Q1. Choose the correct answer.

1.The process used to improve quality of gasoline is called:

(A)Thermal cracking (B)Reforming (C)Steam cracking (D)Combustion

2.-SH functional group is called:

(A)Cyano (B)Mercapto (C)Nitro (D)Carboxyl

3.Ethers show the phenomenon of:

(A)Position isomerism (B)Functional group isomerism

(C)Metamerism (D)Cis-trans isomerism

4.The catalytic oxidation of methane produces:

(A)$CO + H_2O$ (B)$CO_2 + H_2O$ (C)$C_2 + H_2O$ (D)$H_3C\text{-}OH$

5.\beta - \beta '-dichloroethyl sulphide is commonly known as:

(A)Mustard gas (B)Laughing gas (C)Phosgene gas (D)Bio-gas

6.Aromatic compounds burn with sooty flame because:

(A)They have high percentage of hydrogen (B)They have a ring structure

(C)They have high percentage of carbon (D)They resist reaction with air

7.Which of the following is Ortho and Para directing group?

(A)-1 (B)-CHO (C)-COOH (D)$-NR_3$

8.SN2 reactions can be best carried out with:

(A)Primary alkyl halides (B)Secondary alkyl halides

(C)Tertiary alkyl halides (D)All the three

9.Cyanogen chloride reacts with ethyl magnesium bromide to give.

(A)CH_3CH_2Cl (B)CH_3CH_2Br (C)C_4H_{10} (D)CH_3CH_2CN

10.Rectified spirit contains methyl alcohol about:

(A)80% (B)85% (C)90% (D)95%

11.Which is most difficult to be oxidized?

(A)CH_3CHO (B)CH_3COCH_3 (C)HCHO (D)C_2H_5CHO

12.Which one has yellow or orange crystalline ppt?

(A)Acetone hydrazine (B)2,4-DNPH (C)Ethanol oxime (D)Bisulphite addition product

13.The flavor of amylacetate is:

(A)Orange (B)Apricot (C)Banana (D)Pinapple

14.Banana flavor is given by the ester:

(A)Octyl acetate (B)Amyl butyrate (C)Amyl acetate (D)Ethyl butyrate

15.Which one is not a fatty acid?

(A)Acetic acid (B)Propionic acid (C)Butanoic acid (D)Palmitic acid

16.Nylon 6, 6 is obtained by the reaction of hexamethylene diamine with:

(A)Acetic acid (B)Adipic acid (C)Vinyl chloride (D)Acetyl chloride

17.Which one is a disaccharide?

(A)Glucose (B)Sucrose (C)Fruclose (D)Cellulose

Q2. Write short answers of the following questions.

1. What are homocyclic and heterocyclic compounds? Give one example of each.
2. What is catalytic Cracking?
3. What are Isomerse and Tautomers?
4. 1-Butane does not show cis-trans isomerism but 2-butene does. Justify the statement.
5. Write structural formula of the following compound. 2,3,4,4-Tetramethyl-2-pentene
6. What is Raney-Nickel? Where it is prepared?
7. How alkanes are prepared by reduction of aldehyde and Ketones?
8. How C2H2 reacts with: a)(**10%H_2SO_4)/$HgSO_4$** b) **HBr**
9. How do you justify that 150.5 $kJmol^{-1}$ is the resonance energy of benzene?
10. What is Wurtz-Fitting reactions?
11. How Acetophenone can be obtained from benzene?
12. How Acylation of Benzene takes place. Give its mechanism?
13. How does bond polarity of C-X bond affect the reactivity of alkyl halides?
14. Convert ethyl bromide into: i) Ethane b) n-Butane
15. Write down a method for the preparation of ethyl magnesium bromide in laboratory.
16. How will you carry out the following conversions? $CH_3\ CH_3 \rightarrow (CH_3\ CH_3)_4\ N^+Br^-$
17. Why absolute alcohol is not obtained by fermentation process and how is it obtained?
18. What is Lucas test?
19. How will you distinguish between 1-propanol and 2-propanol?
20. Prepare bakelite from phenol.
21. How HCHO and CH_3CHO are polymerized? Give chemical reaction.
22. Convert Acetone into 2-Propanol.
23. How acetone is oxidized with $K_2Cr_2O_7$ / H_2SO_4?
24. What is iodoform test? Give two uses of it.
25. Why boiling point of carboxylic acid is relatively high?
26. How is acetic acid manufactured? What is glacial acetic acid?
27. What is Ninhydrin Test?
28. What is Zwitter ion? How it is formed?
29. Define saponification number and iodine number.
30. Define saponification number with a suitable example

Q3. Write detailed answers of the following questions.

1. What is SP-hybridization? Explain structure of acetylene according to this theory.
2. Give reactions of Ethene with: (i) $H2SO_4$ (ii) O_2 (iii) HOCl (iv) $KMnO_4$
3. Write mechanism for: i) Friedel Crafts Alkylation ii) Nitration of Benzene
4. Discuss S_N2 reactions of alkyl halide in detail.
5. Write the reactions of ethyl alcohol with: Na-metal, $SOCl_2$, NH_3 and $K_2Cr_2O_7$ / H_2SO_4
6. How phenol reacts with: Zn, NaOH, HNO_3 and H_2SO_4