



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – CHEMISTRY

THIRD SEMESTER – APRIL 2014

CH 3951 - APPLIED ORGANIC CHEMISTRY

Date : 15/04/2014

Dept. No.

Max. : 100 Marks

Time : 01:00-04:00

Part-A

Answer all the questions. Each carries two marks.

1. What are the types of flow in fluid dynamics?
2. What is inclined manometer? Mention its advantages.
3. How is number of ideal plates calculated using McCabe-Thiele method?
4. Write Fourier law of heat conduction.
5. What is Murphree efficiency? How it is correlated with overall efficiency?
6. List any two ionic liquids and mention their uses.
7. Why does Wittig reaction is not a green reaction?
8. Write the sonochemical reaction of Friedel-Crafts acylation.
9. What is piezo-electric effect?
10. What are the three major role of phase transfer catalyst in a reaction?

Part-B

Answer any eight questions. Each carries five marks.

11. What is Reynolds's number? How the types of flow are observed in Reynolds's experiment?
12. Write Bernoulli equation and give its significance.
13. What are the various conditions of feed in a column?
14. Compare the uses of paddles and propellers for mixing of the components in synthetic processes.
15. Discuss the synthetic applications of SmI_2 in organic synthesis.
16. Explain the concept of atom economy with a suitable example.
17. What are green solvents? Explain their importance in green reactions.
18. What is Freon? Write the free-radical mechanism of chlorofluorocarbon and mention their advantages and disadvantages.
19. Explain the following organic synthesis using a phase transfer catalyst.
(i) nitrile from alkyl halide and (ii) benzoylcyanide from benzoyl chloride
20. Discuss the effect of ultrasound in the following reactions: (a) esterification (b) hydrolysis.
21. Compare the conventional method and microwave irradiation of deprotection of esters.
22. Describe the solid-liquid and triphase type phase transfer catalyzed reactions with a relevant example.

Part-C

Answer any four questions. Each carries ten marks.

- 23a. What are the various types of plate efficiencies and how are they correlated?
b. Sketch the acid operation flow chart of a nitration process. (5+5)
24. Explain pinacol coupling reactions and McMurray olefination (5+5)
25. Discuss the twelve principles of green chemistry in detail.
26. Describe the concept of selectivity and their types in green synthesis with suitable example for each.
27. Write the principle and explain the instrumentation of sonicator.
- 28a. Highlight the effects of ultrasound in 2+2 cycloaddition and Diels-Alder reaction.
b. Explain the mechanism of a phase transfer catalyst for a reaction between 1-chlorooctane and NaCN in presence of quaternary ammonium salt and water. (5+5)