



FEDERAL PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION-2022
FOR RECRUITMENT TO POSTS IN BS-17
UNDER THE FEDERAL GOVERNMENT
CHEMISTRY, PAPER-II

Roll Number

TIME ALLOWED: THREE HOURS	PART-I (MCQS)	MAXIMUM MARKS = 20
PART-I(MCQS): MAXIMUM 30 MINUTES	PART-II	MAXIMUM MARKS = 80

NOTE: (i) Part-II is to be attempted on the separate **Answer Book**.
(ii) Attempt **ONLY FOUR** questions from **PART-II**. **ALL** questions carry **EQUAL** marks.
(iii) All the parts (if any) of each Question must be attempted at one place instead of at different places.
(iv) Candidate must write Q. No. in the Answer Book in accordance with Q. No. in the Q.Paper.
(v) No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.
(vi) Extra attempt of any question or any part of the attempted question will not be considered.

PART-II

- Q. 2.** Define the following terms and give suitable examples **(4 each) (20)**
- (i)** Aromaticity **(ii)** Conjugation **(iii)** Inductive effect
(iv) Imine-enamine Tautomerism **(v)** Intra molecular Hydrogen Bonding
- Q. 3.** Write down Preparations of Alkanes and Aldehydes. Also give specific example of addition reactions of alkenes with special reference to Markonikav and anti Markonikav rule. **(20)**
- Q. 4. (a)** Starting from acetylene how you can prepare 1-Octyne. **(10)**
- (b)** Write down the condition for the conversion of 2-Octyne to cis 2-Octene. **(10) (20)**
- Q. 5.** Write the structural formula of your choice for all the structural isomers with the molecular formula C_4H_6 . Also explain cis, trans, E,Z and syn, anti geometrical isomerism. **(20)**
- Q. 6.** Phenol is more acidic than methylalcohol. Explain in detail. Also draw resonating structures of phenoxide ion. **(20)**
- Q. 7. (a)** Describe the instrumentation of IR spectrophotometer in detail. **(15)**
- (b)** What are the basic Principals of IR Spectroscopy? **(05) (20)**
- Q. 8. (a)** What is chemical shift? What are the factors effecting chemical shift? **(10)**
- (b)** Describe the instrumentation of NMR spectroscopy.? **(10) (20)**
