



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – CHEMISTRY

THIRD SEMESTER – APRIL 2016

CH 3951 - APPLIED ORGANIC CHEMISTRY

Date: 03-05-2016
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

Part-A

Answer ALL questions.

(10 × 2 = 20)

1. Define the term velocity gradient in a steady flow process.
2. What is extraction battery in the leaching process?
3. Define rectification and reflux ratio.
4. Predict the product for the reaction of (a) HCN and (b) δ -lactone with MeMgX and further work up process.
5. List out the advantages of sonochemistry in coupling reactions.
6. What are the various types of phase transfer catalysts?
7. How sonochemistry improves the rate of reaction in heterogeneous catalysis?
8. Write the general preparation of quaternary ammonium salts.
9. Mention the significance of auxiliary substances in green chemistry.
10. What are green solvents?

Part-B

Answer any EIGHT questions.

(8 × 5 = 40)

11. Explain the components involved in continuous fractionating column with rectifying and stripping section.
12. What are Newtonian and non-Newtonian fluids?
13. Write a note on the factors which influence the process scaling.
14. Explain the use of rate equation in the reactor design.
15. Discuss reduction reaction of α -halocarbonyl compounds using SmI₂.
16. Explain Stetter reaction with suitable example.
17. What are phase transfer catalysts? Discuss its advantages in organic synthesis.
18. Discuss biocatalysis and polymer supported catalysis in green chemistry.
19. Write short notes on the choice of the starting materials and solvent in greener perspective.
20. Discuss the influence of ultra sound in Diels Alder and esterification reactions.
21. What is purple benzene? How purple benzene is used as a phase transfer catalyst in oxidation reactions.
22. Discuss the importance of microwave irradiation in the synthesis of enamino-ketones and electrophilic alkenes.

Part-C

Answer any FOUR questions.

(4 × 10 = 40)

- 23a. Explain energy balance for single-stream process. **(5+5)**
 - b. Sketch a neat diagram of continuous fractionating column with rectifying and stripping section and mention the various components involved in it.
- 24a. Discuss the applications of extraction techniques in the separation processes. **(3+7)**
 - b. Explain the mechanism of preparation of organomagnesium reagent and give its reaction with (i) HCOOCH₃ and (ii) HCONH₂.
- 25a. Explain pinacol coupling reaction with suitable example. **(5+5)**
 - b. What is McMurray olefination? Explain the role of TiCl₄ in McMurray olefination.
26. Discuss the twelve principles of green chemistry in detail.
- 27a. Explain the mechanism of phase transfer catalysts in substitution reaction. **(7)**
 - b. What are crown ethers? Give some examples. **(3)**
28. Discuss the principle, instrumentation, advantages and limitations of microwave assisted organic synthesis.
