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# B.M.S. College of Engineering, Bengaluru-560019

**Autonomous Institute Affiliated to VTU**

## January / February 2025 Semester End Main Examinations

**Programme: B.E.** **Semester: VII**

**Branch: Institutional Elective** **Duration: 3 hrs.**

**Course Code: 23CY7OEGCE** **Max Marks: 100**

**Course: Green Chemistry and Green Engineering**

**Instructions**: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.



**Important Note:** Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

| | | UNIT - I | CO | PO | Marks |
|---|---|---|---|---|---|
| 1 | a) | Explain safer routes to synthesize carbaryl to avoid the incidents such as Bhopal Gas incident. | CO1 | PO2 | **8** |
| | b) | Explain Need, Objectives and limitations of green chemistry in prevention various hazardous to the environment. | CO3 | PO7 | **6** |
| | c) | Explain hydrogen as a green fuel. Highlight the strategic plan of green hydrogen mission of government of India. | CO2 | PO6 | **6** |
| | | **OR** | | | |
| 2 | a) | State and explain any four principles of green chemistry. | CO1 | PO2 | **8** |
| | b) | Explain various environmental laws for safety measures of environmental protection. | CO2 | PO6 | **6** |
| | c) | Discuss the role of Green chemistry in sustainable development. | CO2 | PO7 | **6** |
| | | **UNIT - II** | | | |
| 3 | a) | Discuss the ionic liquids and fluorous biphasic solvent as green solvents. | CO1 | PO2 | **8** |
| | b) | Explain the synthesis of Aspirin by Microwave assisted reactions. | CO3 | PO7 | **6** |
| | c) | Discuss the principle, methodology advantages, and disadvantages. of Photocatalytic reactions | CO2 | PO6 | **6** |
| | | **OR** | | | |
| 4 | a) | Discuss the principle, methodology advantages, and disadvantages of Microwave assisted reactions. | CO1 | PO2 | **8** |
| | b) | Explain the role of Supercritical carbon dioxide as a green solvent. | CO3 | PO7 | **6** |
| | c) | Explain the Synthesis of paracetamol by Ultrasound assisted reactions. | CO2 | PO6 | **6** |

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| | | | **UNIT - III** | | | |
| | 5 | a) | Discuss the fabrication technology involved in fabrication of optical fibers. | *CO1* | *PO2* | **8** |
| | | b) | Explain the principle and working of Light emitting diodes (LED. | *CO3* | *PO7* | **6** |
| | | c) | Discuss the various principle and methods used in Solar Heating & Cooling System. | *CO2* | *PO6* | **6** |
| | | | **OR** | | | |
| | 6 | a) | Discuss the materials development of fiber optic design. Explain the role of fiber optics in minimization of transmission losses. | *CO1* | *PO2* | **8** |
| | | b) | Explain the principle and applications of cool roof paints. | *CO3* | *PO7* | **6** |
| | | c) | Explain Water, ammonia & lithium bromide-water absorption refrigeration systems. | *CO2* | *PO6* | **6** |
| | | | **UNIT - IV** | | | |
| | 7 | a) | Explain Composition, Characteristics and various Toxic materials present in e-waste. | *CO1* | *PO2* | **8** |
| | | b) | Discuss the various sources and remediation of e-waste from electronic and electrical products. | *CO3* | *PO7* | **6** |
| | | c) | Elaborate effect of e-waste on human health. | *CO2* | *PO6* | **6** |
| | | | **OR** | | | |
| | 8 | a) | Explain the principle and procedure involved in conversion of Solid waste to Electricity. Mention the advantages and disadvantages of the process. | *CO1* | *PO2* | **8** |
| | | b) | Discuss the hazardness involved in biomedical waste. | *CO3* | *PO7* | **6** |
| | | c) | Discuss collection, handling, storage, transportation and disposal of biomedical waste. | *CO2* | *PO6* | **6** |
| | | | **UNIT - V** | | | |
| | 9 | a) | Explain the development of binder less board. List the advantages and disadvantages of binder less board. | *CO1* | *PO2* | **8** |
| | | b) | What are biodegradable polymers. List out the criteria's to become a polymer Biodegradable. | *CO3* | *PO7* | **6** |
| | | c) | Discussed plant based materials as green building materials. | *CO2* | *PO6* | **6** |
| | | | **OR** | | | |
| | 10 | a) | Explain the various methods and tests to assess biodegradability of a polymer. | *CO1* | *PO2* | **8** |
| | | b) | What are wood polymer composites (WPC)? Explain its developments and commercial applications | *CO3* | *PO7* | **6** |
| | | c) | Discuss degradation and durability of wood-based materials. | *CO2* | *PO6* | **6** |

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