

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, OCTOBER 2012

(CCSS)

Chemistry

CH 5B 10—ORGANIC CHEMISTRY—II

(Core Course)

Three Hours

Maximum : 30 Weightage

Write equations wherever necessary.

I. Multiple choice and fill in the blanks type questions. Answer all twelve questions :

1 Conversion of phenol to salicylaldehyde involves a _____ as electrophile.

(a) Carbene.

(b) Carbocation.

(c) Carbanion.

(d) None of the above.

2 Reformatsky reaction provides a method for the preparation of _____.

(a) Ketones.

(b) Aldehydes.

(c) α -hydroxy esters.

(d) None of the above.

3 Which one of the following gives Cannizaro's reaction ?

(a) CH_3CHO .(b) $\text{CH}_2\text{CH}_2\text{CHO}$.(c) $[\text{CH}_3]_2\text{CH-CHO}$.(d) $[\text{CH}_3]_3\text{C-CHO}$.

4 Grignard reagent reacts with methanal followed by hydrolysis gives a _____.

(a) Primary alcohol.

(b) Tertiary alcohol.

(c) Secondary alcohol.

(d) Mixture of the above.

5 Which is most acidic among the following ?

(a) *m*-Nitrophenol.(b) *o*-Nitrophenol.(c) *p*-Nitrophenol.(d) *o*-Cresol.

6 When anisole is treated with HI, the products are _____.

7 When ethylene oxide is treated with dilute HCl, the products is _____.

8 In reactions, the carbonyl carbon of ketones are mostly attacked by _____.

(a) Free radicals.

(b) Nucleophiles.

(c) Electrophiles.

(d) All of the above.

9 Pericyclic reactions generally involves :

(a) Carbocations.

(b) Carbanions.

(c) Free radicals.

(d) No intermediates.

Turn over

- 10 Preparation of ethers by alkoxy-mercuration involves _____ as a reducing agent in final stage.
- (a) LiAlH_4 . (b) NaBH_4 .
 (c) Ni-H_2 . (d) Pd-H_2 .
- 11 Alkyl lithium in excess react with CO_2 followed by hydrolysis gives _____.
- (a) Ketone. (b) Carboxylic acid.
 (c) Aldehyde. (d) Diol.
- 12 Which one of the following decolourises bromine water _____.
- (a) Benzoic acid. (b) Cinnamic acid.
 (c) Malonic acid. (d) Citric acid.

(12 × ¼ = 3 weight)

II. Short Answer Type questions. Answer *all* nine questions :

- 13 Ethanol boils at a higher temperature than dimethyl ether. Why ?
- 14 Explain Saytzeff rule.
- 15 Give any synthetic application of Reformatsky reaction.
- 16 What is Caprolactam ?
- 17 Give an example of a pericyclic reaction taking place in human body.
- 18 Draw the structure of aspirin.
- 19 Why is phenolphthalein colourless in strong alkali ?
- 20 Why is it difficult to prepare Grignard reagent from allyl bromide ?
- 21 Mention a synthetic application of ethylene oxide.

(9 × 1 = 9 weight)

III. Short essays or paragraph questions. Answer any *five* questions :

- 22 Discuss the stereochemistry of S_{N}^2 reaction.
- 23 Explain the mechanism of Cannizaro's reaction.
- 24 Give a comparative study between acetone and acetaldehyde.
- 25 How are pericyclic reactions classified ? Give one example of each.
- 26 Discuss Diels-Alder reaction using FMO method.
- 27 Discuss the mechanism of HVZ reaction.
- 28 Discuss the bimolecular displacement mechanism of Chlorobenzene using alkali.

(5 × 2 = 10 weight)

IV. Essay questions. Answer any *two* questions :

29 Discuss the mechanism of the following reactions :—

- (a) Pinacol-Pinacolone rearrangement ;
- (b) Benzoin condensation ;
- (c) Claisen-Schmidt reaction ;
- (d) Saponification of ester.

30 Give the effects of substituents on the acidity of :

- (a) Aliphatic carboxylic acids ;
- (b) Phenols.

31 How are the following compounds prepared ?

- (a) Vanillin ;
- (b) Organocopper compounds ;
- (c) Malonic acid ;
- (d) Cinnamic acid.

(2 × 4 = 8 weightage)