

# RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

B.A./B.SC. SIXTH SEMESTER EXAMINATION, MAY 2015

THIRD YEAR

INDUSTRIAL CHEMISTRY (Honours)

Date : 07/05/2015

Time : 11 am – 1 pm

Paper : VII

Full Marks : 50

[Use a separate Answer book for each Unit]

## Unit – II

Choose the correct alternative (Answer any four questions from Question No. 1 – 7)

[4×1]

1. Acrylonitrile is mainly used in \_\_\_\_\_ industry  
a) polymers                      b) printing                      c) dyeing                      d) drug
2. What is produced by dehydrogenation of ethyl benzene?  
a) styrene                      b) ethyl alcohol                      c) phenol                      d) glycerol
3. What is produced using molasses as the starting raw material?  
a) Methyl alcohol                      b) Ethyl alcohol                      c) Benzol                      d) Dimethyl ether
4. What is produced by the interaction of acetylene and hydrochloric acid?  
a) Vinyl chloride                      b) Pthalic anhydride                      c) Acetaldehyde                      d) Maleic anhydride
5. Raw material for ethylene production in Haldia Petrochemicals is  
a) Ethane                      b) Naptha                      c) Gas oil                      d) Residue vacuum Column
6. Material of construction of  $\text{CH}_3\text{OH}$  synthesis reactor is  
a) Copper lines steel                      b) stainless steel                      c) cast iron                      d) lead-lined steel
7. Aryl benzene Sulphonate (ABS) is a  
a) detergent                      b) a monomer                      c) plasticiser                      d) Biomaterial

8. Answer any three :

[3×2]

Briefly describe the processes with chemical reactions :

- a) Ethylene glycol from Ethylene
- b) Vinyl chloride via Acetylene and hydrochloric route
- c) Isopropanol from Propylene
- d) Methanol from Methane
- e) Acrylonitrile from Propylene
- f) Draw a flow sheet showing petro chemical feed stock sources

Answer any two from Question No. 9 – 12:

[2×10]

9. a) Describe briefly the process of manufacture of acetylene from natural gas. Give chemical reactions. [5]  
b) Give the manufacturing process of styrene from ethylene. Write the chemical reactions and also give a block diagram of the process. [5]
10. a) Describe the process of manufacture of Linear Alkyl Benzene sulphonate starting from kerosene fraction from petroleum distillation unit. [5]  
b) Outline the steps involved in the preparation of following chemicals from ethylene (any two) : Acetaldehyde, Ethylene oxide, Butyl alcohol, benzophenon [2.5+2.5]
11. a) Give examples of four complex reactions that take place during hydroforming of petroleum naptha. Briefly describe the “Platforming” technology for the production of BTX. [6]  
b) How do you prepare chloromethane from methane. Give chemical reactions. [2]  
c) State very briefly the method of synthesis of Ethanol amines. Give chemical reactions. [2]

12. a) What are the different petrochemical products produced starting from xylene as a raw material. Give a flow diagram of the products produced. [3]
- b) Write the use of ethylene as a raw material for petrochemical industry. [3]
- c) Briefly describe the method of manufacture of formaldehyde from methanol. Give chemical reactions and block diagram of the process. [4]

### Unit – III

**Choose the correct alternative** (Answer **any four** questions from Question No. 13 – 20) [4×1]

### 13. Antibiotic

- a) is used as a pain reliever                      b) as a contraceptive  
c) inhibits/destroys the growth of microorganism    d) is an antimalarial drug

14. Vanilla is a type of

- a) antipyretic drug      b) dye      c) food preservative      d) flavour

15. Analgesic drugs are

- a) pain reliever                      b) used in treatment of T.B   c) germ killer                      d) anti amibiotic

16. Which of the following is not an antibiotic

- a) streptomycin      b) penicillin      c) quinine      d) tetracycline

17. Penicillin was discovered by

- a) Dr. Fleming                  b) Dr. Zirago                  c) Newton                  d) Archimedes

18. Eugenol is present in the oil of

- a) Pepper                      b) Ajowan                      c) Fennel                      d) Clove

19. Yeast is used in the manufacture of

- a) Penicillin                      b) Paracetamol                      c) Wine                      d) Pasteurised milk

20. The drug used in the treatment of Malaria is

- a) chloroquin phosphate    b) Enzyme diastase    c) Quiniodochlor    d) Aspirin

21. Answer **any three** : [3×2]

**Outline the process of synthesis :**

- Vanilin from Engenol
- Sulphacetamide from Acetanilide
- Quiniodochlor from Phenol
- Paludrin
- Chloramphenicol from L base
- Methyl Salicylate

Answer **any one** questions from Question No. 22 - 24 : [1×10]

22. a) What is an antibiotic? How antibiotics work? [1+2]

- b) Give the manufacturing process of penicillin by fermentation technology. Give the process in detail with block diagram and chemical reactions. State its uses. [5+1+1]

23. a) What are meant by the terms Analgesic and Antipyretic? Give example of each category. [1.5+1.5]

- b) How Paracetamol is manufactured starting from Paranitrochloro benzene (PNCB). Give the process with chemical reactions in each step and approximate percentage of conversion. Give the flow sheet of the process. State its uses. [4+2+1]

24. Give the current scenario and future prospect of the drug industry. Give the names of top five drug industry in India. [10]