# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

THIRD SEMESTER – **NOVEMBER 2018**

**16/17PCH3ES01 – APPLIED ORGANIC CHEMISTRY**

Date: 31-10-2018 Dept. No. Max. : 100 Marks

Time: 09:00-12:00

## Part-A

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

1. Provide an example for Newtonian and non-Newtonian fluids.
2. Differentiate laminar flow and turbulent flow.
3. Write Barbier reaction and its advantage compared to Grignard reagent.
4. Give an example for pinacol coupling reaction.
5. List any four advantages of polymer supported organic synthesis.
6. Give an example for a polymer supported diazo-transfer reaction.
7. What is meant by photochemical smog?
8. Mention any two green solvents and their uses.
9. State the principle of microwave organic synthesis.
10. What is phase transfer catalyst? Why are they called so?

## Part-B

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

11. Delineate the various operations involved in the manufacture of common salt. Justify that the steps involved are operations and not processes.
12. Deduce the Bernoulli's equation for a potential flow.
13. Derive the rectification operating line equation.
14. Write any two methods of preparation of organocopper and organozinc compounds.
15. Explain the utility of selenium dioxide in oxidation reactions with mechanism.
16. Discuss the applications of polymer supported photosensitizers with an example.
17. Explain the following polymer supported organic synthesis with a suitable example.
    (i) Intramolecular cyclisation (ii) Acylation of aniline
18. Illustrate the need and objectives of green chemistry.
19. Compare the synthesis of adipic acid from benzene and D-glucose.
20. Explain the following microwave assisted organic synthesis and compare them with conventional method.
    (i) Esterification (ii) *ortho*-Claisen rearrangement
21. How are the following phase transfer catalysts prepared? Explain.
    (i) Tetraalkylammonium chloride (ii)Dibenzo [18]crown-6

22. Explain the phase transfer catalyzed reaction mechanism of reaction between 1-chloro octane and aqueous sodium cyanide.

## Part-C

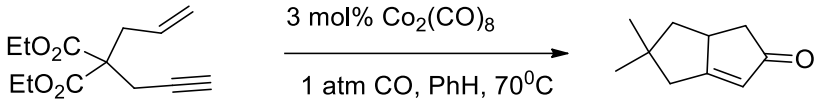
***Answer any FOUR questions.*** **(4 × 10= 40)**

23a. What are the different types of driers used in industry? Explain. (5)

b. Illustrate the continuous fractional distillation set up and its advantages in separating liquid mixtures. (5)

24a. Explain the mechanism of Heck reaction. (5)

b. Identify the following name reaction and explain the conversion with mechanism. (5)




25a. Mention the method of preparation of Gillman reagent and explain its application in addition reactions. (5)

b. Write the mechanism of synthesis of polystyrene carbodiimide and explain any one of its application. (5)

26. Explain the applications of the following polymer support with a suitable example for each.

(i) Polystyrene anhydride (ii) Poly sulfonazide

(iii) Polystyrene diphenylphosphene (iv) polystyrene thiomethyl lithium

(v) Polystyrene peracid

27. Describe the twelve principles of green chemistry with suitable example for each. (10)

28 a. Discuss the advantages, limitations and precautions of microwave assisted organic synthesis. (6)

b. Explain the following phase transfer catalyzed organic reactions with a suitable example.

(i) Esterification (ii) Addition (2+2)

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