

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, OCTOBER 2012

(CCSS)

Chemistry

CH 5B 10—ORGANIC CHEMISTRY—II

(Core Course)

Time : 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 **Cannizzaro'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 the 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 x $\frac{1}{4}$ = 3 **weightage**)

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 x 1 = 9 **weightage**)

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 x 2 = 10 **weightage**)

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 x 4 = 8 **weightage**)