



**FEDERAL PUBLIC SERVICE COMMISSION**  
**COMPETITIVE EXAMINATION FOR**  
**RECRUITMENT TO POSTS IN BS-17**  
**UNDER THE FEDERAL GOVERNMENT, 2015**

Roll Number

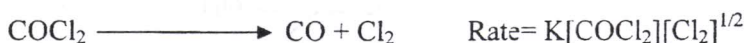
**CHEMISTRY, PAPER-II**

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.  
(vii) **Use of Calculator is allowed.**

**PART-II**

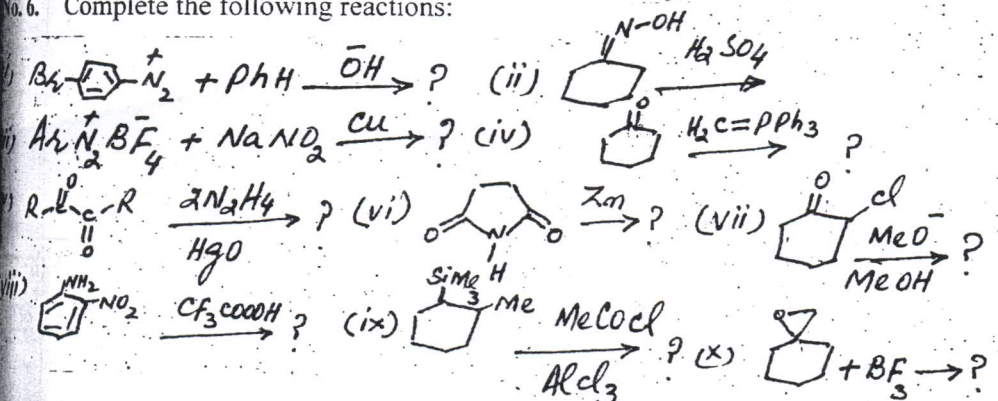
- No. 2. (a) Discuss the Kinetics of Second order reaction with equal concentration of both reactants. (07)  
(b) Derive the expression for half life period of first order reaction. (07)  
(c) Devise a mechanism for the following decomposition which will fit the given rate law. (06)



- No. 3. (a) What are antibiotics? Give their classification and mode of action. (08)  
(b) Describe the merits of the following in Polymers. (6)  
(i) Copolymerization (ii) Chain Transfer agents (iii) Use of  $\text{TiCl}_3 \cdot \text{AlEt}_3$  as catalyst.  
(c) Write short note on: (06)  
(i) Antiknocking agent (ii) Chromogen's in dyes
- No. 4. (a) What are petrochemicals? Give preparation of vinylacetate and Chloroform. (08)  
(b) Discuss the preparation and use of Margraime. (04)  
(c) Explain why? (08)  
(i) The amination of o-chloroanisole and m-chloroanisole yield only m-ansidine.  
(ii) Racemic mixture is optically inactive.  
(iii) Cyclohexane carboxylic acid is less acidic than Benzoic acid.  
(iv) In stereochemistry "D" and "d" are different.

- No. 5. (a) In pinacol rearrangement of  $\text{PhMeC(OH)-C(OH)PhMe}$  and  $\text{Ph}_2\text{C(OH)-C(OH)Me}_2$  a phenyl group migrates in the former case but methyl group migrates in the later. (03)  
(b) How would you synthesize Aldehyde by:  
(i) Sommelet reaction (ii) Kricheldorf reaction (iii) Field's method (12)  
(c) Explain Anchimeric assistance. (05)

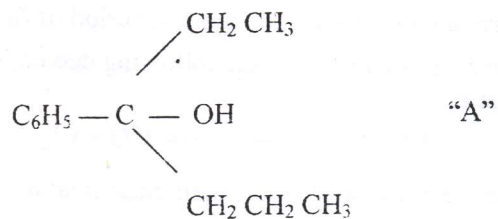
No. 6. Complete the following reactions: (20)



## CHEMISTRY, PAPER-II

- Q. No. 7.** (a) Define and explain the following:  
(i) Flag pole Effect (ii) Field Effect (iii) Levelling Effect (iv) Atropisomers
- (b) Write all possible isomers of the following and name them according to E,Z nomenclature.  
(i) Hexa 2,4- dienoic acid (ii) Hepta 2,4-diene
- (c) Discuss enolization and reduction encountered in the reaction of compound containing  $\text{C}=\text{O}$  Group and Grignard's reagent.?
- (d) Show schematically according to Valence Theory, the orbital occupancy of electrons in the Chlorine-atom in (i)  $\text{ClO}_3^-$  (ii)  $\text{ClO}_4^-$ . Describe the Geometry of these two species.

- Q. No. 8.** (a) How "A" is prepared from three different starting materials using grignard reagent.



- (b) Starting from Benzene, how the following can be Synthesized.  
(i) 1,3,5,-Tribromobenzene (ii) Benzene hexachloride (iii) Iodobenzene
- (c) Describe various methods used for racemization.
- (d) What is Heroin? Explain.

\*\*\*\*\*