

**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034****M.Sc. DEGREE EXAMINATION – CHEMISTRY****THIRD SEMESTER – APRIL 2024****PCH3ME01 – APPLIED ORGANIC CHEMISTRY**

Date: 17-04-2024

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

SECTION A – K1 (CO1)**Answer ALL the questions****(5 x 1 = 5)****1 Choose the correct answer**

- a) Unit operation involves only -----.
(i) chemical changes (ii) physical Changes (iii) isomerization (iv) phase Changes
- b) ----- is a natural organometallic compound.
(i) C-M (ii) C-X (iii) C-N (iv) C-O
- c) Which of the following is the best polymer support for organic synthesis?
(i) Polyethylene (ii) Polypropylene (iii) Polystyrene (iv) PVC
- d) Bhopal gas tragedy is due to the gas
(i) methyl amine (ii) Phosgene (iii) Methyl isocyanide (iv) None of these
- e) The principle of sonicator is
(i) Stark effect (ii) Piezoelectric effect (iii) Zeeman effect (iv) All of these

SECTION A – K2 (CO1)**Answer ALL the questions****(5 x 1 = 5)****2 State True or False**

- a) Blood flow in the middle of the arteries is a turbulent flow.
- b) Organometallic compounds cannot be stored in water.
- c) Rose bengal is a polymer supported photosensitizer.
- d) Ionic liquids are currently employed as green solvents due to their non-volatility.
- e) The principle of microwave cooking is conversion of thermal energy to electromagnetic energy.

SECTION B – K3 (CO2)**Answer any THREE of the following****(3 x 10 = 30)**

- 3 Interpret the significance of Reynold's number on depicting nature of flow.
- 4 Demonstrate the application of methyl and phenyl lithium reagents in organic transformations.
- 5 Discuss the properties and advantages of polymer support in organic synthesis.
- 6 Explain the mechanism of green synthesis of adipic acid and catechol.
- 7 Illustrate the limitations and precautions of microwave assisted organic synthesis.

SECTION C – K4 (CO3)**Answer any TWO of the following (2 x 12.5 = 25)**

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| 8 | Analyze the role of R&D, Quality control and Standardization in an industrial setup. |
| 9 | Compare the nature and application of organomagnesium and organosilicon compounds. |
| 10 | Illustrate the twelve principles of green chemistry in detail. |
| 11 | Describe the mechanism of the following reactions:
(i) Intramolecular cyclization reactions (ii) Use of polystyrene carbodiimide (6+6.5) |

SECTION D – K5 (CO4)**Answer any ONE of the following (1 x 15 = 15)**

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| 12 | Appraise the utilities of samarium diiodide, organoaluminium and organocopper compounds. |
| 13 | (a) Illustrate the properties, advantages and drawbacks of supercritical carbon dioxide with examples.
(b) Explain any two applications of ultrasonic assisted organic synthesis. (10+5) |

SECTION E – K6 (CO5)**Answer any ONE of the following (1 x 20 = 20)**

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| 14 | Summarize the applications of organopalladium compounds and Grubb's catalyst in organic synthesis. |
| 15 | Highlight the advantages of the following polymer supported synthesis with mechanism.
(i) Acylation with polystyrene anhydride (ii) Diazo transfer reaction
(iii) Wittig reaction (iv) Alkylation (v) Oxidation with peracid and chromic acid (5x4) |
