

B.Sc. 3rd Semester New Scheme

Examination, November-2017

(Bio-Technology)

ORGANIC CHEMISTRY

Paper-BT-306

*Time allowed : 3 hours]**[Maximum marks : 40*

Note:- Attempt five questions in all. Question No.1 is compulsory. Select one question from each Section.

1. (a) Why alcohols are generally soluble in water? ✓

1 × 8 = 8

(b) Write the general formula of monohydric alcohols. ✓

(c) Draw the orbital structure of phenol.

(d) Why phenols have higher boiling point than toluene.

(e) Define Hypsochromic effect. ✓

(f) State Beer-Lambert law. ✓

(g) Why pure acetic acid is called glacial acetic acid?

(h) What is Ortho effect? ✓

Section-A

2. (a) Explain why the boiling point of alcohols is higher than alkanes of comparable molecular mass. 2

(b) Describe: 4

(i) Meerwein-Ponndorf Verley reduction

(ii) Pinacol-pinacolone rearrangement

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- (c) Write the reaction of epoxide with organolithium reagent. 2
3. (a) Describe any two methods for formation of vicinal glycols. 2
- (b) Explain the mechanism of acid and base catalysed ring opening in epoxides. 4
- (c) Illustrate the mechanism of oxidative cleavage of vicinal glycols with $\text{Pb}(\text{OAc})_4$. 2

Section-B

4. (a) Alcohols react with organic acids to form esters but phenols do not. Explain. 2
- (b) Describe with mechanism: 6
- (i) Reimer-Tiemann reaction
 - (ii) Claisen rearrangement
 - (iii) Kolbe's reaction.
5. (a) Write the preparation of phenol from:- 4
- (i) Isopropylbenzene
 - (ii) Sodium salicylate
- (b) Describe briefly the effect of electron withdrawing and electron releasing substituents on acidity of phenols. 4

Section-C

6. (a) Describe: 6
- (i) Molar absorptivity
 - (ii) Bathochromic shift
 - (iii) Chromophore

- (b) ✓ How can you detect the formation of charge transfer complexes using UV spectroscopy? 2
7. (a) Describe briefly the various types of electronic transitions in UV spectroscopy. 4
- (b) Explain the effect of polar solvent on $n-\pi^*$ and $\pi-\pi^*$ transitions. 4

Section-D ✓

8. (a) Explain the relative acidic strength of o-, m- and p-nitrobenzoic acids. 2
- (b) Describe : 4
- (i) Hundsdiecker reaction
- (ii) Hell-Volhard Zelinsky reaction
- (c) Write the synthesis of carboxylic acids from nitriles. 2
9. (a) Describe briefly the relative stability and order of reactivity of acid derivatives towards nucleophilic acyl substitution reactions. 2
- (b) Describe: 2
- (i) Trans - esterification
- (ii) Saponification
- (c) What is Hofmann bromamide reaction? 2