LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **CHEMISTRY**

FOURTH SEMESTER – NOVEMBER 2016

CH 4955 - ORGANIC CHEMICAL TECHNOLOGY

Date: 16-11-2016 Dept. No. Max. : 100 Marks
Time: 01:00-04:00

Part-A

Answer ALL questions. **(10 × 2= 20)**

1. How is leaching process advantageous over washing and filtration process?
2. Define the term velocity gradient.
3. Give the correlation between different temperature units.
4. Mention any two rheological properties of fluids.
5. Write Fourier law of heat conduction.
6. What is back mixing? Mention its consequences.
7. Describe the advantages of longitudinal reactors.
8. How is DVS ratio calculated for nitration reactions?
9. Why is chlorination preferred over other halogenation reactions industrially?
10. Write a method to convert pigment in to paint.

Part-B

Answer any EIGHT questions. **(8 × 5= 40)**

11. Discuss the energy balance in steady flow process.
12. Derive an expression for the barometric equation.
13. How is chlorination of benzene controlled to form only monochlorinated product?
14. Draw a complete set of continuous fractionating column with rectifying and stripping sections.
15. Write short note on the rheological behaviors of different fluids.
16. (a) Explain the following: (i) relative volatility (ii) reflux ratio
    (b) Describe the method to calculate number of ideal plates by McCabe-Thiele method.
17. Compare the batch, semibatch and longitudinal reactors.
18. Using Hough nitrator, explain the process of nitration of benzene.
19. How is the oxidation of iso-propylbenzene to phenol carried out? What are the possible side reactions?
20. What are the various types of industrial hydrogenation reactions? Briefly describe each.
21. Explain the importance of quality control in an industry.
22. How does paint industry formulate a dye or a pigment into paint?

Part-C

Answer any FOUR questions. **(4 × 10= 40)**

23 a. What are the types of impellers? Give its applications. **(5)**
   b. Explain the working principle of concurrent leaching experiment. **(5)**
24 a. How are immiscible liquids separated by continuous gravity decanter? **(5)**
   b. Discuss the Hydrostatic equilibrium in a centrifugal field. **(5)**
25 a. Write Bernoulli equation and give its significance. **(4)**
   b. Define Reynolds's number? How are the types of flow observed in Reynolds's experiment? **(6)**
26 a. What are complex series reactions? Explain with an example. **(5)**
   b. Explain fixed and fluidized bed reactors with example. **(5)**
27 a. Explain the preparation of titanium dioxide. **(5)**
   b. What is salting out of sulphonated product from the reaction mixture? **(5)**
28 a. What are the merits and demerits of using copper as reactor material? **(5)**
   b. How is up-gradation from laboratory level to pilot plant achieved? **(5)**

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