

B.E./B.TECH. Degree Examination, December 2020

Second Semester

CY18251 - Organic Chemistry

(Regulation 2018)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. A donor of a pair of electron is termed as
 - a. Nucleophile
 - b. Electrophile
 - c. Free radical
 - d. Anion
2. Which of the following is changed in a chemical reaction due to a catalyst?
 - a) Internal energy
 - b) Entropy
 - c) Enthalpy
 - d) Activation energy
3. Bathochromic groups are
 - a) That brings about deepening of colour
 - b) That brings about lightening of colour
 - c) Positive groups
 - d) Negative groups
4. Treatment of a nitrile with a Grignard reagent followed by hydrolysis results in
 - a) an ester
 - b) a ketone
 - c) an aldehyde
 - d) an alcohol
5. State the anti-Markovnikov's rule.
6. What are rearrangement reactions?
7. Mention an example for heterogeneous catalysis.
8. List any two eluents used in column chromatography(CC).

PART B - (4 X16 = 64 marks)

9. (a) (i) Propose a mechanism of allylic halogenation using N-Bromosuccinimide (NBS). **(8)**
(ii) Write a probable mechanism for the formation of 3,3-dimethyl-2-butanone from 2,3-dimethyl-2,3-butane diol. **(8)**

(OR)

- (b) (i) Write a note on crossed Aldol condensation. (8)
(ii) Propose a plausible mechanism for the formation of N-Methylbenzamide from (Z)- Acetophenone oxime. (8)

10. (a) (i) Illustrate the Diels-Alder reaction when the diene is a cyclic compound. (8)
(ii) Describe the Sharpless epoxidation and list any two industrial applications. (8)

(OR)

- (b) (i) Elaborate the role of sonocatalysts in hydrogenation reactions. (8)
(ii) Explain the formation of propionaldehyde by Oxo process. (8)

11. (a) (i) Explain the Witt's theory of colour and constitution. (8)
(ii) Write the synthesis and uses of the dye Congo red. (8)

(OR)

- (b) (i) Confer the synthesis and uses of Malachite green. (8)
(ii) Outline the synthesis and uses of the dye Phenolphthalein. (8)

12. (a) (i) Discuss the synthetic utility of Grignard reagent in the formation of
a) Tertiary alcohol and b) Carboxylic acid. (8)
(ii) Explain the thermo gravimetric analysis (TGA) of calcium oxalate monohydrate. (8)

(OR)

- (b) (i) How will you prepare the following compounds by utilizing diethyl malonate with suitable substrate
(a) α,β - Unsaturated acid and (b) Heterocyclic compound. (8)
(ii) Write a note on the two types of column used in the gas chromatography(GC). (8)