FEDERAL PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION-2018
FOR RECRUITMENT TO POSTS IN BS-17
UNDER THE FEDERAL GOVERNMENT

Roll Number

CHEMISTRY, PAPER-II

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.No. 2. (a) Define Resonance and Resonance effect. (10)

(b) Write Short note on followings. (5+5) **(20)**
(i) Tautomerism (ii) Hyperconjugation.

Q.No. 3. (a) Complete the following reactions. (8×2=16)

(i) $CH_3\text{-}CH{=}CH_2 + KMnO_4 \xrightarrow{H_2O} ?$

(ii) $CH_3\text{-}CH{=}CH_2 + \xrightarrow[\text{Pressure}]{Ni\ \triangle}$

(iii) $CH_3\text{-}CH{=}CH_2 + \text{dil. } H_2SO_4 \longrightarrow$

(iv) $CH_3\text{-}CH{=}CH_2 + CH_3 - \overset{O}{\overset{\|}{C}}\text{-}H \longrightarrow$

(v) $CH_3\text{-}CH{=}CH_2 + Br_2 \xrightarrow{CCl_4}$

(vi) $CH_3 - C \equiv CH_3 + Na / \text{lig } NH_3 \longrightarrow$

(vii) $CH \equiv CH + NaNH_2 \longrightarrow$

(viii) $CH \equiv CH + H_2O \xrightarrow{H_2SO_4 / HgSO_4}$

(b) 1-Butyne forms a precipitate with an ammonical solution of silver nitrate where 2-Butyne does not. Why? (4) **(20)**

Q.No. 4. Explain electrophilic substitution reaction mechanism with the help of:
(i) Nitration (ii) Sulphonation. **(20)**

Q.No. 5. (a) Distinguish between: (4×3=12)
(i) Configuration and conformation
(ii) Enantiomer and Diastreomers
(iii) R. Convention and S. Convention

(b) Define specific rotation. How do you measure using polarimeter? (8) **(20)**

Q.No. 6. (a) What do you mean by the setting of cement. (10)
(b) Discuss future of cement industry in Pakistan. (10) **(20)**

Q.No. 7. (a) Explain Aldol condensation reaction with examples. (10)
(b) What are proteins? (5)
(c) Explain Bio synthesis of cholesterol. (5)

Q.No. 8. Explain the following: (4 marks each) **(20)**
(a) Beers Lamberts Law. (b) Wood Wards Fieser Rule
(c) Hooks Law (d) Basic principle of NMR?
(e) Chemical Shift.

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