



eduresourcza.com



KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

**GENERAL EDUCATION AND
TRAINING**

GRADE 9

NATURAL SCIENCES
PRACTICAL INVESTIGATION MEMORANDUM
2025 TERM 2

MARKS: 30

DURATION: 1 Hour

NB: This memorandum consists of 2 pages (excluding cover page).

1. Aim

To investigate the neutralisation reaction of vinegar and bicarbonate of soda. ✓ (1)

2. INVESTIGATION QUESTION

How will the pH change when vinegar is treated with bicarbonate of soda or a solution of bicarbonate of soda? ✓ (1)

3. HYPOTHESIS

Bicarbonate of soda neutralises ✓ vinegar to produce salt, water and carbon dioxide. ✓ (1)

Accept any correct answer.

4. VARIABLES

4.1 DEPENDENT: Colour change or pH ✓ (1)

4.2 INDEPENDENT: Number of drops of bicarbonate of soda ✓ (1)

OR

Volume/Amount of bicarbonate of soda. ✓ (1)

4.3 CONTROLLED: Same amount of vinegar ✓ (1)

5. RESULTS				(6)
TEST TUBE	COLOUR CHANGE	pH	ACID, BASE OR NEUTRAL	
T1 Vinegar	Red ✓	Any value below 7, not less than 3	Acid ✓	
T2 Bicarbonate of soda	Blue/Purple ✓	Any value above 7, not greater than 12	Base ✓	
Solution of vinegar & Bicarbonate of soda	Green ✓	7	Neutral ✓	

6. CONCLUSION

Bicarbonate of soda neutralises ✓ vinegar to produce salt, water and carbon dioxide. ✓

OR

Bicarbonate of soda (base) in the presence of universal indicator turn blue, while vinegar (acid) in the presence of universal indicator turn red. ✓ When a base is mixed with an acid the colour turns green indicating that neutralisation has taken place ✓ (2)

7. Do not taste any of the chemicals ✓

Handle chemicals with care and wear protective gear: gloves, goggles, lab coats ✓ (2)

Work in a safe environment

Dispose waste properly

(any two)

8. $\text{NaOH}_{(\text{aq})} + \text{HCl}_{(\text{aq})} \rightarrow \text{NaCl}_{(\text{s})} + \text{H}_2\text{O}_{(\text{l})}$ ✓ (2)

9. Bicarbonate of soda(base) neutralises the acidic chemical that is injected into the skin during a bee sting. ✓✓ (2)

TOTAL: 20 MARKS