PART I

Answer all questions

Questions 1 to 10 should be answered by writing A, B, C or D in the spaces provided.

1. Which of the following groups contain the bones of the hand and wrist?

   A. Tibia, Tarsals, Phalanges
   B. Tarsals, Metatarsals, Phalanges
   C. Clavicle, Metatarsals, Tarsals
   D. Carpals, Phalanges; Metacarpals

   Answer: ....................
   (Total 1 mark)

2. Which of the following statements describes a function of ligaments?

   A. Joins muscle to bone
   B. Helps support the joint
   C. Produces synovial fluid
   D. Forms a cushion between bones to prevent friction

   Answer: .................
   (Total 1 mark)

3. Platelets are responsible for:

   A. Fighting infection
   B. Carrying oxygen
   C. Clotting
   D. Carrying carbon dioxide

   Answer: ....................
   (Total 1 mark)
4. Stroke volume is:

A. The amount of blood ejected from the heart per minute
B. The number of times the heart beats per minute
C. The amount of blood ejected from the heart per beat
D. The pace-maker responsible for timing the stroke of the heart

Answer: .........................

(Total 1 mark)

5. Vital capacity is:

A. The amount of air breathed in and out during normal breathing
B. The largest volume of air which can be expired after the deepest possible inspiration
C. The amount of air moving in and out of the lungs in one minute
D. The amount of air that stays in the lungs after the maximum expiration

Answer: .........................

(Total 1 mark)

6. Which of the following statements describes the movement of the ribs and diaphragm during inspiration?

A. The ribs move up and out, the diaphragm moves down
B. The ribs move up and in, the diaphragm moves down
C. The ribs move up and out, the diaphragm moves up
D. The ribs move down and out, the diaphragm moves down

Answer: .........................

(Total 1 mark)
7. Which of the following occurs as a **short-term immediate** effect of exercise?

A. An increase in heart rate  
B. A drop in resting heart rate  
C. An increase in the speed of recovery  
D. An increase in muscle mass

Answer: ...........................

(Total 1 mark)

8. An isotonic muscle contraction is:

A. Muscle contraction, but no visible movement  
B. No muscle contraction and no visible movement  
C. Muscle contraction with visible movement  
D. A constant state of tension in the muscle

Answer: ...........................

(Total 1 mark)

9. Which of the following equations describes the process of aerobic respiration?

A. Glucose + oxygen + carbon dioxide $\rightarrow$ energy + water  
B. Glucose + carbon dioxide $\rightarrow$ energy + oxygen + water  
C. Glucose + oxygen $\rightarrow$ carbon dioxide + water + energy  
D. Glucose + water + carbon dioxide $\rightarrow$ energy + oxygen

Answer: ...........................

(Total 1 mark)
10. A verruca is:
   A. A flat wart that grows on the soles of the feet
   B. A fungus that grows on the feet
   C. A pad of hard skin that forms on the toes and soles of feet
   D. An inflamed bursa

Answer: .................................................................
(Total 1 mark)

TOTAL FOR PART 1: 10 Marks

PART II
Answer all questions

11. Ossification is the process through which bone is developed.
   (a) What are the limbs of the skeleton made of before they become bone?

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

(b) Why is calcium important in the development of bone?

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

(c) What is the Epiphysis?

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

(d) (i) Apart from length, how else might a bone increase in size?

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

(ii) Why is this type of growth important?

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

(Total 5 marks)
Figure 1 is a diagram of the bones in the shoulder joint.

Figure 2 is a diagram of the bones in the knee joint.

(a) State the anatomical name for the bones labelled:

A. .................................................................................................................................

B. .................................................................................................................................

C. .................................................................................................................................

D. .................................................................................................................................

E. ................................................................................................................................. (5)

(b) Name the type of synovial joint at the shoulder. .......................................................... (1)

(c) State the ranges of movement possible at the shoulder.

(i) ................................................................. and .................................................................

(ii) ................................................................. and .................................................................

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

(d) Suggest why the movement possibilities at the knee are different from those at the shoulder.

........................................................................................................................................ (1)
(e) (i) Choose a movement that occurs at the knee and describe it.

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

(ii) From a sport of your choice, give a specific example when this type of movement would be seen.

Sport: ..........................................................................................................................................

Example: ..................................................................................................................................

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

(Total 12 marks)

13. The human skeleton has several functions. In the table below, list three functions of the skeleton, other than support, and explain how the bones of the vertebral column fulfil these functions.

<table>
<thead>
<tr>
<th>Function of the Skeleton</th>
<th>Example using the Vertebral Column</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example – Support</td>
<td>Sacral vertebrae support body weight</td>
</tr>
</tbody>
</table>

(i) 

(ii) 

(iii) 

(Total 6 marks)
14. Complete the table below by stating **three** components of a synovial joint, other than bone, and explain the purpose of each.

<table>
<thead>
<tr>
<th>Component</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example: Bone</strong></td>
<td>Forms joint to allow movement/muscle attachment</td>
</tr>
<tr>
<td>(i)</td>
<td></td>
</tr>
<tr>
<td>(ii)</td>
<td></td>
</tr>
<tr>
<td>(iii)</td>
<td></td>
</tr>
</tbody>
</table>

(Total 6 marks)
15. Muscles can be classified as either voluntary, involuntary or cardiac.

(a) State the difference between voluntary and involuntary muscle.

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

(b) State one similarity and one difference between voluntary and cardiac muscle.

(i) Similarity: ...........................................................................................................
........................................................................................................................(2)

(ii) Difference: .....................................................................................................
........................................................................................................................(2)

(Total 3 marks)
16. Figure 3 is a diagram of the human muscular system from the front and the back.

(a) In the table below name the muscles labelled and state the main function for each.

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Function of the muscle</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
</tr>
</tbody>
</table>

(10)
(b) For each of the muscles A to E (shown in Figure 3) select the **most** appropriate action from the box below to show its use in sport. Each action may only be used once.

<table>
<thead>
<tr>
<th>Action/Action number</th>
<th>Muscle</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Arm action when preparing to start a cartwheel</td>
<td>A</td>
</tr>
<tr>
<td>(2) Extending the arm into the water during the front crawl action</td>
<td>B</td>
</tr>
<tr>
<td>(3) The downward phase of a press up</td>
<td>C</td>
</tr>
<tr>
<td>(4) The follow through after kicking a ball</td>
<td>D</td>
</tr>
<tr>
<td>(5) The upward phase of a press up</td>
<td>E</td>
</tr>
<tr>
<td>(6) Taking the leg back at the hip in preparation to kick a ball</td>
<td></td>
</tr>
<tr>
<td>(7) A pike in trampolining</td>
<td></td>
</tr>
<tr>
<td>(8) Legs bent in preparation for a sprint start</td>
<td></td>
</tr>
</tbody>
</table>

(Total 15 marks)
Figure 4 is a diagram of a vertical section of the human heart.

(a) Name the parts labelled in Figure 4 and explain their function.

<table>
<thead>
<tr>
<th>Part</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>
(b) The heart acts as a double pump in a double circulatory system. Explain these terms.

(i) Double circulatory system: .................................................................................................................................................................................. (1)

(ii) Double pump: ........................................................................................................................................................................................................... (1)

(Total 10 marks)

18. A function of the nasal passage is to filter air entering the body.

(a) How is this achieved?

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

(b) State two other functions of the nasal passage.

(i) .........................................................................................................................................................................................................................

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

(Total 3 marks)
19. (a) State two components of the respiratory system that are found inside the lungs.

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

(ii) ........................................................................................................

(b) Identify the structures used to protect the lungs.

(i) ........................................................................................................

(ii) ........................................................................................................

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

(c) What is the function of the lungs?

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

(Total 6 marks)

20. (a) State two physical, mental and social benefits of taking part in physical activity.

<table>
<thead>
<tr>
<th>Physical</th>
<th>Mental</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i)</td>
<td>(i)</td>
<td>(i)</td>
</tr>
<tr>
<td>(ii)</td>
<td>(ii)</td>
<td>(ii)</td>
</tr>
</tbody>
</table>
(b) Give one reason why a person may be physically fit but still considered to be unhealthy.

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

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

(c) Give the correct term for ‘how well a task is completed’.

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

(d) Exercise is ‘a form of physical activity done primarily to improve one’s health and physical fitness’. How might exercise improve health and fitness?

(i) Health: ........................................................................................................................................

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

(ii) Physical Fitness: ........................................................................................................................................

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

(Total 10 marks)
21. Figure 5 is a picture of a gymnast. In order to complete his routine successfully, he needs to have **muscular strength**, **muscular endurance** and **flexibility**.

![Figure 5](image)

(a) Explain the use of each of these components of fitness in relation to the gymnast shown in Figure 5.

(i) **Muscular Strength**  

(ii) **Muscular Endurance**  

(iii) **Flexibility**  

(1)
(b) Cardiovascular fitness is required by many different types of athlete.

(i) What is cardiovascular fitness?

(ii) Give an example of a sporting activity that requires a high level of cardiovascular fitness.

(iii) Why does this activity require a high level of cardiovascular fitness?

22. A high level of ability in skill-related fitness can lead to improved performance in some activities. Complete the table below:

<table>
<thead>
<tr>
<th>Skill-Related Fitness Component</th>
<th>An Activity where component is important</th>
<th>How performance is improved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: Balance</td>
<td>Gymnastics</td>
<td>Can hold static balances for an appropriate time</td>
</tr>
<tr>
<td>Speed</td>
<td></td>
<td>Quicker out of starting blocks</td>
</tr>
<tr>
<td>Weightlifting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agility</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Total 10 marks)
To improve performance, athletes often work on their fitness. In order to be effective, performers should devise a Personal Exercise Programme (PEP). Shiraz is 16, and plays sport at a good standard. The following is an extract of some of his thoughts about his PEP:

<table>
<thead>
<tr>
<th>Extract from Shiraz's Personal Exercise Programme</th>
</tr>
</thead>
</table>

At present I'm training three times a week, every week, but at first I only went once a week. I use a different method of training for each session, but I make sure that I focus on appropriate tasks for my activity. At the end of each session I plan the next one, gradually increasing the amount of work I do when I think it's getting too easy.

(a) From the extract state five Principles of Training that Shiraz applies:

(i) .................................................................

(ii) .................................................................

(iii) .................................................................

(iv) .................................................................

(v) .................................................................

(5)
(b) For each Principle of Training that you have identified, give an example from the extract to support your answer.

<table>
<thead>
<tr>
<th>Principle of Training</th>
<th>Example from Extract</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i)</td>
<td></td>
</tr>
<tr>
<td>(ii)</td>
<td></td>
</tr>
<tr>
<td>(iii)</td>
<td></td>
</tr>
<tr>
<td>(iv)</td>
<td></td>
</tr>
<tr>
<td>(v)</td>
<td></td>
</tr>
</tbody>
</table>

(c) Why does Shiraz design his own PEP rather than using the same programme as one of his friends?

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

1 mark

(Total 11 marks)
24. Fartlek, circuit, weight, and interval are all types of training methods.

(a) Briefly describe each type of training method.

Fartlek: .................................................................................................................................
.................................................................................................................................

Circuit: .................................................................................................................................
.................................................................................................................................

Weight: .................................................................................................................................
.................................................................................................................................

Interval: .................................................................................................................................
.................................................................................................................................

(4)

(b) Look at the following list of sporting performers.

<table>
<thead>
<tr>
<th>Hockey player</th>
<th>Football midfielder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tennis player</td>
<td>Competitive swimmer</td>
</tr>
<tr>
<td>Shot putter</td>
<td>Rower</td>
</tr>
<tr>
<td>Sprinter</td>
<td>Netball shooter</td>
</tr>
</tbody>
</table>

Complete the following table by selecting the most appropriate performer from the table above for each type of training. Each performer may only be used once.

<table>
<thead>
<tr>
<th>Type of Training</th>
<th>Sports Performer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fartlek</td>
<td></td>
</tr>
<tr>
<td>Circuit</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td></td>
</tr>
<tr>
<td>Interval</td>
<td></td>
</tr>
</tbody>
</table>

(4)
(c) Explain why the training method is of value to the sports performer that you have chosen.

<table>
<thead>
<tr>
<th>Type of Training</th>
<th>Value of training method to sporting activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fartlek</td>
<td></td>
</tr>
<tr>
<td>Circuit</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td></td>
</tr>
<tr>
<td>Interval</td>
<td></td>
</tr>
</tbody>
</table>

(Total 12 marks)

25. (a) Give three reasons why it is important for a sports performer to consider their diet.

(i) .................................................................
(ii) ..............................................................
(iii) ..............................................................

(3)

(b) State two reasons why sports performers might require different energy intakes.

(i) ..............................................................
(ii) ..............................................................

(2)

(c) Why do sports performers need to ensure that they drink sufficient water?

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

(1)

(d) There are 7 food groups. Five food groups provide the body with essential nutrients. Water is one of the remaining two groups. What is the other?

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

(1)

(Total 7 marks)
26. Obese, overweight and overfat are terms used to describe an individual’s body composition.

(a) Which of these three conditions is likely to be the most harmful?

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

(b) Define this condition.

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

(Total 2 marks)

27. (a) Name **two** socially accepted drugs, which are legal, despite having possible health risks to those taking them.

(i) ................................................................. ..........................................................

(ii) ................................................................. ..........................................................

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

(b) State **one** of the possible health risks associated with **each** of these drugs.

(i) ................................................................. ..........................................................

(ii) ................................................................. ..........................................................

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

(c) Name **two classes** of illegal drugs, which are amongst those banned by the International Olympic Committee.

(i) ................................................................. ..........................................................

(ii) ................................................................. ..........................................................

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

(Total 6 marks)
28. Sarah has played rugby for her local club for the last two years.

(a) The risk of her being injured has been reduced by ‘balancing competition’. What does this mean?

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

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

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

(1)

(b) State three other ways that players can reduce the risk of injury.

(i) ........................................................................................................................................

(ii) ........................................................................................................................................

(iii) ........................................................................................................................................

(3)

During a rugby match Sarah scores a try, but lands awkwardly as she grounds the ball. The first aider thinks that Sarah might have fractured a bone.

(c) State three visible symptoms that might lead the first aider to think Sarah has a fracture.

(i) ........................................................................................................................................

(ii) ........................................................................................................................................

(iii) ........................................................................................................................................

(3)

(d) Due to the similarities of the symptoms, what other injury might Sarah’s fall have caused?

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

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

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

(1)

(e) If Sarah has fractured a bone what should the first aider do next?

(i) ........................................................................................................................................

(ii) ........................................................................................................................................

(2)

(Total 10 marks)

END OF PAPER