



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2022/2023**

COURSE NAME : GENERAL CHEMISTRY
COURSE CODE : BWD 11403
PROGRAMME CODE : BWD
EXAMINATION DATE : FEBRUARY 2023
DURATION : 3 HOURS
INSTRUCTION : 1. ANSWER ALL QUESTIONS
2. THIS FINAL EXAMINATION IS CONDUCTED VIA **CLOSED BOOK**
3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF **THREE (3)** PAGES

TERBUKA

- Q1** Table salt is an important ingredient in cooking dishes. It can be produced in the laboratory by the reaction of sodium with chlorine. Discuss the chemical changes that will occur in this reaction. Please include the chemical equation in your discussion if any. (20 marks)
- Q2** Potassium has a mass number of 39.1 and a neutron number of 20. Describe the steps to write the electronic configuration of the potassium atom based on the three rules of Aufbau, Hund and Pauli. (20 marks)
- Q3** The periodic table organizes all sorts of chemical and physical information about the elements and their compounds.
- (a) Discuss the classification of the *s* and *p* blocks of elements in the periodic table based on the electronic configuration and the properties of the elements. (10 marks)
- (b) Explain the trend of atomic radius down the group of Group 2 elements. (10 marks)
- Q4** Calcium phosphate is commonly used in the food industry as an anti-caking agent, a flavoring agent, a yeast food, a diluent for a vegetable extract, an animal oil refining aid, and a stabilizer. It can be produced by the reaction of calcium chloride and potassium phosphate.
- (a) Based on the statement above, explain the steps involved in order to get the balanced chemical equation. (16 marks)
- (b) List **FOUR (4)** stoichiometric equivalencies that could be extracted from the equation. (4 marks)
- Q5** (a) Aliff drew three Lewis structures for the nitric acid molecules as shown in **Figure Q5(a)**. Based on the formal charge, explain which **ONE (1)** of the three structures is preferred. (14 marks)
- (b) At 25 °C, an aqueous solution of sodium bicarbonate, NaHCO₃, has a molar concentration of hydroxide ion of 7.8 x 10⁻⁶ M. Based on the autoionization of water and pH concept, describe how to determine whether the solution is acidic, basic or neutral. (6 marks)

– END OF QUESTIONS –

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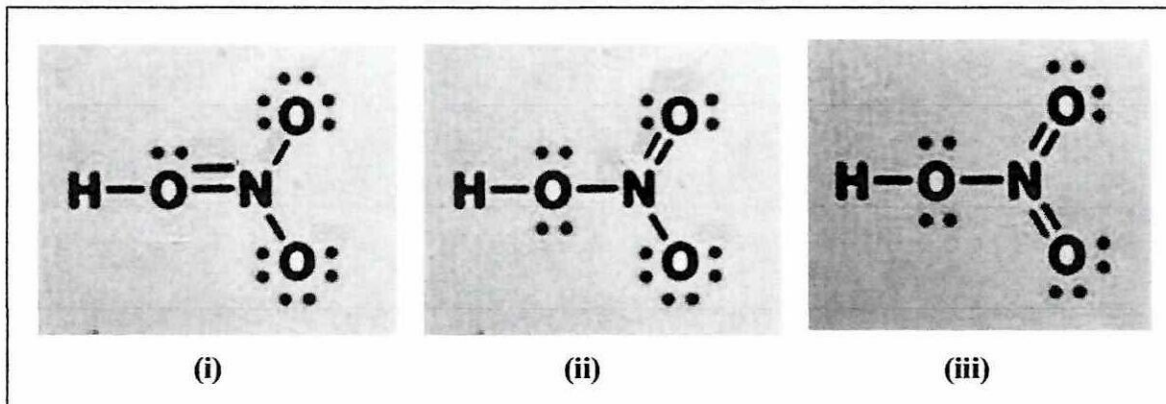


Figure Q5(a)