

PART – A

Answer ALL the questions:

(10 x 2 = 20 marks)

1. How does tautomerism differ from resonance? Give any two points.
2. What are free radicals? How are they obtained?
3. How is butane prepared from ethyl bromide?
4. What is catalytic cracking? Name the catalyst used.
5. What happens when propene is treated with Cl_2 at 500°C .
6. What happens when 1, 3 butadiene is treated with Br_2 in carbon tetrachloride.
7. How will you prepare glyoxal from acetylene?
8. Give the IUPAC name of $\text{CH}_3 - \text{C}\equiv\text{C} - \text{C}(\text{CH}_3)_2 - \text{CH}_3$.
9. Classify the following groups as activating or deactivating with respect to further electrophilic substitution of the aromatic ring.
a) $-\text{NH}_2$ b) $-\text{NO}_2$ c) CH_3 d) Cl .
10. Give the reaction of anthracene on treatment with sodium & ethanol.

PART – B

Answer any EIGHT questions:

(8 x 5 = 40 marks)

11. What is hybridization? Discuss the orbital structure of acetylene.
12. Tertiary carbonium ion is more stable than secondary carbonium ion. Explain.
13. How will you prepare propane from methane using Corey – House synthesis.
14. What is Saytzeff's rule? Explain with an example.
15. Define polymerization? Explain Zeigler-Natta catalysed polymerization of alkenes.
16. Write a note on the acidity of 1-Alkynes.
17. Give the products of the following reaction:

18. Explain with mechanism the Friedel Craft acylation of benzene.
19. How is Naphthalene prepared by Haworth's synthesis.
20. Write the Free radical mechanism of halogenations of alkanes.
21. Explain Bayer's strain theory with suitable examples.
22. Write a short note on the stability of conjugated dienes.

PART – C

Answer any FOUR questions:

(4 x 10 = 40 marks)

23. Write short notes on: a) Hyperconjugation b) Steric effect c) Inductive effect. (3+3+4)
24. a) What is Huckel's rule? Prove that Naphthalene is aromatic, using Huckel's rule. (4)
b) How will you synthesize cyclopentane using Dieckmann reaction. (6)
25. a) How does cyclopropane react with

i) Conc.HBr. ii) H_2/Ni at $80^\circ C$. iii. Cl_2/UV light iv) Br_2/CCl_4 in dark.

b) Define the following terms with suitable examples:

i) Bond length. (1) ii) Bond energy. (2) iii. Bond angle. (2).

26. a) What is Hydroboration? Give an example.

b) Complete the reaction:

27. a) Explain how acetylene is prepared in the laboratory? Give two uses of acetylene. (3+2)

b) Give the reactions for the following:

i) Acetylene is treated with water in the presence of mercuric sulphate and sulphuric acid. (3)

ii) Acetylene reacts with HCN in the presence of $Ba(CN)_2$. (2)

28. a) Explain why toluene is more readily nitrated than benzene? (4)

b) How will you synthesize the following compounds from benzene.

i) Acetophenone ii) Chlorobenzene iii) Styrene (6)