



Federal Board HSSC – II Examination  
Chemistry – Mark Scheme

**SECTION A**

**Q.1**

- |         |         |        |
|---------|---------|--------|
| i. D    | ii. B   | iii. D |
| iv. B   | v. C    | vi. B  |
| vii. C  | viii. A | ix. A  |
| x. B    | xi. B   | xii. D |
| xiii. A | xiv. B  | xv. C  |
| xvi. C  | xvii. B |        |

(17 × 1=17)

**SECTION B**

**Q.2**

- a. Absorption of CO<sub>2</sub> and release of O<sub>2</sub> (1+1=2 marks) (3)
- b.  $2\text{KO}_2 + 2\text{CO}_2 \longrightarrow 2\text{K}_2\text{CO}_3 + 3\text{O}_2$  (1 mark)

**Q.3**

- a. White phosphorus (1 mark)
- b. P<sub>4</sub> (1 mark)
- c. Structure (1 mark)

**Q.4**

- a. Iron acts as cathode (1 mark)
- b. i. Oxidation reaction (½ mark)
- ii. Reduction reaction (½ mark)
- iii. Redox reaction (1 mark)

**Q.5**

- Reaction conditions (½+½=1 mark) (3)
- Equations (1+1=2 marks)

**Q.6**

- Electron with-drawing property of –COOH, –CN (1 mark)
- Formation of meta product & O’P products with equations. (2 marks)

**(OR)**

Explain  
Resonance due to delocalization  
Resonance energy

- Q.7** (3)  
a. Pyridine (1 mark)  
b. Proper reasoning is required. Absence of steric hinderance in primary halide results in simultaneous departure and attack of  $\text{nu}^-$  (2 marks)
- Q.8** (3)  
i. Reaction with  $\text{NaHSO}_3$  (1 mark)  
ii. Uses (purification)  
a. for aldehyde (1 mark)  
b. for ketones (1 mark)
- Q.9** (3)  
Definition of oxidizing smog (1 mark)  
Any two properties (1+1=2 marks)
- Q.10** (3)  
a. Formation of transparent glass on heating which dissolves  $\text{MO}$  forming coloured bead. (2 marks)  
b. Alkaline (1 mark)
- Q.11** (3)  
a. Formation of fog and difficult to condense. (1½ marks)  
b. Any one equation (1½ marks)
- Q.12** (3)  
a. Resonance structures of phenolate ion and absence of this character in ethanoate ion (2 marks)  
b. Ethanoic acid (1 mark)
- (OR)**
- a. Weak Vander Waals forces in hydrocarbons. (1½ marks)  
b. Tendency to form H-bonding with water reduces with the increase in non-polar character in larger carboxylic acids. (1½ marks)
- Q.13** (3)  
a. Definition and structure of Zwitter ion (1 mark)  
b. Two reasons (1+1=2 marks)

- Q.14** (3)
- a. Reaction (1 mark)
  - b. Definition of saponification (1 mark)
  - Chemical reaction (1 mark)

- Q.15** (3)
- a. Specific temperature (1 mark)
  - b. Oxide formation of impurities (1 mark)
  - formation of silicates (1 mark)

**SECTION C**

- Q.16** (13)
- a. Down's cell (for fused NaCl) (½ mark)
  - Diaphragm cell or Nelson's cell for brine (½ mark)
  - b. Down's cell
    - i. Reaction at cathode (1 mark)
    - ii. Reaction at anode (1 mark)
  - Diaphragm or Nelson's cell
    - i. Reaction at cathode (1 mark)
    - ii. Reaction at anode (1 mark)
  - c. Reason of discharge of H<sup>+</sup> ions instead of Na<sup>+</sup> ions at cathode in diaphragm cell. (2 marks)
  - d. Labelled diagrams of both cells (3+3=6 marks)

**(OR)**

- a. Name and disadvantages of worst method (1+1=2 marks)
- b. Name of suitable method (1 mark)
- Advantages (1×4=4 marks)
- c. Definition of incineration (1 mark)
- Explanation of incineration of industrial waste (2 marks)
- d. Purpose of chlorination of water (1 mark)
- Hazardous effect of chlorinated water for human beings (2 marks)

- Q.17** (13)
- a. i. – Ionization of sodium or potassium salt of suitable carboxylic acid (1 mark)
  - Reaction at cathode (1 mark)
  - Reaction at anode (1 mark)
  - ii. Same division of marks as above (3 marks)
  - b. i. – Test with ammoniacal silver nitrate (equation) (1 mark)
  - Observation (1 mark)

- ii. – Test with ammoniacal cuprous chloride (equation) (1 mark)  
– Observation (1 mark)
- c. Conversion
  - i. Reaction with ozone (2 marks)
  - ii. Conversion to ethanal (1 mark)

**(OR)**

- a. Name and example of three types of polymers. (1×3=3 marks)
- b. Biopolymers (Definition) (1 mark)  
Name of four types of biopolymers ( $\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}=2$  marks)
- c. Reaction to form peptide linkage (1 mark)  
Explanation of reaction (2 marks)  
Differentiation of polypeptide and protein (1 mark)
- d. Four points of importance ( $\frac{1}{2}\times 4=2$  marks)
- e. De-naturing of protein. (1 mark)