



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – CHEMISTRY

FOURTH SEMESTER – APRIL 2016

CH 4955 - ORGANIC CHEMICAL TECHNOLOGY

Date: 21-04-2016
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

Part-A

Answer ALL questions.

(10 x 2= 20)

1. Mention any two rheological properties of fluids.
2. How is leaching process advantageous over washing and filtration processes.
3. Define the term velocity gradient.
4. Define the following
 - a) relative volatility
 - b) reflux ratio
5. Give the correlation between different temperature units.
6. What are the different types of chemical process kinetics?
7. Why is the concentration of sulphuric acid maintained very high during nitration of benzene?
8. Name any two blue and red dyes.
9. What are the different types of oxidation reactions carried out industrially?
10. How is paracetamol prepared?

Part-B

Answer any EIGHT questions.

(8 x 5= 40)

11. Discuss the energy balance in steady flow process.
12. Explain hydrostatic equilibrium in a centrifugal field.
13. Discuss the energy equation for a potential flow.
14. Sketch temperature – length curve for counter flow and parallel flow of fluids.
15. Derive an expression for the barometric equation.
16. Draw a complete set of continuous fractionating column with rectifying and stripping sections.
17. Compare the merits and demerits of fixed and fluidized bed reactors.
18. Discuss on the types and shapes of reactors used for industrial preparation.
19. Draw Hough nitrator and explain the process of nitration of benzene.
20. How is benzenesulphonic acid prepared and purified industrially?
21. Why is chlorination reaction preferred often by industry than other halogenation reactions?
22. How is Research and Development useful for the growth of an industry?

Part-C

Answer any FOUR questions.

(4 x 10= 40)

- 23 a. What are the various types impellers? Give its applications. **(5)**
b. Explain the working principle of concurrent leaching experiment. **(5)**
- 24 a. Explain the various terminologies involved in the material balance diagram in plate column. **(5)**
b. Derive an expression for the overall material balance of distillation of two component system in a plate column. **(5)**
- 25 a. What are complex series reactions? Explain them with examples. **(5)**
b. Write a note on the importance of heat transfer in chemical processes. **(5)**
- 26 a. Discuss the batch and flow processes. **(5)**
b. How is aliphatic nitration carried out? What are the products formed when 2,3-dimethylpentane is nitrated? Write the mechanism of this reaction. **(5)**
- 27 a. Why are ferrous metals used extensively as reactor materials? What are their merits and demerits? **(6)**
b. Write the preparation of titanium dioxide. **(4)**
- 28 a. Write the industrial preparation of penicillin. **(6)**
b. How is the upgradation of a product from laboratory to pilot plant level carried out? **(4)**
