PART A

STUDENT NAME:

TEACHER NAME:

DATE:

USE SEPARATE ANSWER GRID FOR MULTI-CHOICE

TIME ALLOWED FOR THIS EXAM: (Part A and Part B - combined)

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 booklet

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

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 paper, Part A and Part B, to familiarise yourself with all the questions.
2. Use a blue or black ballpoint / ink pen for written answers. Use pencil for drawing the graph.
3. Write your answers in the booklets.
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.
Name: ____________________

Yr 8 Science Exam Multiple Choice Answer Sheet

USE THIS ANSWER SHEET (QUESTIONS NEXT PAGE)

Circle the letter indicating the best answer.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
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MULTI-CHOICE – PART A
CHOOSE THE LETTER WHICH BEST FITS THE STATEMENT OR QUESTION:
(USE THE ANSWER SHEET BEFORE THIS PAGE)

EARTH SCIENCE & TOOLKIT  (20 marks)

1. Which one of the following is not safe behaviour in a science laboratory?
   a. Wearing a lab coat when using chemicals
   b. Wearing closed-toe shoes at all times in a laboratory
   c. Wearing long hair out when using Bunsen burners
   d. Wearing safety glasses when heating substances

2. a. 10 out of 15 seeds in the 10ml group sprouted on day 4
   b. To determine the relationship between the volume of water per day and the number of days for the bean seeds to sprout.
   c. Water each group of seeds with 2ml, 5ml, 10ml and 15ml of water each day at 9.00a.m
   d. The more water used each day, the quicker the seeds sprouted.

You are conducting a simple experiment to determine the optimal amount of water required each day for bean plants to sprout from seed.

3. The independent variable of the experiment above is:
   a. the type of seeds used
   b. the amount of water used each day.
   c. the time taken for the seeds to sprout
   d. the time of day the seeds are watered.

4. A variable that should be controlled in the above experiment is:
   a. the amount and intensity of light received by each plant
   b. the time taken for the seeds to sprout
   c. the amount of water used each day
   d. what the experimenter has for lunch

Graphs can be used to show the relationship between two variables in an experiment.

5. The graph shows:
   a. that as the dependent variable increases, so does the independent variable.
   b. that the dependent variable is not affected by the independent variable.
   c. an inversely proportional relationship between the variables
   d. the independent variable on the vertical axis and the dependent variable on the horizontal axis.
6. The Rock Cycle can explain:
   a. How a sedimentary rock can become metamorphic
   b. How a metamorphic rock can become sedimentary
   c. How all rocks can become igneous
   d. All of the above.

7. Which of the following is an igneous rock?
   a. Pumice
   b. Diamond
   c. Limestone
   d. Marble

8. Which of the following is a sedimentary rock?
   a. Pumice
   b. Diamond
   c. Limestone
   d. Marble

9. Where are the oldest layers of rock usually found in a cliff made from sedimentary rock?
   a. At the top
   b. In the middle
   c. At the bottom
   d. At the bottom and in the middle

10. Which type of rock often contains fossils
    a. Sedimentary
    b. Igneous
    c. Metamorphic
    d. All of them will contain fossils

11. The first type of rock to form in the Earth’s crust was most likely:
    a. sedimentary
    b. metamorphic
    c. igneous
    d. clastic sedimentary.

12. Rock that forms from the cooling of magma or lava:
    a. metamorphic rock
    b. igneous rock
    c. sedimentary rock
    d. volcanic rock

13. What two factors does a metamorphic rock need to form?
    a. Weathering and erosion
    b. Heat and pressure
    c. Cooling and solidification
    d. Crystallisation and evaporation

14. The two most common processes that change a pile of sediment into a sedimentary rock are:
    a. compaction and cementation
    b. weathering and erosion
    c. deposition and sedimentation
    d. cooling and crystallisation

15. The destruction of rocks by front shattering is an example of:
    a. chemical weathering
    b. erosion
    c. biological weathering
    d. physical weathering
16. When a material cools down, its particles
   a. Vibrate slower and make it contract
   b. Vibrate faster and make it expand
   c. Vibrate slower and make it expand
   d. Vibrate faster and make it contract

17. My particles are lined up in a regular repeating pattern and cannot change position. I am a:
   a. Plasma
   b. Gas
   c. Liquid
   d. Solid

18. Sublimation is the name given to the change from:
   a. Solid to liquid
   b. Liquid to gas
   c. Liquid to solid
   d. Solid to gas

19. Which of the following is a physical change?
   a. Methane burning in air
   b. Magnesium fizzing in hydrochloric acid
   c. Salt dissolving in water
   d. Glucose releasing energy in respiration

20. Water contains 2 hydrogen atoms bonded on to 1 oxygen atom. Water is:
   a. An element
   b. A compound
   c. A mixture
   d. None of the above

21. If a perfume bottle is opened at the front of the classroom, eventually people at the back of the room can smell it. This is due to:
   a. Dissolution
   b. Deflection
   c. Diffusion
   d. Distraction

22. What is a reactant?
   a. A substance created by a chemical reaction
   b. A person who controls a chemical reaction
   c. A substance you start with before a chemical reaction
   d. A chemical change

23. What is the periodic table?
   a. A table showing all of the elements
   b. A list of molecules
   c. A table of gases
   d. A table showing all of the solids

24. When the bathroom mirror steams up it is an example of:
   a. Melting
   b. Boiling
   c. Condensing
   d. Freezing
25. If a material can be compressed, it means it can:
   a. Change its shape
   b. Be squeezed into a smaller space
   c. Be poured through a tube
   d. Be heated to a very high temperature

26. The burning of methane can be written by the chemical reaction
   \( \text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O} \)

   The products of this reaction are:
   a. \( \text{CH}_4 + 2\text{O}_2 \)
   b. \( 2\text{O}_2 + 2\text{H}_2\text{O} \)
   c. \( \text{CH}_4 + \text{CO}_2 \)
   d. \( \text{CO}_2 + 2\text{H}_2\text{O} \)

27. The chemical properties of a substance are:
   a. what it looks like
   b. how it smells
   c. what it does in a chemical reaction
   d. how it feels

28. Which of the following is a chemical property of matter?
   a. permanent colour change
   b. Viscosity
   c. Density
   d. Boiling point

29. A molecule is:
   a. Groups of two or more atoms bonded together
   b. Two or more of the same atoms bonded together
   c. Two or more different types of atoms bonded together
   d. All of the above

30. The size of the particles of a substance affects the rate of a reaction. If the particles are smaller the reaction rate will:
   a. decrease
   b. increase
   c. stop
   d. not change

END OF MULTIPLE-CHOICE – PART A
CONTINUE ONTO SHORT ANSWERS PART B
SHORT ANSWERS - PART B (60 marks):

Earth & Beyond + Toolkit  (30 marks)

1. Complete the missing labels 1, 2, 3 and 4, on the diagram below showing the rock cycle. using the following terms 

cooling, melting, weathering & erosion, metamorphic rocks 

(4 marks) 

... 

2. Name and describe a method that a palaeontologist can use to estimate the age of a fossil. 

(2 marks) 

Name of method: 

Description: 

3a) Identify two methods (tests) that can be used to identify and differentiate the minerals in a sample of rock. 

(2 marks) 

1) 

2) 

3b) Define weathering 

(1 mark) 

_________________________________________________________________

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_______________________________________________________________
1) Describe weathering by temperature change (1 mark)

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

2) Name an example of a biological rock and explain what it was made from. (2 marks)

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

3) Contrast erosion and weathering. (How are they different?) (1 mark)

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

You have been asked to select a building material for a new construction and have narrowed the choice down to three minerals. Your final decision will be based on which of the minerals is the hardest.

4) Describe how you would test the minerals to put them in order of hardness, without looking them up on the Mohs scale. (3 marks)

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5. Compare and contrast intrusive igneous rocks and extrusive igneous rocks using the Venn diagram below: (4 marks)
Questions 6 and 7 relate to the graph shown.

6. Describe, using as much information as possible, the independent variable in the experiment, from the information in the graph. (2 marks)

__________________________________________________________________________________

7. From the graph, at what time was the temperature 50°C? ___________ (1 mark)

USE THE ANSWER SHEET (NEXT PAGE)

8. A student reacted two chemicals together and recorded the temperature of the reaction for 8 minutes. (Shown in Figure 8.1 below)

<table>
<thead>
<tr>
<th>TIME (MINS)</th>
<th>TEMPERATURE (ºC)</th>
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<tbody>
<tr>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>1</td>
<td>30</td>
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<tr>
<td>2</td>
<td>40</td>
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<td>7</td>
<td>69</td>
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<td>8</td>
<td>70</td>
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</tbody>
</table>

Figure 8.1

Create a line graph of the set of data that was obtained. (5 marks)

Include: title, label, units, scale
CHEMISTRY (30 marks)

9. States of matter differ in several ways.

Using the diagram above, describe the difference in:

a) the speed of the particles:
___________________________________________________________________________
___________________________________________________________________________
______________________________________________________________________________
(3 marks)

b) how the particles fill a container
___________________________________________________________________________
___________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
(3 marks)

10a. What are physical properties of matter?
______________________________________________________________________________
(1 mark)

10b. List 2 examples of physical properties:
______________________________________________________________________________
______________________________________________________________________________
(1 mark)

11. The diagrams below represent the arrangement of particles in four different gases. In the space below, correctly identify each one as an element, a compound or a mixture. (Use one label twice)

A       B       C       D

_________________________  ______________      ______________  ______________
(2 marks)
12 Alice and Joanne placed a piece of metal in a test tube of liquid and made 5 observations about the reaction they witnessed, which they recorded in the table below:

<table>
<thead>
<tr>
<th>Observations</th>
<th>Results</th>
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</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>Start: 23C, Finish: 45C</td>
</tr>
<tr>
<td>Colour</td>
<td>Start: Colourless, Finish: Colourless</td>
</tr>
<tr>
<td>Liquid</td>
<td>Start: Clear, Finish: Clear</td>
</tr>
<tr>
<td>Piece of metal</td>
<td>Start: Can be seen, Finish: Can’t be seen</td>
</tr>
<tr>
<td>Air above test tube</td>
<td>Start: No smell, Finish: Strong smell</td>
</tr>
</tbody>
</table>

a. Did Alice and Joanne observe a physical reaction or a chemical reaction?
   ____________________________________________________________ (1 mark)

b. Which two observations in the table support your answer to part a? Explain why.
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________ (4 marks)

13a. How does particle size affect the rate of a chemical reaction? (1 mark)

13b. How does temperature increase the rate of a chemical reaction? (1 mark)

14. Complete the table below by describing the changes as either physical or chemical

<table>
<thead>
<tr>
<th>Change</th>
<th>Physical or chemical</th>
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<tbody>
<tr>
<td>Burning a piece of wood</td>
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<td>Ice melting</td>
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</tbody>
</table>

(1 mark)

15. Write word equations for each of the following reactions:

a. Hydrogen reacts with oxygen to produce water.
   ____________________________________________________________ (2 marks)

b. Methane reacts with oxygen to produce carbon dioxide and water
   ____________________________________________________________ (2 marks)
16. The railway track in the photograph twisted and buckled on a hot summer day

The tracks expanded in the heat.

a. What does expanded mean?

________________________________________________________ (1 mark)

b. Explain, by referring to the speed of vibration of particles, why materials expand when they are heated.

________________________________________________________

________________________________________________________ (3 marks)

17. Dennis and Zoe were investigating the reaction between hydrochloric acid (HCl) and magnesium (Mg). This reaction produces magnesium chloride (MgCl₂) and hydrogen (H₂).

They wanted to see what effect changing the concentration of acid had on the rate of the reaction. They measured the rate of reaction by timing how long it took to collect 10mls of hydrogen. Their results are in the table:

<table>
<thead>
<tr>
<th>Acid Concentration (M)</th>
<th>Time to collect H₂ (s)</th>
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<td>0.1</td>
<td>77</td>
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<td>0.5</td>
<td>15</td>
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<td>1.0</td>
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<td>2.0</td>
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<td>4.0</td>
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</table>
18. What was the independent variable in this investigation?

______________________________________________________________________ (1 mark)

a. What was the dependent variable in this investigation?

______________________________________________________________________ (1 mark)

b. Suggest 2 things Dennis and Zoe would need to keep the same to ensure that this was a fair test

______________________________________________________________________

______________________________________________________________________ (1 mark)

c. What should Dennis and Zoe have done to get more reliable results?

______________________________________________________________________ (1 mark)