

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF
SCIENCE AND BACHELOR OF EDUCATION (SCIENCE)

CHEM 212: COMPARATIVE STUDY OF S AND P BLOCK ELEMENTS

STREAMS: BSc. & B.Ed (Sc)

TIME: 2 HOURS

DAY/DATE: FRIDAY 25/04/2025

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS

- Do not write anything on the question paper
- Answer question ONE and any other two questions

Question one [30 marks]

- a) Determine the effective nuclear charge experienced by;
- One of the outer most electron of chlorine, calcium and chromium. [3 marks]
 - One of the electrons in 3d orbital of manganese and copper. [3 marks]
- b) State how interstitial hydrides are prepared and explain their densities. [4 marks]
- c) Show how beryllium is different from other group 2 elements. [5 marks]
- d) With an appropriate chemical equation in each case, give two methods of preparation of small crystalline amount of boron. [5 marks]
- e) Using appropriate chemical equations, describe the two main methods of obtaining lead metal from galena. [5 marks]
- f) Enumerate five (5) uses of helium. [5 marks]

Question two [20 marks]

- a) Explain the trends in ionic radius of the elements in the periodic table. [10 marks]

- b) Discuss the chemical properties of alkali metals. [10 marks]

Question three [20 marks]

- a) Using relevant chemical equations, describe preparations of hydrides of nitrogen and phosphorus and give properties of each of them. [10 marks]
- b) Give uses of various compounds of nitrogen and phosphorous [10 marks]

Question four (20 marks)

- a) Oxides are classified in terms of geometry or their chemical properties. Elaborate giving appropriate examples. [10 marks]
- b) Describe how fluorine is manufactured and explain in details its industrial applications [10 marks]
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