

# GREENHILL ACADEMY SECONDARY

## S.5 CHEMISTRY TERM 3 HOLIDAY WORK, 2024

### ORGANIC

1. (a) Outline, giving all essential conditions, one method for
- (i) Increasing the length of a carbon chain (2 marks)
  - (ii) Decreasing the length of a carbon chain. (2 marks)
- (b) Propanone from propanal (04 marks)
- (c) Benzoic acid from Phenylamine. (04 marks)
- (d) Aminomethane from Ethanol. (04 marks)
- (e)  $(\text{CH}_3)_2\text{C} = \text{N-OH}$  from 1,2-dibromoethane. (04 marks)

### PHYSICAL CHEMISTRY

2. (a) Explain what is meant by the following terms
- (i) Solubility of a salt
  - (ii) Solubility product
  - (iii) Common ion effect (3 marks)
- (b)(i) Describe an experiment which can be carried out to determine the solubility product of lead (II) iodide. (6 marks)
- (ii) The solubility of lead (II) iodide at 25°C is 0.2904g per litre of water. Calculate the mass of lead (II) iodide that can be precipitated out of solution when 50cm<sup>3</sup> of 0.2M calcium iodide solution was added to 950 cm<sup>3</sup> of a saturated solution of lead(II)iodide at 25<sup>0</sup>C . (6 marks)
- (i) State and explain how the solubility of lead (II) iodide can be affected when a small amount of iodine was added to a saturated solution of lead (II) iodide at 25°C. (3 marks)
- (d) State two applications of solubility product (2 marks)

### MIXED QUESTION

3. Explain briefly each of the following

(a) Sodium chloride melts at  $800^{\circ}\text{C}$  whereas Aluminium chloride. (04 marks)

(b) Nitrogen is gaseous at room temperature whereas phosphorus can exist in several solid forms at room temperature. (04 marks)

(c) Ethoxyethane boils at  $34^{\circ}\text{C}$  and butan-1-ol at  $118^{\circ}\text{C}$  although both compounds have the same molecular mass. (04 marks)

(d) The boiling points of the tetrahalides of group (IV) elements increase from carbon to tin.

### INORGANIC CHEMISTRY

4. One of the chief ores of iron is siderite (spathic iron)

(a) Write the formula of siderite. (½ mark)

(b) Outline how cast iron can be obtained from siderite. (8 marks)

(c) Describe briefly how iron reacts with: -

(i) Bromine. (2 marks)

(ii) Hydrochloric acid. (2 marks)

(iii) Concentrated sulphuric acid. (2½ marks)

(d) Describe briefly how the percentage of iron in an ore can be determined in the laboratory. (5 marks)