

**FIFTH SEMESTER B.Sc. DEGREE EXAMINATION
NOVEMBER 2011**

(CCSS)

Chemistry – Core Course – VI

CH 5B 10 – ORGANIC CHEMISTRY – II

Three Hours

Maximum Weightage : 30

*Write equations wherever necessary.*Multiple choice and fill in the blanks type questions. Answer all *twelve* questions :

- Suggest the best reagent for allylic bromination of alkenes :
 - NBS.
 - Bromine water.
 - Bromine in CCl_4 .
 - All of the above.
- Which one of the following halide is most reactive towards nucleophilic substitution ?
 - Chlorobenzene.
 - Iodobenzene.
 - Vinyl bromide.
 - Allyl bromide.
- Which metal-C bond is most ionic ?
 - C-Mg.
 - C-Zn.
 - C-Li.
 - All are equally ionic.
- Grignard reagent reacts with a ketone followed by hydrolysis gives _____.
 - Primary alcohol.
 - Tertiary alcohol.
 - Secondary alcohol.
 - A mixture of the above.
- Phenol is a stronger acid than _____.
 - Formic acid.
 - o*-Nitrophenol.
 - p*-Nitrophenol.
 - o*-Cresol.
- Williamson's synthesis of ether is an example of _____ substitution.
 - Nucleophilic.
 - Electrophilic.
 - Free radical.
 - None of the above.
- Preparation of ethers by alkoxy-mercuration involves _____ as a reducing agent in the final stage.
 - LiAlH_4 .
 - NaBH_4 .
 - Ni-H_2 .
 - Pd-H_2 .

Turn over

8. The nucleophilic addition reactions on carbonyl groups are catalysed by _____.
- (a) Bases. (b) Water.
(c) Acids. (d) Ampholytes.
9. Methyl ketones are easily identified by _____.
- (a) Iodoform reaction. (b) Schiff's test.
(c) Fehling's test. (d) Tollen's test.
10. The natural source for formic acid is _____.
- (a) Vinegar. (b) Red ant.
(c) Butter. (d) Valerian plant.
11. Phthalic acid reacts with resorcinol in presence of Con. H_2SO_4 gives :
- (a) Phenolphthalein. (b) Alizarin.
(c) Coumarin. (d) Fluorescein.
12. Pericyclic reactions generally involves :
- (a) Carbocations. (b) Carbanions.
(c) Free radicals. (d) No intermediates.

(12 × ¼ = 3 weightage)

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

13. What are electrocyclic reactions? Give an example.
14. Explain Kolbe's reaction.
15. Explain any *two* applications of crown ethers in organic synthesis.
16. How is iodoform prepared from ethanol?
17. Which is more reactive and why? Ethanol or acetone.
18. What happens when cinnamic acid is exposed to sunlight?
19. Amides are very slowly hydrolysed by water? Why?
20. Give an example of a pericyclic reaction taking place in human body.
21. Vinyl halides are aliphatic halogen compounds but they resemble aryl halides in chemical reactions. Rationalise.

(9 × 1 = 9 weightage)

III. Short Essays or Paragraph Questions. Answer any *five* questions :

22. Explain the benzyne intermediate mechanism of nucleophilic aromatic substitution and furnish any evidence in support of the mechanism.
23. Discuss the mechanism of Reformatsky reaction. Mention any *one* of its synthetic application.

24. Discuss in detail Zeisel's method of methoxy groups.
25. Explain the chemistry of Liebermann's nitroso reaction.
26. Discuss Diels-Alder reaction using FMO method.
27. Explain the mechanism of Claisen rearrangement.
28. How is phenolphthalein prepared? Why is it colourless in strong alkali?

(5 × 2 = 10 weightage)

Essay Questions. Answer any *two* questions :

29. Discuss the effect of the structure of the substrate and polarity of the solvent on S_N1 and S_N2 reactions.
30. Discuss the mechanisms of the following reactions :
 - (a) Aldol condensation.
 - (b) Cannizaro's reaction.
 - (c) Claisen condensation.
 - (d) Benzoin condensation.
31. Give a detailed account of the effects of substituents on the acidity of aliphatic and aromatic carboxylic acids.

(2 × 4 = 8 weightage)