

**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

M.Sc. DEGREE EXAMINATION – CHEMISTRY

FOURTH SEMESTER – APRIL 2010

**CH 4955 - ORGANIC CHEMICAL TECHNOLOGY**

Date & Time: 20/04/2010 / 9:00 - 12:00 Dept. No.

Max. : 100 Marks

**PART-A**

Answer **ALL** questions.

(10 × 2 = 20 marks)

01. Compare batch and longitudinal reactors?
02. Calculate the DVS ratio for a mono and dinitration reactions of benzene?
03. Name the industrial sulphonating agents.
04. Why industrially fluorination reactions are more important?
05. How is paracetamol prepared?
06. Differentiate unit processes and unit operations with examples.
07. Define Reynold's number and mention its significance.
08. Define the law of conservation of mass. How is it useful to control mass transfer?
09. What are the methods by which heat transfer is done?
10. Name the fire safety measures done in industry?

**PART-B**

Answer any **EIGHT** questions.

(8 × 5 = 40 marks)

11. Classify various chemical reactors and give a brief account on each.
12. How is product distribution done in parallel and complex series reactions?
13. Explain the industrial mono nitration of benzene.
14. Give a detailed account on the design and material of reactors used for halogenation reaction.
15. Explain the oxidation reactions by various forms of  $\text{KMnO}_4$ .
16. Draw the flow chart and explain the preparation of a dye industrially?
17. How turbulent fluid flow controls reaction kinetics in batch and continuous flow reactors?
18. Write short notes on a) calcination and b) filtration.
19. Explain the three primary reasons for heat transfer reactions.
20. Explain the separation of fluids in centrifugal decanter.
21. What are type 1 and 2 material transfer reactions? Explain.
22. Explain the role of R&D and QC units in industry.

**PART-C**

Answer any **FOUR** questions.

(4 × 10 = 40 marks)

23. a) What are the physical factors that affect chemical process kinetics of chemical reactions? Write a short note on each.  
b) What is back mixing? Explain the effect of back mixing in consecutive reactions.
24. How do the following factors alter sulphonation reactions industrially?  
i) Chemical structure                      ii) catalysts                      iii) solvents
25. With a complete flow chart, explain the industrial preparation of penicillin.
26. Explain the following unit operations in detail  
a) distillation    b) crystallization
27. Write short notes on the following  
a) manometers                      b) globe valve                      c) pitot tube
28. a) A 1000 kg saturated solution of KCl at 80 °C when cooled yields 100 kg of KCl crystals. Find out the temperature at which the crystals separate.  
b) How is titanium dioxide prepared by chloride method? Explain.

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