

Leave
blank

SECTION A – EXERCISE & ENERGY SYSTEMS

Answer only ONE question from this section. Write your answers in the spaces provided.

If you answer Question 1 put a cross in this box .

1. (a) (i) Define the concepts of energy and power and give the unit of measure for each.

Energy:

.....

.....

Unit of measure:

Power:

.....

.....

Unit of measure:

(4)

- (ii) Calculate the power output of an athlete who has travelled 1500 m in 2 minutes on a cycle ergometer with a fixed load resistance of 10 kg attached.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(5)



Leave
blank

(c) In the context of ATP breakdown and re-synthesis, define the terms **exothermic**, **endothermic** and **coupled reactions** and give an example of each.

Exothermic:

.....

Example:

.....

Endothermic:

.....

Example:

.....

Coupled reactions:

.....

Example:

.....

(6)

Q1

(Total 25 marks)



SECTION B – SPORTS MECHANICS & SPORTS PSYCHOLOGY

Answer only ONE question from this section. Write your answers in the spaces provided.

If you answer Question 3 put a cross in this box .

3.

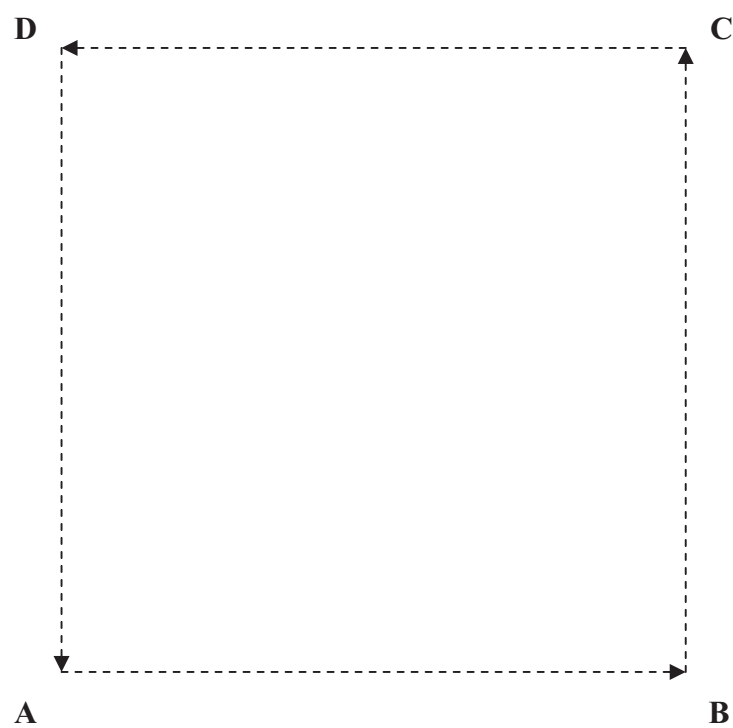


Figure 1

Figure 1 shows the path of a ball as it is passed along the ground, around a square in a football practice, between the players **A**, **B**, **C** and **D**. Each side of the square is 15 m in length.

(a) Showing all your workings, if the ball starts at player **A**, calculate:

(i) The distance the ball has travelled when it reaches **C**.

.....
.....

(1)

(ii) The displacement of the ball as it reaches **C**.

.....
.....
.....

(3)



(iii) The displacement of the ball as it completes one circuit.

.....
.....
(1)

(b) (i) It takes the ball 2 seconds to travel from **C** to **D**.

Calculate the average speed of the ball as it moves from **C** to **D**.

.....
.....
(1)

(ii) The speed of the ball is measured as it leaves **D** and as it arrives at **A**, and the values below are recorded.

Speed at D	Speed at A
10 ms ⁻¹	6 ms ⁻¹

It takes the ball 1.9 seconds to travel from **D** to **A**.

Calculate the average acceleration of the ball between the two points.

.....
.....
.....
(2)

(iii) State Newton's Second Law, and use it to explain your answer to part (b) (ii).

.....
.....
.....
.....
.....
.....
(3)



Leave
blank

(iv) State Newton's First and Third Laws, and use them to explain the motion of the ball in the above practice.

First Law

.....

.....

.....

.....

.....

Third Law

.....

.....

.....

.....

.....

(6)

(c) (i) Draw and label a diagram that shows air resistance, lift and drag acting on a discus in flight in relation to its direction of travel.

(3)





<p>(ii) Explain how lift force is achieved in discus and how it can be optimised.</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>(5)</p> <p>(Total 25 marks)</p>	Leave blank
	Q3



N 2 5 0 9 5 A 0 1 1 3 2



Leave
blank

If you answer Question 4 put a cross in this box .

4. (a) Identify the body's **three** axes of rotation and use sporting examples to explain the movement that occurs around each one.

Axis

.....

Example

.....

Axis

.....

Example

.....

Axis

.....

Example

.....

(6)



Leave
blank

(b) Explain how back spin influences a ball's flight.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

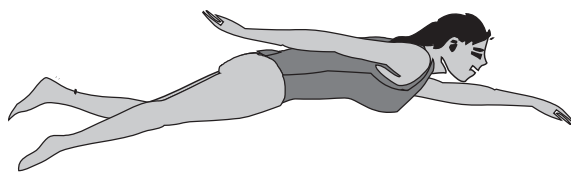
.....

(6)



Leave blank

- (c) (i) Label the diagram below to show the external forces acting on a swimmer in relation to the direction of motion.



(3)

- (ii) There are a number of strategies that a swimmer uses in order to minimise the effects of one of these forces.

Identify which force the swimmer attempts to minimise and explain how the swimmer can reduce this force.

.....

.....

.....

.....

.....

.....

(5)



(d) During the time a sprinter's foot is in contact with the ground it experiences different forces.

Draw **two** force/time graphs:

- one to show the force acting on the foot as the athlete accelerates
- one to show the force acting on the foot as the athlete decelerates

Leave
blank

(5)

(Total 25 marks)

Q4

15

Turn over



Leave
blank

If you answer Question 5 put a cross in this box .

5. (a) Using examples from sport, define the terms **aggression**, **instrumental aggression** and **assertion**.

Aggression:

.....

.....

.....

Instrumental aggression:

.....

.....

.....

Assertion:

.....

.....

.....

(6)



Leave
blank

(b) List **five** strategies a coach can use to reduce aggressive behaviour in a player.

1

.....

2

.....

3

.....

4

.....

5

.....

(5)

(c) Explain how a coach would structure their practice sessions if they were applying the cognitive approach to learning.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(5)



Leave
blank

(d) Explain the effect that the presence of others may have on sports performance.

.....
.....
.....
.....
.....
.....
.....
.....

(5)

(e) Name **four** strategies that a performer or coach could use to manage the effect of a crowd on performance.

1
.....
2
.....
3
.....
4
.....

(4)

Q5

(Total 25 marks)



BLANK PAGE





(c) What is **learned helplessness** and how can it be overcome? Use examples from sport to support your answer.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Leave blank

(5)



N 2 5 0 9 5 A 0 2 1 3 2



Leave
blank

SECTION C – A SYNOPTIC ANALYSIS OF SCIENTIFIC PRINCIPLES

Answer ONE question only from this section

Each question is worth 25 marks

**Indicate which question you are answering by marking the box (☒).
If you change your mind, put a line through the box (☒) and then indicate your new
question with a cross (☒).**

Chosen question number: **Question 7** ☒ **Question 8** ☒
Question 9 ☒ **Question 10** ☒

7. Discuss the various long term strategies undertaken by elite athletes in preparation for global competitions.

(Total 25 marks)

8. Discuss the view that elite athletes are born, not made.

(Total 25 marks)

9. Discuss how modern technology aids an athlete's preparation for competition.

(Total 25 marks)

10. Discuss what an athlete would do during the final 72 hours prior to competition in order to maximise performance.

(Total 25 marks)

Write your answer to Section C here:

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....



BLANK PAGE



BLANK PAGE



BLANK PAGE

