

PUNJAB PUBLIC SERVICE COMMISSION
COMBINED COMPETITIVE EXAMINATION
FOR RECRUITMENT TO THE POSTS OF
PROVINCIAL MANAGEMENT SERVICE, ETC.
CHEMISTRY (OPTIONAL) PAPER-II

TIME ALLOWED: 3 HOURS

MAXIMUM MARKS: 100

Note: Attempt any FIVE questions only. Write answers in English.

- Q.1:** Explain the difference between (20)
- (i) Inductive Effect and Resonance Effect
 - (i) Localized Bond and Delocalized Bond
 - (iii) Conjugation and Hyperconjugation
 - (iv) Steric Effect and Tautomerism
- Q.2:** (a) Write a comprehensive note on any of the following: (10)
- (i) Column Chromatography
 - (ii) Paper Chromatography
- (b) Explain Ultraviolet (UV) spectroscopy. (10)
- Q.3:** (a) Write the products formed by the following reactions: (15)
- (i) Addition of HCN to acetone
 - (ii) Addition of Grignard Reagent to Butanone
 - (iii) Reaction of Formaldehyde with Ammonia
 - (iv) Reaction of Butanone with LiAlH_4 .
 - (v) Reaction of Aldehyde with Tollen's Reagent
- (b) Sodium Sulphite is used for purification of aldehydes and Ketones. Explain. (5)
- Q.4:** (a) Describe mechanism of Friedel Craft alkylation of benzene. (8)
- (b) Write a note on condensed ring aromatic compounds. Discuss preparation of Naphthalene. (12)
- Q.5:** (a) What are Dyes? Describes Acidic and Basic Dyes. Explain the role of perfumes and deodorants. (10)
- (b) Define the term detergent. What are the types of detergents? How does a detergent differ from Soap? Discuss cleansing action of detergent. (10)
- Q.6:** (a) Explain the difference between Chain Growth and Step Growth Polymerization. (10)
- (b) How do thermoplastic differs from thermosetting polymers? (10)
- Q.7:** (a) What are vitamins? How are they classified? Describe the role of various vitamins in the body. (10)
- (b) Discuss various factors affecting enzymic activity? (10)