

## Short Answers and Questions

**Q1: Define industrial chemistry?**

**Answer**

The branch of chemistry which applies physical and chemical procedures towards the transformation of natural raw materials and their derivatives to products that are benefit to humanity.

**Q2: Give some benefits of chemistry in the field of science and technology.**

**Answer**

There are immense benefits of chemistry in the field of science and technology. Some of these are food production health, hygiene, shelter, protection, decoration, recreation and entertainment.

**Q3: Define industrial inorganic chemistry?**

**Answer**

Industrial inorganic chemistry is the branch of chemistry which extract inorganic chemical substances make composites of the same and also synthesize inorganic chemicals.

**Q4: Define industrial organic chemistry?**

**Answer**

Industrial organic chemistry deals with the extraction and production of petroleum fuels, polymers, petrochemicals and other synthetic materials mostly from petroleum.

**Q5: What are light organic industrial chemicals? Give examples.**

**Answer**

The chemicals which are produced by the light organic industrials are termed as light organic industrial chemicals.

**Examples**

Pharmaceuticals, dyes, pigments, paints, pesticides, soaps, detergents and cosmetics.

**Q6: What are heavy industrial organic chemicals? Give examples.**

**Answer**

Heavy industrial organic chemicals are the chemicals which are produce from heavy organic industries.

Examples: Polymers, petroleum, petrochemicals.

**Q7: What do you mean by BOC? Give examples.**

**Answer**

BOC are basic organic chemicals which are produced directly from natural resources.

Example: Ethylene, propylene etc.

**Q8: What do you mean by BIC?**

**Answer**

BIC are basic inorganic chemicals which are produced directly from natural resources. Example: Sulphuric acid, nitrogen, oxygen etc.

**Q9: What are Commodity chemicals? Give examples.**

**Answer**

Low — valued products produced in large quantities in continuous processes and have general purpose grade.

Example: pigment flavours fragrance etc..

**Q 10: What are specially chemicals? Give examples?**

**Answer**

High value adding involves the production of small quantities of chemical products for specific end uses, these are called specially chemicals. Examples: surfactants, adhesives, agrochemicals etc..

**Q11: What are fine chemicals? Give examples?**

**Answer**

High values pure chemicals are called fine chemicals. Examples: pharmaceutical ingredients, etc.

**Q12: What is atmosphere? With raw materials we can get from it?**

**Answer**

The atmosphere is the field above ground level.

The raw materials we can get are  $N_2$ ,  $O_2$ , Ne, Ar, Kr and Xe.

**Q13: Which raw materials we can get from hydrosphere?**

**Answer**

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

**Q14: Which raw materials are obtained from lithosphere?**

**Answer**

Coal, natural gas, crude petroleum and other chemicals.

**Q15: Which raw material can be derived from biosphere?**

**Answer**

Oils, fats, waxes, resins, sugar, natural fibers and leather etc.

**Q16: What are dyes? Give examples.**

**Answer**

Dye are the coloured compounds used in solution and are capable of fixing with a fabric.

Examples: Methylene blue, naphthol yellow.

**Q17: How dyes owes their colour?**

**Answer**

Dyes owe their colour due to the presence of a chromophore and its

**Q18: What are pesticides? Give examples.****Answer**

The chemicals which are used by man to kill or control pests are called pesticides.

**Q19: What are Nematicides? Give examples.****Answer**

Nematicides are chemicals used to control nematodes. Examples: soil fumigants etc.

**Q20: What are molluscicides? Give examples?****Answer**

Molluscicides are chemicals used to control snails and slugs.

**Q21 : What are petrochemicals? Give examples.****Answer**

Petrochemicals are chemical products derived from petroleum or fossil fuels. Examples: olefins, aromatics, synthesis gas etc.

**Q22: What are olefins? Give examples.****Answer**

Olefins are the basic for polymers and oligomers which are produced mainly from hydrocarbons by chemical cracking. Examples: Ethylene, propylene, butadiene etc.

**Q23: What are Aromatics? Give examples.**

**Answer**

Aromatics are the basic raw material for dyes and detergents and mainly produced by catalytic reforming.

Examples: Benzene, toluene, xylenes etc.

**Q24: How much quantity**

**Answer**

Ethylene is around 110 million ions per annum, propylene is 65 million ions and of aromatic raw materials are 70 million ions.

**Q25: Enlist some chemicals produced from ethylene.**

**Answer**

i) Polyethylene                      ii) Ethanol                              iii) Ethylene oxide  
iv) Polyesters                        v) Glycol ethers                        vi) Vinyl chloride and many  
more.

**Q26: Name chemicals produced from propylene.**

**Answer**

- |                      |                     |
|----------------------|---------------------|
| i) Isopropyl alcohol | ii) Acrylonitrile   |
| iii) Polypropylene   | iv) Propylene oxide |
| v) Glycol ethers     | vi) Allyl chloride  |

**Q27: Give the names of some chemicals produced from benzene.**

**Answer**

- |                  |                   |
|------------------|-------------------|
| i) Cumene        | ii) Ethylbenzene  |
| iii) Cyclohexane | iv) Nitrobenzene  |
| v) Alkyl benzene | vi) Chlorobenzene |

**Q28: Give the names of chemicals produced from Toluene**

**Answer**

- i) Benzene ii) Toluene disocyanate iii) Polyurethanes iv) Benzoic acid

**Q29: Give the names of chemicals produced from toluene.**

**Answer**

- |                       |                            |
|-----------------------|----------------------------|
| i) Phthalic anhydride | ii) Dimethyl terephthalate |
| iii) Isophthalic acid | iv) Ortho xylene           |
| v) Polyamide Resins   | vi) Alkyd resins           |

**Q30: What are polymers? Give example.**

**Answer**

Polymers are high molecular weight compounds whose structures are made up of a large number of simple repeating units.

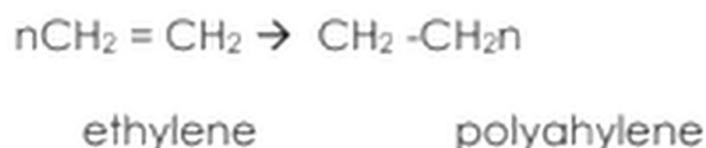
Example: polyethylene

**Q31: What are addition polymers?**

**Answer**

Addition polymers are formed by combination of alkenes monomers to produce a single huge molecule only.

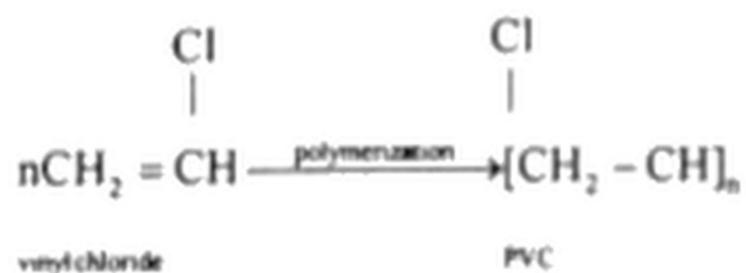
Example



**Q32: How PVC is formed? Give its uses.**

**Answer**

PVC i.e polyvinyl chloride is obtained by the polymerization of vinyl chloride.



**Uses**

PVC is used in the manufacturing of imitation leather, floor covering and gramophone records etc.

**Q33: What are condensation polymers? Give example.**

**Answer**

Condensation polymers are formed with the elimination of simple molecules such as H<sub>2</sub>O or CH<sub>2</sub>OH

Example: Nylon — 6, 6

**Q34: What are thermoplastic and thermosetting polymers?****Answer**

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

**Q35: What is heat spinning process?****Answer**

Heat spinning process is the process in which involves the heating of fiber until it begins to melt, then drawing out the molten fiber with tweezers as quickly as possible. Then draw the molecules by aligning them in a parallel arrangement. This brings the fibers close together and allows them to crystallize and orient. Lastly, is heat setting. This utilizes heat to permeate the shape and dimensions of fabrics made from heat sensitive fibers.

**Q36: Give uses of fibers.****Answer**

Fibers are used for making clothes, ropes, fish nets, tents, carpets etc.

**Q37: For which purpose glass fiber is used?**

**Answer**

It is used in home insulation reinforcement of composite materials.

**Q38: What is the use of synthetics in horticulture industry?**

**Answer**

Synthetics are used to help plant growth better, to expanded polystyrene flakes, to phenolic resin foam and in urea-formaldehyde foam resins etc.

**Q39: Which chemical is used as a nail polish remover?**

**Answer**

Acetone and ethyl acetate are commonly used as nail polish remover.

**Q40: Which raw materials are used in hair dyes?**

**Answer**

The raw materials include:

- i) Dyes e.g. 4-amino-2-hydroxytoluene
- ii) Modifiers e.g. resorcinol
- iii) Antioxidant e.g. sodium sulphate
- iv) Alkalizers e.g. ammonium hydroxide

