

KHYBER PAKHTUNKHWA, PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION FOR THE POSTS OF PROVINCIAL MANAGEMENT
SERVICES (BPS-17)
CHEMISTRY PAPER - II

2018

TIME ALLOWED: 03 HOURS

MAX. MARKS: 100

Note: Attempt any Five questions out of the following:

- Q1.a). What do you understand by Hybridization of Orbitals? What are the rules applied for Hybridization. Discuss the formation of sp , sp^2 and sp^3 hybrid orbitals? (10)
- b). Compare the Valence Bond and Molecular Orbital Theories? (10)
- Q2. a). What is meant by the Order of Reaction? Describe the important methods of determining the Order of Reaction? (10)
- b). Define the term "Velocity Constant of Reaction". Derive the Kinetic equation for the First-Order reaction? What are the units of K in this case? (10)
- Q3.a). What is Catalyst and Catalysis? Give classification of Catalysis? How do Enzymes act as a Catalyst? (12)
- b). What is Catalyst Poisoning? How a Catalyst increases the rate of a chemical reaction? (08)
- Q4.a). Which kind of compounds show "Resonance" phenomenon? What are the general conditions for a compound to be aromatic? (10)
- b). Discuss in detail, How Hydrogen Bonding play a vital role in the formation of biological molecules? (10)
- Q5.a). Discuss the structure and reactivity of Carbonyl group? Give various compounds of carbonyl group? (10)
- b). Give Nucleophilic addition reactions of Aldehydes and Ketones? (10)
- Q6.a). Describe the mechanism of Aromatic Electrophilic Substitution reaction. Explain Friedel-Craft reaction of benzene? (10)
- b). Why Benzene is given a cyclic structure? Discuss structure of Benzene on the basis of MOT? (10)
- Q7.a). Discuss the chemistry of Azo dyes? Write a detail note on Azo dyes and human health? (10)
- b). Give synthetic applications of Arenediazonium Salts? (10)
- Q8.a). What are Lipids? Describe its classification and role in human body? (10)
- b). Discuss fermentation process as an industrial technique for production of Antibiotics? (10)