



GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

JUNE 2022

GRADE 6

NATURAL SCIENCES AND TECHNOLOGY

TIME: 1½ hours

MARKS: 60

12 pages

DISTRICT:				
SCHOOL NAME:				
NAME AND SURNAME:				
CLASS (e.g. 6A):	BOY		GIRL	

SECTIONS	A					B	C	TOTAL
Questions	1	2	3	4	5	6 & 7	8 & 9	
Mark Allocation	5	5	5	5	10	21	9	60
Learner's Marks								

INSTRUCTIONS

1. Answer ALL the questions on this paper.
2. Read the instructions of each question carefully before answering.
3. Write neatly and legibly.

STRANDS

NATURAL SCIENCES	MATTER AND MATERIALS
TECHNOLOGY	SYSTEMS AND CONTROL

The question paper consists of **SECTION A, SECTION B AND SECTION C**

SECTION A: LOW ORDER QUESTIONS/ COGNITIVE LEVEL 1	SECTION B: MIDDLE ORDER QUESTIONS/ COGNITIVE LEVEL 2, 3 & 4	SECTION C: HIGH ORDER QUESTIONS/COGNITIVE LEVEL 5 & 6
Q1: Phases of matter and mixtures	Q6: Saturated solutions; Mixtures and solutions	Q8: Rate of dissolving
Q2: Solutions as special mixtures	Q7: Rate of dissolving	Q9: Wetlands
Q3: Mixtures, Solutions as special mixtures		
Q4: State of matter, Mixtures, Rate of dissolving, Soluble and insoluble substances, Water pollution		
Q5: Solutions and Rate of Dissolving		
Total – 30	Total – 21	Total – 9

SECTION A

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

Read each question carefully. Circle the correct answer, example 1.1.6 (A).

1.1 Water vapour is an example of which state of matter?

- A Solid
- B Liquid
- C Gas
- D Liquid and gas

(1)

1.2 Which of the following characteristics does NOT represent the arrangement of a SOLID particle?

- A The particles are arranged in a regular pattern.
- B The particles are far apart.
- C Spaces between the particles are very small.
- D The particles stay in a fixed pattern.

(1)

1.3 What do we call the process of liquid water changing into ice?

- A Evaporation
- B Condensation
- C Melting
- D Freezing

(1)

1.4 Which of the following is NOT a mixture of a SOLID and a SOLID?

- A Salt and sand
- B Oil and water
- C Tea leaves and sugar
- D Peanuts and beans

(1)

1.5 Which method of separation is best to use to separate tea and tea leaves?

- A Hand sorting
- B Sieving
- C Filtering
- D Settling

(1)

[5]

QUESTION 2: MATCHING ITEMS

Match COLUMN A with COLUMN B by writing the correct letter in the answer table below.

COLUMN A		COLUMN B	
2.1	Sugar	A	The liquid in which something is dissolved
2.2	Insoluble	B	When two or more substances are combined
2.3	Solvent	C	Something that cannot dissolve
2.4	Solvent mixture	D	Soluble
2.5	Saturated	E	When a dissolved substance changes into solid crystals again
2.6	Crystallisation	F	When a solution can no longer dissolve any more solute

2.1	2.2	2.3	2.4	2.5	2.6
D					

[5]

QUESTION 3: TRUE AND FALSE

Indicate whether the following sentences are TRUE or FALSE in the spaces provided.

- 3.1 Sand and water is a mixture of two solids. _____ (1)
- 3.2 A sieve allows small particles to pass through but catches the bigger particles. _____ (1)
- 3.3 Salt and sugar can be separated by hand sorting. _____ (1)
- 3.4 Substances that dissolve in a liquid is called a solution. _____ (1)
- 3.5 Sand and water is an example of a solution. _____ (1)
- [5]**

QUESTION 4: STATE OF MATTER AND RATE OF DISSOLVING

Provide the scientific name/term for each of the following statements in the spaces provided.

STATEMENT	ANSWER
4.1 The liquid in which a substance dissolves	
4.2 How fast or slow something happens	
4.3 To allow a substance mixed with a liquid to settle at the bottom	
4.4 Anything that has mass and takes up space	
4.5 Changing from a liquid to a gas	

(5)

QUESTION 5: SOLUTIONS AND RATE OF DISSOLVING

Below is a solution of copper sulphate and water. Use the picture to answer the following questions.



5.1 Define the term *solution*.

(2)

5.2 Label parts **A**, **B** and **C**

A _____

B _____

C _____

(3)

5.3 Name the **solute** in the solution.

(1)

5.4 Name the **solvent** in the solution.

(1)

5.5 How would you separate the solution?

(1)

5.6 There are three factors that affect the time it takes for a solute to dissolve in a solvent. State any TWO.

5.6.1 _____

(1)

5.6.2 _____

(1)

[10]

TOTAL SECTION A: 30

SECTION B: UNDERSTANDING AND APPLYING SCIENCE AND TECHNOLOGY

QUESTION 6

6.1 Read the case study below and answer the following questions.

Sipho wanted to investigate how long it took to reach a saturated solution with:

1. Salt
2. Chocolate
3. Flour
4. Sugar
5. Oil



He planned to add a teaspoon at a time to a cup of water, stir the solution and then see whether he needed to add more solute.

6.1.1 How would he know when the solution is saturated?

_____ (1)

6.1.2 Sipho decided to heat the water of each beaker. Why do you think he did this?

_____ (1)

6.1.3 Which substances will not work for Sipho's experiment? Indicate why it will not work.

_____ (1)

6.2 In the space below, illustrate and label a mixture of water and oil.

(2)

6.3 Differentiate between sieving and decanting.

Sieving -

(1)

Decanting -

(1)

6.4 Comparing mixtures

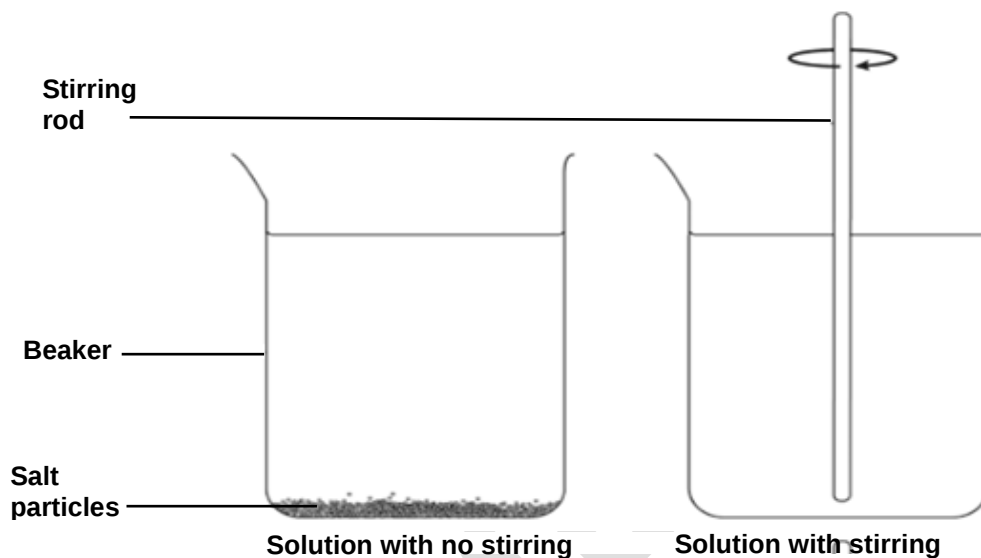
Compare the mixtures of sugar and water, and oil and water by completing the table below.

Mixtures	Phases of matter (Solid, Liquid, Gas)	Soluble or Insoluble?	Is the mixture a solution? (Yes/No)
Sugar and Water	_____ (1) and <u>liquid</u>	_____ (1)	_____ (1)
Oil and Water	_____ (1) and _____ (1)	_____ (1)	_____ (1)

(7)
[14]

QUESTION 7: RATE OF DISSOLVING

Grade 6 learners from Mzimhlophe Primary School conducted an experiment where they investigate the influence of stirring a salt and water solution on the rate of dissolving. They used two jars which contained 125 ml of water each. A teaspoon of salt was added to each jar. One jar will be stirred, while the other will not be stirred.



- 7.1 Predict what would happen when a teaspoon of salt is added to each jar, and you stir only one of the solutions.

(1)

- 7.2 Identify TWO factors which remained the same for both jars.

7.2.1

(1)

7.2.2

(1)

- 7.3 Identify ONE factor that was different in the experiment.

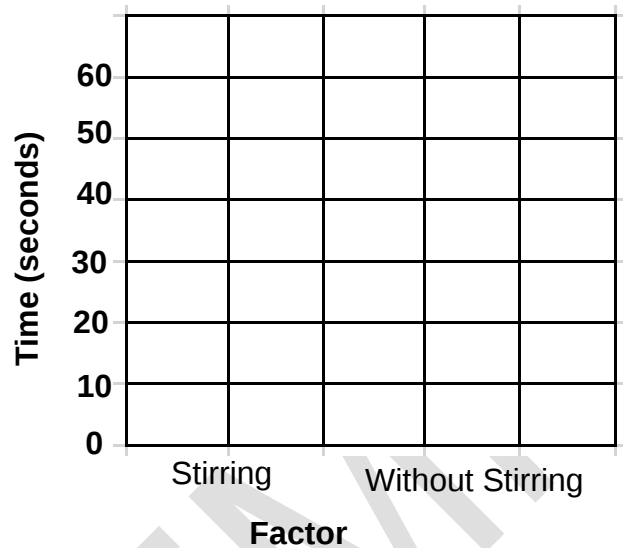
(1)

- 7.4 Study the table below which tells us about the rate of dissolving when a solution is stirred and not stirred. Answer the questions that follow.

	Without stirring the mixture	Stirring the mixture
Time taken to dissolve (seconds)	60	15

- 7.4.1 Use a pencil to construct a **bar graph** using the information from the table above. Use the grid below.

(2)



- 7.4.2 What was the conclusion for this experiment?

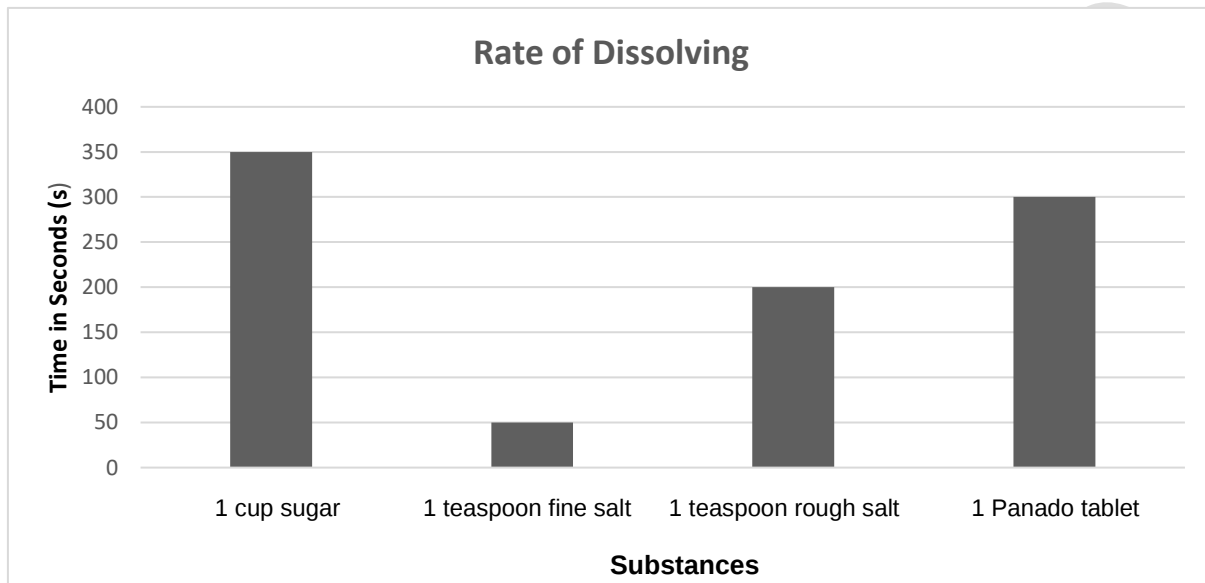
(1)
[7]

TOTAL SECTION B: 21

SECTION C: ANALYSING AND EVALUATING RATE OF DISSOLVING, AND WETLANDS

QUESTION 8

Study the graph below which tells us about the rate of dissolving different substances at different times. Answer the questions that follow.



8.1 In your opinion, which substance dissolved the fastest? _____ (1)

8.2 Give ONE reason why there is a big difference in the time taken to dissolve fine salt and rough salt.

_____ (1)

8.3 Considering how long the Panado tablet took to dissolve, explain what you could do to dissolve the Panado tablet faster.

_____ (2)

8.4 Why do you think the sugar took the longest to dissolve?

_____ (1)
[5]

QUESTION 9

9.1 Propose TWO reasons why you feel wetlands are important.

(2)

9.2 Briefly discuss how wetlands are destroyed.

(2)

[4]

TOTAL SECTION C:

9

TOTAL:

60

END