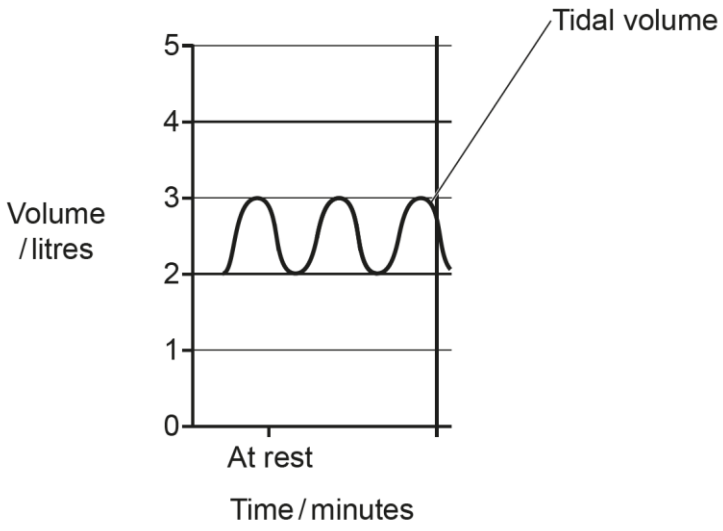
.....

[4]

The most successful responses considered the wording of the question carefully and made notes to plan their responses. Some responses described a long-term effect of weight training under the section headed 'effect on performance'. These responses were credited if appropriate. Less successful responses often did not explain how the long-term effect could help the gymnast during their performance. Some candidates did not attempt this question.

Question 22 (a)

22 The line graph below shows respiratory volume at rest.



(a) State the **tidal** volume at rest.

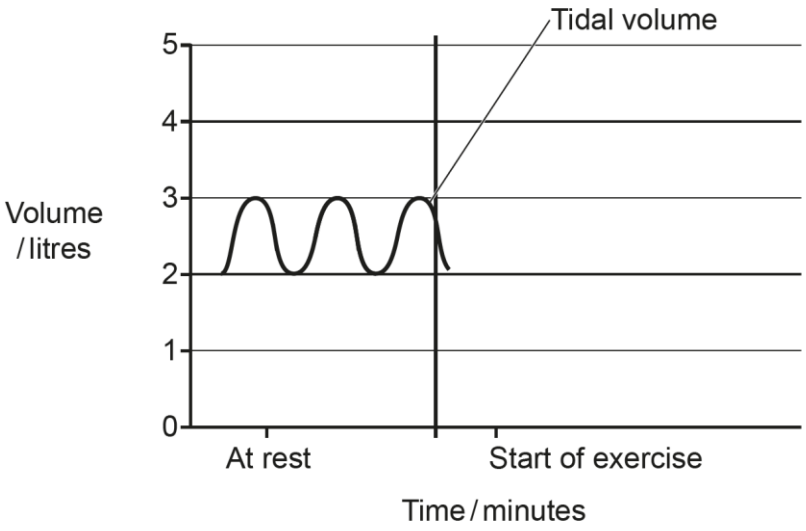
.....

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

Candidates should be able to present, analyse and evaluate data. The candidates who understood that the graph showed the volume of air moving in and out of the lungs were able to interpret the graph to calculate and give the correct tidal volume. Candidates are reminded that they must include the correct units in their response.

Question 22 (b)

(b) Continue the line graph below to show how tidal volume changes when exercise starts.



[1]

In this question candidates were asked to continue the graph to show how tidal volume changes when exercise starts. Many responses did this correctly and showed a continuation of the line of the graph with an increase in amplitude of the wave. This increase was acceptable if it showed an increase in tidal volume compared to the resting volume. Some graphs moved the wave upwards without an increase in amplitude. These graphs did not show an increase in tidal volume and were not credited.

Question 22 (c)

(c) The left bronchus enters the left lung.

The right bronchus enters the right lung.

Name **two** other features of the lungs and describe a function for each of the features you name.

Feature 1 .....

Function .....

.....

Feature 2 .....

Function .....

.....

[4]

This question included information to help candidates, and stronger candidates understood that the bronchi were given as an example of a feature. These candidates named the bronchioles and alveoli as the only other features of the respiratory system that are part of the lungs and described the function of each. Answers that described features of the alveoli gained credit for the alveoli. The trachea and the capillaries surrounding the alveoli are not part of the lungs. Some candidates did not attempt this question.

Question 22 (d)

(d) A basketball match is about to start.
Player A has performed a full warm up.
Player B has not performed any warm up.

At the start of the match compare the short-term effects of a full warm up on the **respiratory** system of player A when compared to player B.

.....

.....

.....

.....

.....

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

The best responses showed a detailed knowledge and understanding of the short-term effects of a warm up on the respiratory system. These candidates recognised that the question asked for a comparison between player A and player B. Some candidates misunderstood the question and described the changes to the respiratory system of player B after the start of the match. Responses describing short-term effects to other body systems were irrelevant. A few candidates did not attempt this question.

Exemplar 3

For Player A, their tidal volume increases as there is more breathes air being taken in per breath. Whereas, for Player B, their tidal volume will remain the same as they are not warming up. For Player A, their minute ventilation will increase, whereas in Player B, their minute ventilation will stay the same. In Player A, their breathing rate will increase, whereas, in Player B, their breathing rate will remain constant and not change.

This response shows how answers that compare one thing with another could be set out. Three marks are given for three direct comparisons between player A and player B, namely the differences in tidal volume, minute ventilation and breathing rate. To achieve full marks for this question the candidate could have stated that player A will be taking in greater volumes of oxygen than player B or that higher rates of gaseous exchange will be happening in player A's lungs compared to player B.

Question 23 (a)

23 A netball player performs passing and catching drills as part of their warm up routine.

(a) Name the warm up component that involves passing and catching drills in netball.

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

Many candidates gave the correct name for the warm up component described in the question. A few candidates misread the question and named a fitness component. Candidates are reminded to read every question carefully.

Question 23 (b)

(b) Other than the component named in **23(a)**, identify a warm up component and describe **two** benefits for a netball player performing this component.

Named warm up component: .....

Benefit 1 .....

.....

Benefit 2 .....

.....

[3]

This question was generally well answered. Some responses included two correct benefits within their description for 'benefit 1'. These responses were marked positively and both benefits were given marks. However, candidates are reminded that if a set number of answers are demanded any further responses will not be considered.

Misconception

There are two common misconceptions to highlight here.

Warming up prevents injury. A warm up cannot prevent injury. Injuries occur during sporting activities for a variety of reasons. Candidates are reminded that warm ups can only **reduce the risk** of injury.

Warming up gets blood flowing to working muscles. Muscles receive a steady flow of oxygenated blood **all the time**. The benefit of a warm up is to **increase** the volume of oxygenated blood travelling to working muscles.

Question 23 (c)*

(c)* A sports coach uses different types of guidance during a session.

A coach must also encourage players to perform a cool down to help the body transition to a resting state.

Describe, using examples, the key components of a cool down **and** outline other physical benefits of a cool down.

Explain how using different types of guidance can improve safety when coaching in sport. **[6]**

Most candidates described and gave examples of the key components of a cool down. The best responses showed detailed knowledge and understanding of the benefits of a cool down. Weaker responses tended to describe processes that happen after exercise naturally without the help of a cool down. Candidates are reminded that the benefits of a cool down speed up the recovery process. So, for example, lactic acid will be removed without a cool down, but the process will take longer. Therefore, the benefit of cooling down is to speed up lactic acid removal. Moreover, the benefit of a cool down is to maintain the circulation of blood and oxygen by maintaining elevated rates of respiration and circulation.

More successful responses gave detailed explanations to show how each of the four types of guidance can improve safety when coaching a sport. Most used examples to support their answers. Some responses covered all or most types of guidance but lacked the explanations needed to move the response into Level 3. Less successful responses tended not to name the types of guidance or confused feedback with guidance.

Some candidates combined the two parts of the question together and explained how a coach can use types of guidance to make a cool down safer. Credit was given for valid responses but these candidates may not have been able to consider some of the applications of types of guidance to examples of dangerous activities in some sports such as gymnastics and trampolining. Candidates are reminded to read the whole question carefully and revisit it so that extended responses stay relevant.

Misconception

Some candidates stated that a cool down can reduce the risk of injury. This is not correct. A cool down can minimise and reduce the effects of muscle soreness. But it is important to recognise that a cool down happens after a match/event/training session so injury will not occur other than an accident that cannot be mitigated by a cool down.

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