

HYBER PAKHTOON KHWA, PUBLIC SERVICE COMMISSION PESHAWAR

Subject: - Competitive Examination for the Posts of Provincial Management Service (BPS-17), 2010

CHEMISTRY PAPER-II

Max. Marks: 100

Time Allowed: 03 hours

Note: Attempt any five questions. All questions carry equal marks.

- Q.1 A) Define the terms **Sigma** and **pi bonds**. What types of atomic orbitals give **Sigma** and **pi** bonds? Illustrate with the help of diagrams. 12
- B) Predict and draw the shapes of **NH₃**, **H₂O**, **C₂H₄** and **C₂H₂** using Hybridization. 08
- Q.2 A) What is **1st order reaction**? Explain with help of equation and describe its characteristics giving one example. 14
- B) Explain the terms: i) **Order of Reaction**, ii) **Molecularity of Reaction**, iii) **Rate Law** 06
- Q.3 A) Describe with examples the main types of **Catalysis**. 12
- B) What is **hydrogen bond**? Discuss its effects on the properties organic compounds. 08
- Q.4 A) What is **Grignard Reagent**? Discuss with examples reactions of this Reagent. 10
- B) Name typical reactions of carbonyl compounds. Describe following Nucleophilic addition Reactions: i) **Base-catalyzed**, ii) **Acid-Catalyzed**, iii) **Ammonia and its derivatives**. 10
- Q.5 A) Describe the following **Electrophilic Substitution Reactions**: i) **Friedel-Crafts Reactions**, ii) **Formylation**, iii) **Carboxylation**. 12
- B) What is **Aromaticity**? Describe the Criteria and evidences for Aromaticity. 08
- Q.6 What is **Diazotization**? How **Diazonium** salts are prepared? Describe with examples the **Replacement Reactions** of Diazonium salts. 20
- Q.7 A) What is the role of **Vitamins** in the body? Write a note on **Vit-B**. 06
- B) Describe with examples the classes of Polymers. Write comprehensive notes on **Polyesters**, **Polyamides**, and **Polyurethanes**. 14