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Reg.No :

Name :

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) REGULAR/IMPROVEMENT/REAPPEARANCE
EXAMINATION APRIL 2026
SECOND SEMESTER
Discipline Specific Core Course (DSC) - MG2DSCICH100 - MAJOR
CHEMICAL INDUSTRIES
(2024 ADMISSION ONWARDS)

Duration: 1 Hour 30 Minutes

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. What is the primary cause of resistance in normal conductors, which disappears in superconducting oxides? [U] / [CO1]
a). Thermal motion of electrons b). High electron density
c). Absence of free electrons d). Lattice vibrations
2. Which of the following types of glass typically contains metal oxides or sulphides to impart color? [K] / [CO2]
a). Borosilicate glass b). Fluorosilicate glass
c). Coloured glass d). Photosensitive glass
3. In solar cell, which energy is getting converted into electricity [K] / [CO2]
a). chemical b). light energy c). wind energy d). tide energy
energy

4. Why is the Nernst equation important in biological systems? [U] / [CO3]
- a). It helps in DNA replication
 - b). It explains pH balance
 - c). It determines membrane potentials
 - d). It helps in protein synthesis
5. The overall reaction in a standard Daniel cell is: [An] / [CO3]
- a). $\text{Zn} + \text{Cu}^{2+} \rightarrow \text{Zn}^{2+} + \text{Cu}$
 - b). $\text{Cu} + \text{Zn}^{2+} \rightarrow \text{Zn} + \text{Cu}^{2+}$
 - c). $\text{Zn} + 2\text{H}^+ \rightarrow \text{Zn}^{2+} + \text{H}_2$
 - d). None of the above
6. Armoured glass achieves its strength through [A] / [CO1]
- a). The addition of metallic coatings
 - b). The use of multiple glass-polymer layers
 - c). A chemical etching process
 - d). Increased transparency
7. What is the role of the die in extrusion moulding? [U] / [CO4]
- a). Heats the plastic
 - b). Shapes the plastic into its final form
 - c). Cools the plastic
 - d). Increases pressure
8. 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
9. What is the primary goal of the Fischer-Tropsch process? [U] / [CO5]
- a). To produce synthetic rubber
 - b). To convert carbon monoxide and hydrogen into hydrocarbons
 - c). To synthesize natural gas
 - d). To extract oil from shale
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

- | | |
|---|------------------|
| 11. Describe the formulation process of water-based and solvent-based paints. | [A] / [CO1] |
| 12. What is the main chemical component of silicate glass? | [U] / [CO2] |
| 13. What are the main components of a battery? | [U] / [CO3] |
| 14. What are the main components of a battery and their functions? | [K] / [CO3] |
| 15. Explain the plastic casting process | [U] / [CO1, CO4] |
| 16. What is anthracene, and where is it applied? | [U] / [CO5] |

[3x4 = 12]

Part C

Short Essay Questions

Answer any **4** questions

Each question carries **7** marks

- | | |
|---|--------------|
| 17. Analyze the role of carbon fibers in enhancing the mechanical properties of composite materials. | [An] / [CO1] |
| 18. Explain the properties and manufacturing process of ceramics. | [U] / [CO2] |
| 19. Describe the working of a lithium ion battery and its uses. | [K] / [CO3] |
| 20. Explain the measures used to describe the performance of a battery. | [U] / [CO3] |
| 21. Explain the process of polymerization in the formation of thermoplastic and thermosetting polymers. | [K] / [CO4] |
| 22. Describe the ultimate analysis of coal and how it differs from proximate analysis. | [U] / [CO5] |

[7x4 = 28]