STUDENT NAME: ____________________________________________________________

YEAR 9 SEMESTER 2 2019 – EXAMINATION

Multiple Choice Answer Sheet

Circle the letter indicating the best answer.

<p>| | | | |</p>
<table>
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YEAR 9 SCIENCE EXAMINATION
Semester 2, 2019
WRITTEN QUESTION AND ANSWER BOOKLET

STUDENT NAME:

TEACHER NAME:

DATE:

Mark Allocations:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Section</th>
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<tr>
<td>Biological Science</td>
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<td>Short Answer questions</td>
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<tr>
<td>Earth and Space Science</td>
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<td>/30</td>
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</tbody>
</table>

TIME ALLOWED FOR THIS PAPER:
Reading time before commencing work: 10 minutes
Working time for this paper: 1 hour 50 minutes

MATERIAL REQUIRED / RECOMMENDED FOR THIS PAPER:
To be provided by the supervisor:
- This question and answer booklets

To be provided by the candidate:
- Pens, pencils, ruler, eraser

IMPORTANT NOTE TO CANDIDATES
No other items may be taken into the examination room.
It is your responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor BEFORE reading any further. All iPads and mobile phones must be turned off and in your bag along with any other devices and notes. Bags are to be closed and placed under the desk.
INSTRUCTION TO CANDIDATES:

1. **Read** through the paper to familiarise yourself with all of the questions.
2. Use a **blue or black** ballpoint / ink pen for the written answers. Use pencil for drawing the graphs.
3. **Write** your answers in this booklet.
4. Should you require more space than you have been given please use the **spare sheet** (at the back of this booklet) and ensure that you include your name and the question / statement to which you are responding.

AT THE END OF THE EXAMINATION:

- Any planning sheets or other pieces of paper **MUST** be handed in with this booklet.
- At the end of the examination make sure that your name is on your booklet and any other pieces of paper used.

Instructions to candidates

1. Sitting this examination implies that you agree to abide by the examination rules set down by Kinross College.
2. Answer the questions in the space provided.
3. You must be careful to confine your responses to the specific questions asked and to follow any instructions that are specific to a particular question.
4. A spare page is included at the end of this booklet. It can be used for planning your responses and/or as additional space if required to continue an answer.
   (a) Planning: If you use the spare page for planning, indicate this clearly at the top of the page. If you choose to use lined paper for planning, ensure your name and the title is clearly printed.
   (b) Continuing an answer: If you need to use the space to continue an answer give the page number. Fill in the number of the question (s) that you are continuing to answer at the top of the page.
5. This examination contributes towards your report. If you have any questions, please ask them during the ten-minute reading time.
   Manage your time wisely. Always provide substantiation (evidence). Make sure that what you have written makes sense.

**Note:** Do not turn the page until you are asked to do so.
1. The respiratory and circulatory system work together to
   a. Fight disease
   b. Exchange gases
   c. Deliver nutrients to cells
   d. Respond to stimuli

2. The order of decreasing complexity is
   a. Cells → tissues → organs → systems
   b. Tissues → organs → cells → systems
   c. Cells → systems → tissues → organs
   d. Systems → organs → tissues → cells

3. Pathogens are microbes that
   a. Aid digestion
   b. Cure disease
   c. Cause disease
   d. Photosynthesize

4. Nerves impulses are:
   a. fast
   b. direct
   c. electrical
   d. all of the above

5. The glands found next to the kidneys are the
   a. pituitary
   b. thyroid
   c. testes
   d. adrenal

6. The circulatory system consists of the:
   a. Heart, lungs and muscles
   b. Kidneys, blood and urine
   c. Heart, blood and blood vessels
   d. Brain, blood vessels and nerves

7. The job of the excretory system is to remove waste and:
   a. Control blood sugar levels
   b. Control body water levels
   c. Control body temperature
   d. Control muscular actions

8. Food chains always start with a
   a. Primary consumer
   b. producer
   c. secondary consumer
   d. decomposer

9. A tapeworm living in your gut is an example of
   a. parasitism
   b. mutualism
   c. commensalism
   d. predation

10. Which of the following is an abiotic factor?
    a. Amount of food
    b. Number of predators
    c. Amount of water
    d. Available breeding partners

11. The energy for life on Earth all comes from
    a. Water
    b. Coal
    c. Food
    d. The Sun

12. Respiration is
    a. breathing
    b. a chemical reaction that traps energy
    c. a chemical reaction that releases energy
    d. not necessary for life
13. An example of an introduced species to Australia is
a. Kangaroo
b. Echidna
c. Salt water crocodile
d. Rabbit

14. Organisms like bacteria and fungi that break down dead matter into simple compounds are called:
   a. Herbivores
   b. Producers
   c. Decomposers
d. Secondary consumers

15. Photosynthesis is a reaction that:
   a. Releases carbon dioxide
   b. Turns carbon dioxide into sugar
c. Gives out energy
d. Takes in oxygen

16. Which of these concepts is part of the theory of plate tectonics?
   a. Continents are fixed and don’t move
   b. A great flood shaped The Earth’s surface
c. Continents are in slow constant motion
d. None of the above

17. Which of The Earth’s layers is broken into several tectonic plates?
   a. Crust
   b. Mantle
c. Outer core
d. Inner core

18. Which scientist is credited with proposing the theory of plate tectonics?
   a. Charles Darwin
   b. Albert Einstein
c. Isaac Newton
d. Alfred Wegener

19. What type of crust is found on the sea floor?
   a. Sea floor crust
   b. Oceanic crust
c. Continental crust
d. Geological crust

20. Which of these statements is correct?
    a. There is no difference between oceanic and geological crust
    b. Continental crust lies under the oceans
c. Oceanic crust is denser than continental crust
d. Sea floor crust and continental crust have the same thickness

21. The Earth’s land was once joined up in one supercontinent called:
   a. Europa
   b. Jurassica
c. Pangaea
d. Americana

22. What is happening at a subduction zone?
   a. Plates are sliding past each other
   b. Plates are spreading apart
c. One plate is sliding underneath another
d. None of the above

23. Which of the following can happen at a transform boundary?
   a. Earthquake
   b. Mountain formation
c. Volcanic eruption
d. Rift valley formation
24. At mid-ocean ridges plates are:
   a. Colliding
   b. Sliding past each other
   c. Spreading apart
   d. None of the above

25. The three types of plate boundary are:
   a. Convergent, divergent, transverse
   b. Convergent, digressive, transform
   c. Concave, divergent, transform
   d. Convergent, divergent, transform

26. The slipping, sliding and colliding of tectonic plates cause
   a. Volcanoes
   b. Earthquakes
   c. Tsunamis
   d. All of the above

27. The movement of the Earth’s tectonic plates is driven by
   a. Conduction zones
   b. Convection currents
   c. Convergence plates
   d. Collision boundaries

28. Harry Hess discovered some evidence for continental drift. He called it:
   a. Seafloor spreading
   b. Plate tectonics
   c. Ocean drift
   d. Subduction

29. As you travel deeper into the Earth...
   a. the temperature increases and the density decreases
   b. the temperature increases and the density increases
   c. the temperature decreases and the density decreases
   d. the temperature decreases and the density increases

30. Millions of year in the future, what is likely to happen to Earth’s continents?
   a. They will have spread really far apart
   b. They will have sunk
   c. They will have all joined back together
   d. They will be the same as they are today

End of Multiple choice questions
1. Complete the table by matching the words below with their definitions:

   mutualism; habitat; pathogen; myelin sheath; hormone; dendrite; community; population; reflex; decomposer

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutualism</td>
<td>Relationship between two organisms where both benefit</td>
</tr>
<tr>
<td>Habitat</td>
<td>Place where organisms live</td>
</tr>
<tr>
<td>Pathogen</td>
<td>Anything that causes disease</td>
</tr>
<tr>
<td>Myelin sheath</td>
<td>Fatty layer that covers the axon</td>
</tr>
<tr>
<td>Hormone</td>
<td>Chemical messenger that travels through bloodstream</td>
</tr>
<tr>
<td>Dendrite</td>
<td>Part of nerve cell that receives messages and sends them to the cell body</td>
</tr>
<tr>
<td>Community</td>
<td>A group of the same species living in the same place</td>
</tr>
<tr>
<td>Population</td>
<td>Different populations living in the same place</td>
</tr>
<tr>
<td>Reflex</td>
<td>Involuntary movement</td>
</tr>
<tr>
<td>Decomposer</td>
<td>Organism that breaks down dead organisms to gain nutrients</td>
</tr>
</tbody>
</table>

2. The immune system needs to work with the circulatory system in order to do its job.

   Describe how the circulatory system helps the immune system to do its job

   _______________________________________________________________________
   _______________________________________________________________________
   _______________________________________________________________________
   _______________________________________________________________________

   (4 marks)
3. Ecosystems contain biotic and abiotic factors.

   Name 3 biotic and 3 abiotic factors you might find in an ocean ecosystem

   i) Biotic

   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

   (3 marks)

   i) Abiotic

   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

   (3 marks)

4. A middle distance runner is standing still waiting for their race to start. When the starting gun goes, they start running. **Describe and explain** the response of their **circulatory system** to the change from standing still to running.

   a. Response of circulatory system:

   ____________________________________________________________
   ____________________________________________________________

   (2 marks)

   b. Reasons for response:

   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

   (3 marks)
5. Scientists studied the following ecosystem over a number of years:

![Ecosystem Diagram]

The scientists used the capture/recapture technique – where \( \frac{N_1 \times N_2}{M_2} \) estimates the number of individuals in a population - to estimate the number of frill-necked lizards living in the area. Their results for Year 1 and Year 5 of their study are shown in the table below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Lizards captured on night 1 ((N_1))</th>
<th>Lizards captured on night 2 ((N_2))</th>
<th>Number of marked lizards on night 2 ((M_2))</th>
</tr>
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<tr>
<td>1</td>
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<td>35</td>
<td>10</td>
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</table>

a. Calculate the estimated population of lizards for years 1 and 5

Year 1: \( \frac{30 \times 35}{10} \) = \( \frac{1050}{10} \) = \( 105 \)

Year 5: \( \frac{35 \times 30}{15} \) = \( \frac{1050}{15} \) = \( 70 \) (2 marks)

b. Predict and explain what would happen to the numbers of grasshoppers, kookaburras and wombats over the same period of time:

Grasshoppers: numbers would \( \)_________________________\( \)_________________________\( \)
Because - \( \)___________________________________________________________________\( \)

Kookaburras: numbers would \( \)_________________________\( \)_________________________\( \)
Because - \( \)___________________________________________________________________\( \)

Wombats: numbers would \( \)_________________________\( \)_________________________\( \)
Because - \( \)___________________________________________________________________\( \) (3 marks)
6. Many top level athletes spend time training at high altitudes. Describe and explain the body’s response to high altitude training and explain why it improves athletic performance.

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(6 marks)

7. Shorehaven is a coastal area just north of Kinross. Wildlife in the area includes kangaroos, snakes, parrots, mice and rats living in the bushland behind the sand dunes, while on the beach and in the shallow water live crabs, shrimps and small fish. Offshore whales and dolphins swim. There are plans for a housing estate to be built in the bushland between the sand dunes and Marmion Avenue.

Identify, either from the examples above, or from your own knowledge, one species whose population is likely to **decrease** and one species whose population is likely to **increase**. Give **2 reasons** to explain each choice.

**Decrease:**

**Reasons:**

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

**Increase:**

**Reasons:**

___________________________________________________________________________
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(4 marks)
Earth and Space Science Short Answer Questions

8. Complete the table by matching the words below with their definitions:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continental shelf</td>
<td>the centre of the Earth</td>
</tr>
<tr>
<td>Ocean trench</td>
<td>a series of large waves that result from an underwater earthquake</td>
</tr>
<tr>
<td>Mantle</td>
<td>molten rock found beneath the Earth’s surface</td>
</tr>
<tr>
<td>Magma</td>
<td>the wide layer of molten rock located beneath the Earth’s crust</td>
</tr>
<tr>
<td>Lava</td>
<td>underwater cliffs between the beach and the ocean</td>
</tr>
<tr>
<td>Tsunami</td>
<td>a deep valley that forms as a result of tectonic plates moving apart on land</td>
</tr>
<tr>
<td>Core</td>
<td>he outer layer of the Earth</td>
</tr>
<tr>
<td>Fault</td>
<td>a deep ditch under the ocean along a tectonic plate boundary</td>
</tr>
<tr>
<td>Crust</td>
<td>a fracture in rock where the tectonic plates have moved</td>
</tr>
<tr>
<td>Rift Valley</td>
<td>molten rock on top of the Earth’s surface</td>
</tr>
</tbody>
</table>
9. The map below shows the arrangement of the continents as they appear today. Describe how a map of the world from 400 million years ago would have looked and explain why it has changed.

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(5 marks)
10. The Venn diagram below compares and contrasts the typical features of Oceanic crust and Continental crust:

At a plate boundary between oceanic and continental crust, the continental crust always moves up on top of the oceanic crust, with the oceanic crust being pushed back down into the mantle.

a. Which of the characteristics in the diagram – density, colour, thickness or age – is the reason for oceanic crust always being pushed underneath continental crust?

___________________________________________________________________________ (1 mark)

b. Explain your answer to part a.

___________________________________________________________________________
___________________________________________________________________________ (2 marks)

c. This type of collision boundary produces a feature known as a **subduction zone**. Identify 1 typical feature of a subduction zone and explain how that feature is formed:

**Feature:**

___________________________________________________________________________ (1 mark)

**Formed because:**

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________ (1 marks)
11. Below is a diagram of the Mid-Atlantic Ridge:

d. Mark on the diagram 2 arrows showing the direction of movement of the plates – label them “a”  
   (1 mark)

e. Mark on the diagram arrows showing the movement of magma in the mantle due to convection currents – label them “b”  
   (2 mark)

f. The Mid-Atlantic Ridge provides an example of seafloor spreading. With reference to the direction of plate movement and convection currents, describe, in detail, what is happening during seafloor spreading and what type of plate boundary this is.

_______________________________________________________________________________

_______________________________________________________________________________

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(5 marks)
12. The summit of Mount Everest is the highest point on Earth. It has been formed at a plate boundary. Describe, **in detail**, the processes involved in the formation of Mount Everest and explain why, excluding other factors such as weather and equipment, it should get harder to climb as time goes on. Give some indication of the speed at which these processes are happening.

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(8 marks)

13. If we could heat the mantle, just below the crust, to the same temperature as the mantle just above the core, we could possibly prevent earthquakes. Explain why:

_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
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_______________________________________________________________________________

_______________________________________________________________________________

(4 marks)

...END OF EXAM...