

25900119

Reg.No :

Name :

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) REGULAR EXAMINATION MARCH 2025
SECOND SEMESTER
Discipline Specific Core Course (DSC) - MG2DSCICH100 - MAJOR
CHEMICAL INDUSTRIES
(2024 ADMISSION ONWARDS)

Duration: 1.5 Hours

Maximum Marks: 50

Remember(K), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create(C), Skill(S), Interest(I) and Appreciation(Ap)

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

Part A

Multiple choice questions

Answer all questions

Each question carries **1** marks

1. Which type of glass is known for its high resistance to thermal shock? [K] / [CO1]
a). Borosilicate glass b). Fluorosilicate glass
c). Coloured glass d). Photosensitive glass
2. What is the main advantage of powder coating over traditional painting? [U] / [CO2]
a). It is cheaper b). It is more environmentally friendly
c). It requires less surface preparation d). It dries faster
3. What is the main reason for the limited life cycle of secondary batteries? [U] / [CO2]
a). Memory effect b). Slow reaction rate
c). Electrolyte depletion and electrode degradation d). High internal resistance
4. In rechargeable batteries, which component undergoes structural changes over cycles? [U] / [CO3]

- a). Electrolyte b). Electrodes
 - c). Separator d). Casing
5. In solar cell, photo current depends on. [U] / [CO3]
- a). area of solar cell b). power of incident light source
 - c). optical properties of the panel d). All of these
6. Which of the following oxides has a direct bandgap, making it useful for optoelectronic applications? [A] / [CO1]
- a). Titanium oxide (TiO_2) b). Zinc oxide (ZnO)
 - c). Silicon oxide (SiO_2) d). Copper oxide (CuO)
7. Why are thermosetting plastics more suitable for applications requiring heat resistance? [U] / [CO4]
- a). They can be reshaped easily
 - b). They have a flexible structure
 - c). They form permanent chemical bonds that prevent melting
 - d). They have a lower density than thermoplastics
8. Which type of gaseous fuel is produced by anaerobic digestion of organic waste? [U] / [CO1, CO5]
- a). LPG b). CNG
 - c). Biogas d). Hydrogen
9. Which fraction is obtained first during the distillation of coal tar? [U] / [CO1, CO5]
- a). Heavy oils b). Light oils c). Middle oils d). Pitch
10. What is the primary purpose of the injection screw in injection moulding? [U] / [CO4]
- a). To mix the plastic with additives
 - b). To inject the plastic material into the mould
 - c). To melt and feed the plastic material into the mould
 - d). To cool the material after it is injected

[1x10 = 10]

Part B

Short Answer Questions

Answer any **4** questions

Each question carries **3** marks

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|--|------------------|
| 11. Describe the characteristics and uses of traditional ceramics such as porcelain and earthenware. | [U] / [CO1] |
| 12. Discuss the composition and properties of armoured glass. | [U] / [CO2] |
| 13. Write a note on the voltage generation in a battery. | [U] / [CO3] |
| 14. Write the anode and cathode reactions during the recharging of a lead acid battery. | [U] / [CO3] |
| 15. Compare Transfer Moulding and Compression Moulding. | [U] / [CO4] |
| 16. Why is LNG preferred over CNG for long-distance transportation and heavy-duty applications? | [U] / [CO1, CO5] |

[3x4 = 12]

Part C

Short Essay Questions

Answer any **4** questions

Each question carries **7** marks

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|---|------------------|
| 17. Analyze the role of carbon fibers in enhancing the mechanical properties of composite materials. | [An] / [CO1] |
| 18. Explain the role of pigments in paints, their classification, and their impact on paint properties. | [U] / [CO2] |
| 19. Describe the function and importance of a salt bridge in an electrochemical cell. | [U] / [CO3] |
| 20. How does the Nernst equation explain the variation of electrode potential with concentration? | [U] / [CO3] |
| 21. Describe the Process, Types, and Applications of Foaming in Plastics. | [U] / [CO1, CO4] |
| 22. Describe the ultimate analysis of coal and how it differs from proximate analysis. | [U] / [CO5] |

[7x4 = 28]