Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____
I declare this is my own work.

A-level
PHYSICAL EDUCATION

Paper 2 Factors affecting optimal performance in physical activity and sport

Time allowed: 2 hours

Materials
For this paper you may use:
- a calculator.

Instructions
- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions. You must answer the questions in the spaces provided. Do **not** write on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 105.
- Questions should be answered in continuous prose. You will be assessed on your ability to:
  - use good English
  - organise information clearly
  - use specialist vocabulary where appropriate.

For Examiner's Use	
Section	Mark
A	
B	
C	
TOTAL	

Do not write outside the box

Section A

Exercise physiology and biomechanics

Answer **all** questions in this section.

Only **one** answer per question is allowed.

For each question completely fill in the circle alongside the appropriate answer.

CORRECT METHOD ⬬ WRONG METHODS ⊗ ⊙ ≋ ✓

If you want to change your answer you must cross out your original answer as shown. ⊠

If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown. ⊗

0 1 Which **one** of the following is classed as a **chronic** injury?

[1 mark]

A Achilles tendonitis ⬭

B Ankle sprain ⬭

C Hamstring strain ⬭

D Shoulder dislocation ⬭

0 2 Which **one** of the following will **increase** the drag experienced by a cyclist?

[1 mark]

A Following another cyclist closely ⬭

B Travelling at a higher velocity ⬭

C Wearing tight-fitting clothes ⬭

Do not write outside the box

0 3 Sodium bicarbonate can be taken as a dietary supplement by a 400-metre runner.

0 3 . 1 Describe how sodium bicarbonate works to delay fatigue.

[2 marks]

_____

_____

_____

_____

0 3 . 2 State **one** negative effect of taking sodium bicarbonate.

[1 mark]

_____

_____

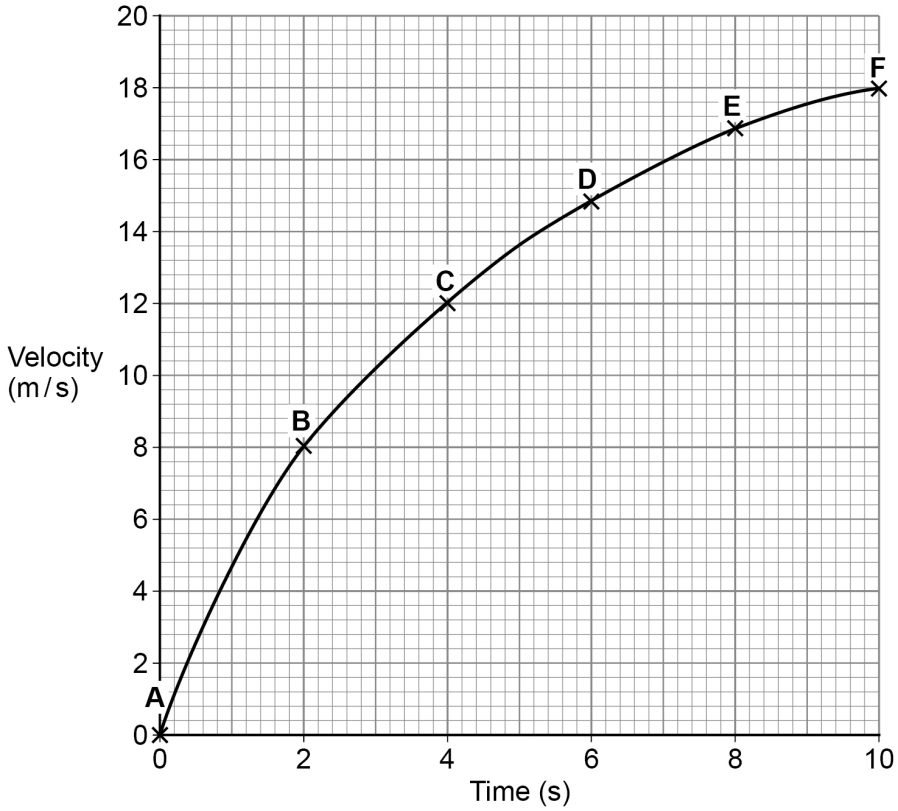
Turn over for the next question

Do not write outside the box

0 4 Cyclists need to be able to accelerate at the start of a race.

Figure 1 shows a velocity–time graph of a cyclist at the start of a road race.

Figure 1



0 4 . 1 Calculate the cyclist's acceleration between points B **and** C in **Figure 1**.

Give the correct units in your answer.

[2 marks]

Cyclist's acceleration _____ Units _____

0 4 . 2 Identify the **two** points in **Figure 1** between which the cyclist was accelerating at the greatest rate.

[1 mark]

Between point _____ and point _____

Do not write outside the box

0 5 State **one** exercise-related function of carbohydrates.

[1 mark]

0 6 Katarina Johnson-Thompson is a heptathlete competing in multiple events over two days.

Analyse why a lack of sleep between the two days of competition may impair her recovery **and** performance.

[3 marks]

Turn over for the next question

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0 7 A runner has followed a continuous training programme three times per week for the last six weeks to prepare for a 5 km race.

The race is scheduled to take place in four weeks' time.

Analyse how applying the FITT principles to the runner's training could improve their performance during the race.

[8 marks]

You may use this space to plan your answer.

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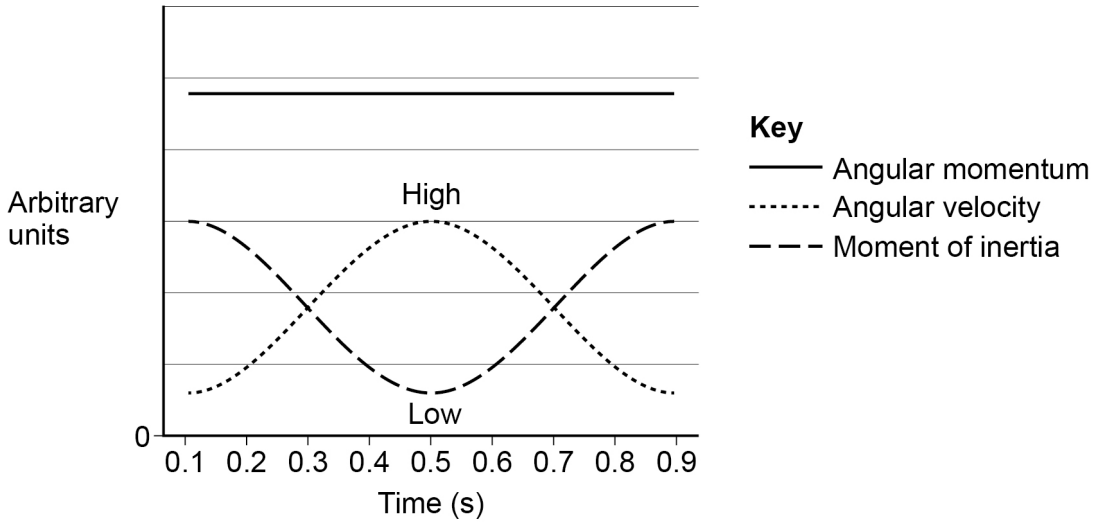
0 8 **Figure 2** represents the principle of conservation of angular momentum applied to a gymnast as they perform a front tuck somersault.

Figure 2



Analyse how the gymnast makes use of the principle of conservation of angular momentum when performing a front tuck somersault.

Refer to **Figure 2** in your answer.

[15 marks]

You may use this space to plan your answer.

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Section B

Sport psychology

Answer **all** questions in this section.

0 9 Which **one** of the following is the **second** stage of group formation according to Tuckman's model?

[1 mark]

A Forming ⬭

B Norming ⬭

C Performing ⬭

D Storming ⬭

1 0 A golfer sets herself the goal of keeping her head still throughout her swing.

Identify which type of goal this is.

[1 mark]

A Outcome ⬭

B Performance ⬭

C Process ⬭

Turn over for the next question

Do not write outside the box

1 1 Define 'aggression' **and** 'assertive behaviour'. Give a sporting example of each.

[4 marks]

Aggression _____

_____

_____

_____

Assertive behaviour _____

_____

_____

_____

1 2 State **three** strategies a coach can use to prevent a performer behaving aggressively in a competitive situation.

[3 marks]

1 _____

_____

2 _____

_____

3 _____

_____

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1 3 **Figure 3** shows a four-person rowing crew.

Figure 3

The rowers carry out their roles individually, but at the same time, relying on co-ordination to be successful.

Evaluate the impact of task **and** social cohesion on the performance of a rowing crew.

[3 marks]

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1 4 The diver in **Figure 4** may use cognitive techniques such as mental rehearsal, visualisation and imagery to manage stress immediately before performance.

Figure 4

Analyse how the diver could use **other** cognitive stress management techniques to improve their performance in a competition. Refer to catastrophe theory in your answer.

[8 marks]

You may use this space to plan your answer.

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Turn over for the next question

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1 5 A coach can use observations, questionnaires or physiological measures to obtain data on anxiety levels.

Evaluate the use of each measure to provide valid and reliable data to assess anxiety in sport.

[15 marks]

You may use this space to plan your answer.

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Section C

Sport and society and technology in sport

Answer **all** questions in this section.

1 6 Which **one** of the following organisations **only** provides support to talented athletes?

[1 mark]

A National Governing Bodies ⬭

B Sport England ⬭

C UK Sport ⬭

1 7 Two adults play badminton for the purpose of physical recreation.

In which **one** of the following levels of the sporting development continuum does this activity occur?

[1 mark]

A Foundation ⬭

B Participation ⬭

C Performance ⬭

1 8 Evaluate the effectiveness of **three** different measures put in place to improve spectator safety at football matches.

[3 marks]

1 _____

_____

_____

2 _____

_____

_____

3 _____

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_____

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1 9 One function of sports analytics is game analysis.

1 9 . 1 State **two** other functions of sports analytics.

[2 marks]

1 _____

_____

2 _____

_____

1 9 . 2 Explain how technology can be used to carry out game analysis in a team sport.

[2 marks]

_____

_____

_____

_____

2 0 Using testing and recording equipment such as a metabolic cart for indirect calorimetry can provide useful information about performance.

Describe what a metabolic cart is **and** how it can be used to carry out indirect calorimetry.

[3 marks]

_____

_____

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2 1 In 2012, Lance Armstrong was stripped of his seven Tour de France titles and given a lifetime ban for using banned substances including erythropoietin (EPO).

Evaluate the choice made by other professional cyclists to inject EPO instead of relying on altitude training alone to improve performance. Refer to the physiological effects of EPO on the cyclist in your answer.

[8 marks]

You may use this space to plan your answer.

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2 2 Analyse how support provided by the National Institutes of Sport has helped to improve the performance of British elite track cyclists.

[15 marks]

You may use this space to plan your answer.

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END OF QUESTIONS

35

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ANSWER IN THE SPACES PROVIDED

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