

DEPARTMENT OF CHEMISTRY
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
FIRST SEMESTER EXAMINATION 2012/2013 SESSION

CHM 311: CHEMISTRY OF THE MAIN GROUP ELEMENTS UNITS: 2

TIME ALLOWED: 2 HOURS

Q1 Write short notes on the following

- (i) Contributions of Lord Rayleigh and Sir William Ramsey to the development of the periodic table. **3 marks**
- (ii) Hydrogen as an asphyxiating agent. **5 marks**
- (lii) Hydrogen bonding and its importance to molecules that exhibit it. **7 marks.**

Q2 Explain the following

- a.** The contribution of J. J. Thomson to the development of the atomic structure. **7 marks**
- b.** Classification of hydrogen in the periodic table. **8 marks**

Q3a. Explain the trends in the following properties of alkali metals.

- (i) Ionization potentials. **4 marks** (ii) Metallic bonding. **4 marks** (iii) Electronegativity. **4 marks**
- b.** Write short notes on the carbonates of the alkali metals. **4 marks**

Q4 Write short notes on the following.

- (i) The carbonates of the alkaline earth metals. **5 marks**
- (ii) The biological importance of alkaline earth metals. **5 marks**
- (iii) The reactivity of alkali metals with dilute mineral acids. **5 marks**

Q5 Briefly elucidate the following

- (i) Boranes. **5 marks** (ii) Allotropes of carbon **6 marks**
- (iii) Physical properties of group IIA elements. **6 marks**