# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI - 600 034



### M.Sc. DEGREE EXAMINATION - CHEMISTRY

### THIRD SEMESTER - NOVEMBER 2019

### 16/17/18PCH3ES01 - APPLIED ORGANIC CHEMISTRY

Date: 06-11-2019	Date: 06-11-2019	Dept. No.	Max. : 100 Mark
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Time: 09:00-12:00

### Part-A

### Answer ALL questions.

 $(10 \times 2 = 20)$ 

- 1. Define shear and shear stress.
- 2. Differentiate between laminar flow and turbulent flow.
- 3. Outline the application of Gilman reagents in selective carbon-carbon bond formation.
- 4. Identify the reagents required for the following conversion.
- 5. What are the effects of chlorofluorocarbon?
- 6. Predict the product and state whether the following reaction is green reaction or not.

$$CH_3MgBr + CH_3CHO \xrightarrow{H^+/H_2O}$$
?

- 7. Write a polymer supported intramolecular cyclisation reaction.
- 8. List any four advantages of polymer supported organic synthesis.
- 9. What is phase transfer catalyst? Give an example.
- 10. Identify the product in the following reactions.

(i) 
$$R$$
 (ii)  $R$  + Cl<sub>3</sub>COCl  $R$  ?

#### Part-B

### Answer any EIGHT questions.

 $(8 \times 5 = 40)$ 

- 11. Discuss any one manufacturing method that involves only unit operations and not processes.
- 12. Write a note on the following industrial processes: a) Nitration
- b) Sulphonation
- 13. Describe the vapor phase and liquid phase catalytic reactions with suitable examples
- 14. Provide any two methods of preparation of organocobalt and organoaluminium compounds.
- 15. Write an account on the usage of samarium reagents in organic synthesis.
- 16. Explain the importance of green solvents with examples.
- 17. Calculate percentage atom economy for a Claisen and Diels-adder reaction. Highlight its importance in green chemistry.
- 18. Compare the salient features of general procedure of an organic synthesis by conventional and polymer supported method.

- 19. How is polystyrene carbodiimide prepared? Explain its advantages.
- 20. List the advantages and disadvantages of microwave assisted organic synthesis.
- Discuss phase transfer catalyzed reaction mechanism of reaction between 1-chloro octane and aqueous 21. sodium cyanide.
- 22. Explain the following ultrasonic synthesis with a suitable example for each.
  - (i) Friedel-Crafts alkylation
- (ii) Solvolysis

### Part-C

## Answer any FOUR questions.

 $(4 \times 10 = 40)$ 

**(4)** 

- 23a. Derive the rectification operating line equation.
  - (6)
  - b. Illustrate the continuous fractional distillation set up and explain its advantage in separating liquid mixtures.
- 24. Identify the products in the following reactions and explain the mechanism.

- 25a. Discuss the reactivity and application of organocadmium reagents in organic synthesis. (5)
- b. Illustrate the need and objectives of green chemistry. (5)
- List the twelve principles of green chemistry and explain the concept of selectivity with 26. suitable examples for each type.
- 27a. Explain the preparation and functions of rose 2engal. (4)
  - Write short note on the following polymer supported organic synthesis.
    - (i) Diazo-transfer (ii) Alkylation (3+3)
- 28 a. Discuss the types of phase transfer catalyst and give examples for each type. (6)
  - b. Write the need and advantages of phase transfer catalyzed reactions. (4)