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|  | **Year 11 ATAR Human Biology**  **Task 6 – Excretory and musculoskeletal systems** |

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| **Name:** | **Teacher:** | **Date:** | **Score: /70** |

**Assessment type:** Test

**Conditions**

Time for the task: 55 minutes

**Task weighting** – 5%

Total marks 70

|  |  |  |
| --- | --- | --- |
|  | Available Marks | Your Marks |
| Multiple Choice |  |  |
| Short Answer |  |  |
| Extended Answer |  |  |
| Total |  |  |

**Section 1: Multiple-choice (10 marks)**

This section has 10 questions. Answer all questions by circling the correct answer.

1. The three major parts of the kidney from the outermost layer to the innermost layer are:
2. medulla, cortex and renal pelvis.
3. cortex, renal pelvis, and medulla.
4. medulla, renal pelvis and cortex.
5. cortex, medulla and renal pelvis.

1. Which of the following organs does not play a role in excretion?
2. The liver
3. The skin
4. The kidneys
5. The heart
6. Which of the following is the first step in urine formation?
7. Selective reabsorption
8. Glomerular filtration
9. Secretion
10. Excretion
11. Reabsorption of ions, such as chlorine, in the nephron does not occur in the:
12. proximal convoluted tubule.
13. renal corpuscle
14. distal convolute tubule.
15. collecting duct.
16. Which of the following is an activity of the collecting duct of the nephron?
17. Filtration of blood
18. Formation of filtrate
19. Active reabsorption of water
20. Reabsorption of sodium ions
21. Whilst running, the gluteus maximus and hamstrings work together to help perform a movement. What name is given to such a pair of muscles?
22. Antagonistic
23. Agonistic
24. Origins
25. Synergistic

Use the diagram of the ballerina below to answer Question 4.



1. The movement of the hip joint allowing the ballerina to lift her leg is best described as:
2. flexion.
3. abduction.
4. adduction.
5. extension.

1. The cartilage in the nose that provides form and support is best described as being:
2. hyaline cartilage.
3. fibrocartilage.
4. elastic cartilage.
5. smooth cartilage.
6. A specific type of muscle will exhibit all of the following characteristics. Choose the best response.
7. Have properties of contractibility, extensibility and elasticity.
8. Bring about movement of joints.
9. Gives the body its form and contours.
10. Allow the body to maintain posture.

The specific type of muscle that exhibits all of the characteristics from above is known as

1. Smooth muscle
2. Voluntary muscle
3. Skeletal muscle
4. Cardiac muscle
5. Which of the following statements is incorrect about synovial fluid? It:
6. contains phagocytic cells that remove micro-organisms and any debris.
7. may decrease in volume when a joint is traumatised or injured.
8. lubricates the joint and provides nourishment for the cells of the articular cartilage.
9. forms a thin film over surfaces within the capsule.

**End of Section 1 – See below for Section 2**

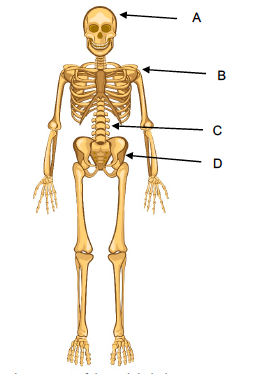
**Section 2: Short answer (45 marks)**

This section has three questions. Answer all questions. Write your answers in the spaces provided.

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**Question 11 (14 marks)**

The skeletal system of the human body is shown in the diagram below.



1. Identify the letter(s) that make up part of the axial skeleton.

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(1 mark)

1. The femur is an example of a long bone. Draw a cross section diagram through a long bone and identify the compact bone, spongy bone and epiphysis.

(3 marks)

1. There are two types of bone marrow in a long bone: red and yellow.

How do they differ in function? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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(2 marks)

1. Outline how two named features of the hip joint help prevent injury and allow for stability when moving.

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(4 marks)

A 60-year old patient is exhibiting signs of hip pain, decreased range of motion, and a popping feeling when walking.

1. State the degenerative disease most likely attributed to this pain.

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(1 mark)

1. Suggest a management plan the doctor may assign to help assist the patient.

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(3 marks)

**Question 12 (18 marks)**

The diagram below represents the urinary system of the human body.



Y

Z

1. Identify the following labelled structures stating a function for each.

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Z \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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(4 marks)

1. Describe the processes that occur during excretion in the kidneys.

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(6 marks)

1. Explain how the structure of the nephron relates to its function to excrete wastes.

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(4 marks)

Urea is a metabolic waste that is excreted primarily from the kidneys.

1. Describe the formation of urea in the body and state an organ besides the kidney hat excretes this metabolic waste.

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(4 marks)

**Question 13 (13 marks)**

A sport science student wanted to investigate if there was a difference in percentage of fast and slow twitch fibers of highly skilled marathon runners compared to non-athletic individuals. His sample size of individuals tested at each level was 100. He used a muscle fibre composition test to obtain his data.

The results of his investigation are in the table below.

Table 1: Average muscle fibre composition for non-athletic and endurance athletes

|  |  |  |
| --- | --- | --- |
| **Athletic level** | **Average amount of fibres (%)**  **Fast twitch**  **Slow twitch** | |
| Non-athletic | 50 | 50 |
| Endurance athlete | 30 | 70 |

1. Propose a suitable hypothesis for this investigation.

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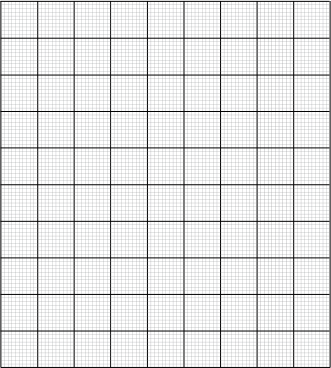
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(1 mark)

1. Identify:
   1. the independent variable – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. the dependent variable – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. two controlled variables – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(4 marks)

1. Draw a graph of the results in the space provided below.



(5 marks)

1. Propose a suitable conclusion for this investigation.

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(3 marks)

**End of Section 2 – Turn over for Section 3**

**Section 3: Extended answer (15 marks)**

This section has one question. Write your answers in the spaces provided.

**Question 14**

The human body is composed of tissues, which are groups of cells that perform specific functions.

1. Identify and compare the types of tissues that make up the muscular system.

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(8 marks)

Muscle tissue consists of elongated cells called muscle fibers. This tissue is responsible for movement through muscle contraction.

1. Draw an annotated diagram of the sliding filament model and explain how muscle contraction takes place using this model.

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(7 marks)

**END OF TEST**