

EXERCISE

Q1. Select the right answer from the choices given with each question.

1) The branch of chemistry which applies physical and chemical procedures towards the transformation of natural raw material and their derivatives to products is called:

- a) physical chemistry
- b) classical chemistry
- c) industrial chemistry
- d) both b and c

2) Which dye is used in boot polish:

- a) Azo dye
- b) Congo red
- c) Methyl orange
- d) Bismarck Brown

3) Miticides are used to control:

- a) ticks and mites
- b) Fungi
- c) Unwanted plants
- d) mice and bats

4) Aerosoles and lotions are used as:

- a) Fungicides
- b) Repellent
- c) Herbicides
- d) a and c

5) Petrochemicals are classified into how many classes?

- a) One
- c) Three

- b) Two
- d) Four

6) How many classes of polymers?

- a) One
- c) Three

- b) Two
- d) Four

7) Nylon is a polymer obtained by:

- a) Addition polymerization
- c) Homopolymer

- b) Condensation polymerization.
- d) None

8) Which of following is not a raw material for nail polish?

- a) Pearl
- c) Resorcinol

- b) Castor oil
- d) Nitrocellulose

9) A polymer which becomes hard on heating is:

- a) Thermosetting
- c) Addition

- b) Thermoplastic
- d) None

10) Nail Polish remover base commonly contains a mixture of two organic solvents as

- a) Benzene and acetone
- c) Benzene and CS₂

- b) ethyl acetate and CS₂
- d) acetone and ethyl acetate

1) What is the difference between classical and industrial chemistry.

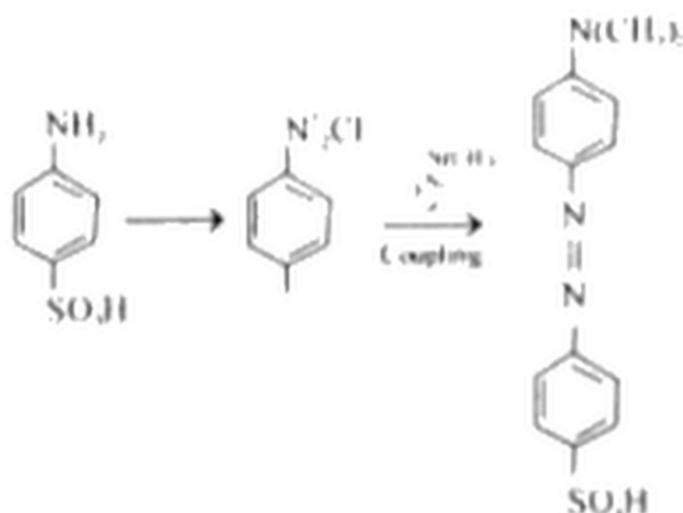
Answer

Classical chemistry is the science of chemistry by discovering and reporting new products routes and techniques while industrial chemistry applies physical and chemical procedures towards the transformation of natural raw materials and their derivatives to products that are of benefits to humanity.

2) How is methyl orange prepared?

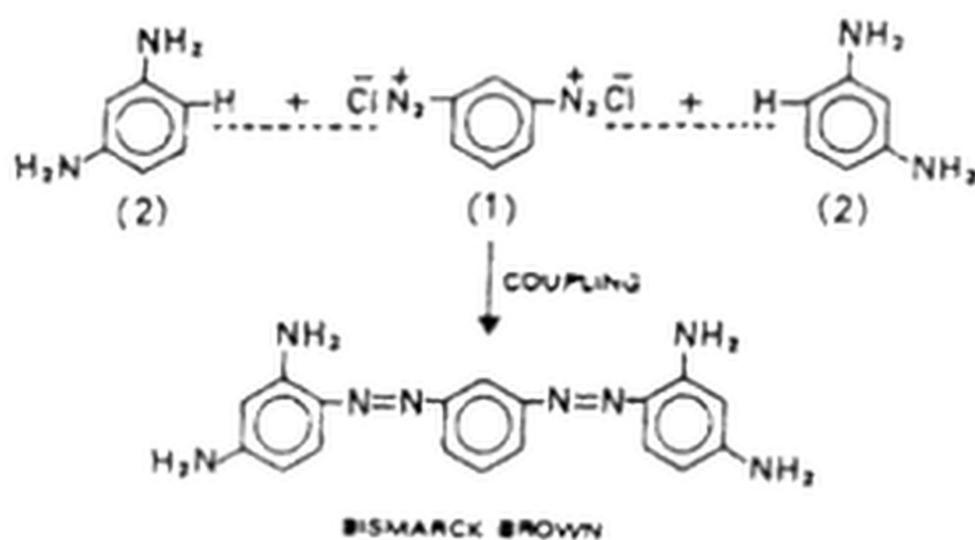
Answer

Methyl orange is obtained from sulfonic acid by following steps.



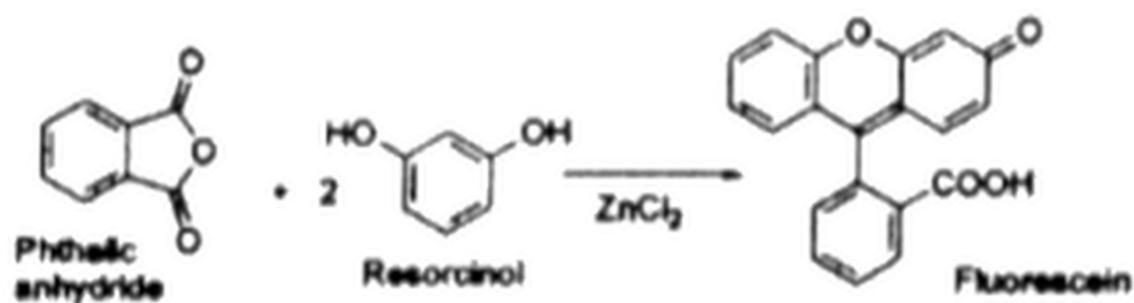
3) How is Bismarck Brown prepared?

Answer



4) How is Fluorescein prepared?

Answer



5) Enlist different chemicals produced from ethylene.

Answer

- | | |
|---------------------|-----------------------|
| i) Polyethylene | ii) Ethanol |
| iii) Ethylene oxide | iv) Glycol ethers |
| v) Ethoxylates | iv) Trichloroethylene |

6) Enlist different chemicals.

Answer

- | | |
|--------------------|--------------------------|
| i) Benzene | ii) Toluene diisocyanate |
| iii) Polyurethanes | iv) Benzoic acid |

7) Differentiate between homopolymer and copolymer?

Answer

Polymers which are synthesized from only one kind of monomer are called homopolymer while polymers prepared from more than one kind of monomer are called copolymer.

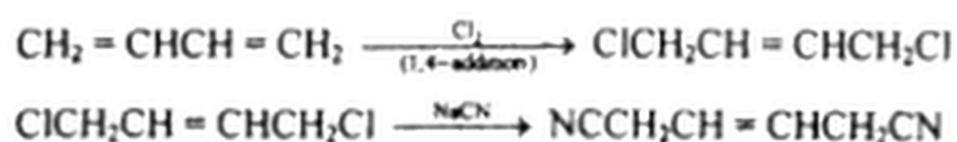
8) What is difference between thermoplastic and thermosetting polymer?

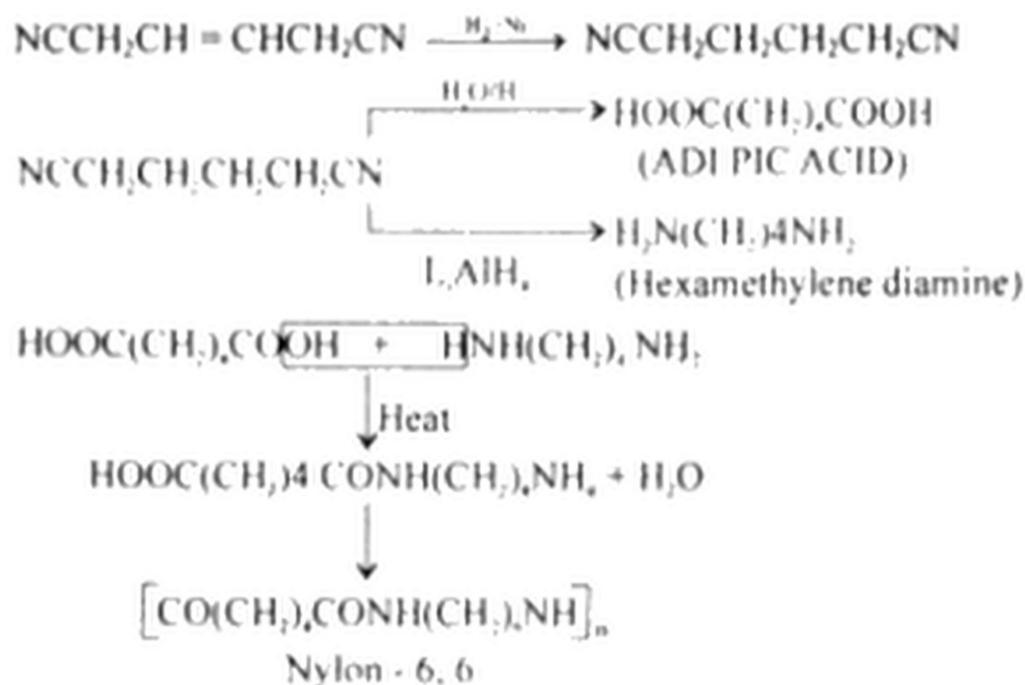
Answer

A thermoplastic polymer is one which softens on heating and becomes hard on cooling while thermosetting polymer is one which becomes hard heating it cannot be softened by heating.

9) How will you synthesize Nylon 6, 6 from 1, 3 — butadiene?

Answer





Q3. Give detailed answers for the following questions.

1) What is chemical industry? Discuss different raw materials used in this industry.

Answer

Chemical Industry

The industry majorly concerned with the production of chemicals is called chemical industry.

Chemical industry is classified according to type of main raw materials used for principal product made therefore there are two major types of chemical industries which are:

i) Industrial Inorganic Chemical Industries

These extract inorganic chemical substances main composites of the same and also synthesize inorganic chemicals.

ii) Industrial Organic Chemical Industries

These produce petroleum fuels, polymers, petrochemicals and other synthetic materials mostly from petroleum.

Raw Materials used In Chemical Industries

All chemicals are derived from raw materials available in is the source of raw material for the chemical industries.

Raw Materials from Atmosphere

It is the source of air from which six industrial gases namely N₂, O₂, Ne, Ar, Kr and Xe and manufactured.

Raw Materials from Hydrosphere

Seawater is a good source of sodium chloride, magnesium and bromine.

Raw Materials from Lithosphere

Coal, natural gas crude petroleum, mineral ores carbon and hydrocarbons.

Raw materials from biosphere

Oils, fats, waxes, resins, sugar, natural fibers and leather are obtained mainly.

2) What are dyes? How are they classified on the basis of structure?

Answer

Dyes:

A dye is a coloured compound, normally used in solution capable of being fixed to a fabric.

How they classified on the basic of structure:

Dyes are classified on the type of chromospheres present in their structures.

3) What do you know about dyes? How are they classified on the basis of application?

Answer

Dye is a coloured compound normally used in solutions which is capable.

How they are classified on the basis of application

On the basis of application, the dyes are classified on the term of heahmen to the fabric.

4) Write a note on: (i) Vat Dyes (ii) Mordant Dyes

Answer

Vat Dyes

These are insoluble in water but in reduction with sodium hydrosulphide a vat form colourless soluble compound which has a great affinity for cotton and other cellulose fibers. The cloth is soaked in the solution of a reduced dye and their ring in an as colourless compound is oxidized back to insoluble dye which now bound to the fabric indigo is a good example of a vat dye.

Mordant Dyes

This dye has no natural affinity for the fabric and applied to it with the help of salts e.g. oxides of aluminium or chromium. These salts are called mordant. The mordant dyeing is the most suitable for wool and nylon.

5) What is meant by Pesticides? Describe its types in detail.

Answer

A pesticide is any chemical which is used by man to control pests.

Types of Pesticides

Insecticides

Insecticides are the chemicals used to kill or control insects. In insecticide may kill the insect by touching it or it may have to swallowed to be effective.

Miticides or Acaricides

Miticides or Acaricides used to control mites and ticks. These chemicals usually must contact the mites or ticks to be effective.

Fungicides

Fungicides are chemical used to control the fungi which causes molds rots and plant diseases. They are not swallowed but applied to large area.

Herbicides

Herbicides are chemicals used to control unwanted plants called weeds kills by spraying.

Rodenticides

Rodenticides are chemicals used to control rats, mice, bats and other rodents. They effect when they are swallowed.

Nematicides:

Nematicides are chemicals used to control nematodes tiny: hair like worms. Solid fumigants are majority used.

Molluscicides:

Molluscicides are chemicals used to control shails and slugs. Effective only when they, are eaten.

Repellent:

A repellent is a pesticide that mares a site or food unattractive to a target pest.

6) Describe the basic building block in petrochemicals technology.**Answer**

The building blocks follows:

a) Olefins

b) Aromatics

c) Synthesis Gas

a) Olefins:

Olefins include ethylene, propylene are important sources of the industrial chemicals and plastic products. Butadiene is used in making synthetic rubber. Olefins are the basic for polymers and oligomers used in plastics, resins, fibers, elastomers, lubricants and gels.

b) Aromatics:

Aromatics includes benzene, toluene and xylenes. Benzene is a raw material for dyes and synthetic detergents and benzene and toluene for isocyanates manufactures use xylene to produce plastics and synthetic fibers.

c) Synthesis Gas:

Synthesis Gas is a mixture of carbon monoxide and hydrogen used to make ammonia and methanol; Ammonia is used to make fertilizer while methanol is used as solvent.

7) Describe raw materials and manufacturing process of Nail Polish.**Answer****Raw material:****Raw material includes:**

- i) Film forming agents e.g Nitrocellulose
- ii) Resins and plasticizers eg castor oil, amyland butyl stearate etc.
- iii) Solvent eg acetate compound
- iv) Coloring agents e.g pearl or fish scale.

Manufacturing process

- i) When properly and fully milled the mixture is removed from the mill in sheet form and then broken up into small chips for mixing with the solvent. The mixing is performed in stainless steel netties.
- ii) At the end of the process the mix is cooled slightly before the addition of such addition other materials as perfumes and moisturizers.
- iii) The mixture is then pumped into smaller 55 gallon drums and then tugged to a production line. The finished nail polish is pumped into explosion proof pumps and then into smaller bottles suitable for the retail market.

8) What are adhesives? Discuss its working and types.

Answer

Adhesives:

Adhesives are meant to stick things together. An adhesive is a compound that adhesives or bonds two items together.

Working:

The major working of an adhesive is to make bonds between two things if any adhesive does not make a bond then it is no more adhesive.

Types:

i. Natural Adhesives:

These are vegetable matter starch natural resins, animal skin etc.

ii. Synthetic adhesives:

Elastomers thermoplastic and thermosetting adhesives etc.

iii. Drying adhesives:

White glue, and rubber cements are common examples.

iv. Contact adhesives:

These are applied or rubbed on both the surface which are going to adhere.

v. Hot Glue:

It is applied hot and simply allowed to harden as they cool.

vi. UV and light curing adhesives:

UV and light curing adhesives consist essentially of low or medium molecular weight resins

