

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)

CLASS: B. PHARMACY  
BRANCH: PHARMACY

SEMESTER: II  
SESSION: SP2022

SUBJECT: BP202T PHARMACEUTICAL ORGANIC CHEMISTRY I

TIME: 3.00 Hours

FULL MARK: 75

INSTRUCTIONS:

1. The missing data, if any, may be assumed suitably.
2. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
3. This question paper consists of (03) three parts. Read the part wise instructions before attempting the questions.

PART-I

Objective types questions (Instruction: Answer all questions)

Q1. (10 x 2 = 20 Marks)

A. Fill in the blanks:

- (i) An atom or a group having ability to donate electron to carbocation is called as .....
- (ii) Positively charged leaving groups favour elimination by ..... rule.
- (iii) ..... reduces only carbonyl group in the presence of double bond.
- (iv) ..... is the only aldehyde that answers Iodoform test.

B. State True or False:

- (i) The order of nucleophilicity for the halides are given as  $I^- < Br^- < Cl^- < F^-$ .
- (ii) Electron withdrawing substituents in beta carbon of alkyl halides favours formation of carbanion and elimination by E1cB mechanism
- (iii) Irrespective of nature of alcohol (primary, secondary or tertiary), it will always undergo elimination by E2 mechanism
- (iv) Friedel-craft's acylation happens through electrophilic substitution mechanism.

C. Match the following

- |                       |                                 |
|-----------------------|---------------------------------|
| A. Lucas test         | I. Red-ox                       |
| B. Silver mirror test | II. Nucleophilic addition       |
| C. Osazone test       | III. Electrophilic substitution |
| D. Acylium ion        | IV. Nucleophilic substitution   |

D. Write the structure of alcohol formed by the reaction between methanal and methyl magnesium bromide.

E. Write the structure of elimination product of neo-pentyl alcohol

F. Write the structure of transition state of nucleophilic addition reaction

G. Write the structure of transition state for chromate mediated oxidation of secondary alcohol.

PART-II

Short Answers

(Instruction: Answer seven out of nine questions)

(7 x 5 = 35 Marks)

- Q2. List the set of rules for guiding the IUPAC nomenclature of organic compounds
- Q3. Discuss the mechanism of action for the preparation of alkenes through dehydrohalogenation.
- Q4. Write a note on Walden inversion.
- Q5. Discuss in detail the oxidation of alcohols.
- Q6. Discuss in detail the reduction of carbonyl compounds.
- Q7. Write a note on Cannizzaro reaction.
- Q8. Discuss the mechanism and significance of Friedel-craft's acylation.
- Q9. Write the mechanism for Kolbe-Schmitt reaction.
- Q10. With equation discuss the differentiation of primary, secondary and tertiary amines.

**PART-III**  
**Long Answers**  
(Instruction: Answer two out of three questions)

(2 x 10 = 20 marks)

- Q11. Discuss in detail the factors affecting nucleophilic substitution reaction.
- Q12. Discuss in detail the factors affecting elimination reactions.
- Q13. Discuss in detail the nucleophilic addition reactions of ammonia compounds.

:::19/07/2022:::