

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU-UGP (HONOURS)

FIFTH SEMESTER EXAMINATION

MG5DSECHEA03-MANUFACTURE OF PETROCHEMICALS II

Duration: 2 hrs.

Maximum marks: 70

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. The largest application of methanol is in the manufacture of: [Understand] [CO1]
A) Ethylene
B) Formaldehyde
C) Benzene
D) Propylene
2. Which property of carbon black makes it useful as a reinforcing agent in rubber?
[Remember] [CO1]
A) High solubility in water
B) High surface area
C) Low thermal stability
D) High volatility
3. Which chloromethane is commonly used as a refrigerant? [Remember] [CO2]
A) CHCl_3
B) CH_3Cl
C) CCl_4
D) CH_2Cl_2

4. Carbon disulphide is manufactured industrially by: [Remember] [CO2]
- A) Claus process
 - B) Andrussow process
 - C) Thacker process
 - D) Wulff process
5. Which solvent is used for safe storage of acetylene? [Remember] [CO2]
- A) Water
 - B) Methanol
 - C) Acetone
 - D) DMF
6. Identify the main reaction involved in the manufacture of isopropanol from propylene. [Understand] [CO3]
- A) Oxidation
 - B) Hydration
 - C) Polymerization
 - D) Esterification
7. Recognize the type of alcohol represented by glycerin. [Remember] [CO3]
- A) Monohydric alcohol
 - B) Dihydric alcohol
 - C) Trihydric alcohol
 - D) Aromatic alcohol
8. Discuss the purpose of the second oxidation stage in acrylic acid manufacture. [Understand] [CO3]
- A) To convert propylene into glycerin
 - B) To convert acrolein into acrylic acid
 - C) To convert acrylic acid into propylene
 - D) To convert water into acrolein
9. Acetaldehyde is prepared from acetylene by [Remember] [CO4]
- A) Chlorination
 - B) Hydration
 - C) Hydrogenation

D) Oxidation

10. Neoprene is manufactured by.... [Understand] [CO4]

A) Condensation polymerization

B) Free-radical emulsion polymerization

C) Copolymerization with PVC

D) Ring-opening polymerization

(1x10=10)

Part B

Short Answer Questions

Answer Any **8** Questions

Each question carries **3** marks

11. Explain the Acetylene Process for the manufacture of carbon black. [Understand] [CO1]

12. Analyze the factors that make DME a clean alternative fuel. [Analyze] [CO2]

13. Compare the Silver Catalyst Process and Formox Process used for formaldehyde manufacture. [Analyze] [CO2]

14. Explain the industrial production of formic acid from methanol and carbon monoxide. [Understand] [CO2]

15. Describe the manufacture of chloromethanes by direct chlorination of methane. [Understand] [CO2]

16. List any three uses of isopropanol. [Remember] [CO3]

17. State the difference between natural and synthetic glycerin. [Remember] [CO3]

18. State the two oxidation stages involved in the manufacture of acrylic acid from propylene. [Remember] [CO3]

19. Explain why the HCN process for acrylonitrile has been replaced. [Understand] [CO4]

20. A factory wants to manufacture waterproof wetsuits. Which acetylene-derived product would you recommend? Justify. [Apply] [CO4]

(3x8=24)

Part C

Short Essay Questions

Answer Any **3** Questions

Each question carries **7** marks

21. Compare the Channel Process and Furnace Process for the manufacture of carbon black
[Analyze] [CO1]
22. Examine the Sachse process for acetylene manufacture and discuss its industrial applications. [Analyze] [CO2]
23. Discuss the manufacture of isopropanol from propylene by the hydration method.
[Understand] [CO3]
24. Explain the properties and uses of glycerin. [Understand] [CO3]
25. Compare the manufacture of vinyl chloride and acrylonitrile from acetylene.
[Analyze][CO4]

(7x3=21)

Part D

Essay Questions

Answer Any **1** Question

Each question carries **15** marks

26. Illustrate Degussa process and Shawnigan process for the manufacture of HCN [Apply]
[CO1]
27. Explain Reppe's synthesis of acrylic acid with flow chart. Mention the reaction, catalyst, operating conditions and process. [Understand] [CO4]

(15x1=15)