

Short Questions & Answers

Q1: What is modern definition of organic chemistry?

Answer

Organic chemistry is the branch of chemistry which deals with the study of compounds of carbon and hydrogen and their derivatives.

Q2:a) What is Petroleum?

A black thick sticky liquid seeps out of the ground is called petroleum.

b) What is coal?

Answer

Coal is an organic compound which yields coke and coal tar on destructive distillation.

Q3: What do you know about the origin of petroleum?

Answer

Nothing definite can be said about the origin of petroleum. The word petroleum is derived from the Latin words "pera" meaning rock and "oleum" meaning oil. It is also called mineral oil. It is formed millions of years ago when large area of earth was covered by sea water tiny sea creatures died and sank to the sea and decay and decaying result in formation of petroleum.

Q4: What are planktons?**Answer**

Planktons are the tiny sea creatures includes phytoplanktons meaning drifting plants and 200 plankton meaning drifting animals.

Q5: Which countries have biggest deposits of petroleum name them.**Answer**

These include Saudi Arabia, Iran, Iraq, Kuwait, Libya, Russia, Mexico's, Nigeria, USA and Venezuela.

Q6: What is refining?**Answer**

The process of separating petroleum into useful fractions and removal of undesirable impurities is called refining.

Q7: What is fractional distillation?**Answer**

The process in which various fractions are separated according to the difference in their boiling points and it comprises evaporation and condensation is called fractional distillation.

Q8: What is Neutralization?**Answer**

It is the first step in the refining process in which crude oil is washed with acidic or basic solution than oil is heated in an electrical furnace above 400°C and the vapours are fed in to a tall fractionation tower.

Q9:a) Give uses of petroleum gas?

Answer

Petroleum gases are liquefied and sold as bottled gas for cookers and stores.

b) Give the names of refineries of Pakistan.

Answer

These are:

i) Attock oil refinery

ii) Pakistan oil refinery

iii) National oil refinery

iv) Pak — Arab refinery

Q10: What is natural gas?

Answer

It is a mixture of low boiling hydrocarbons major portion of the natural gas is methane (CH_4 about 85%). In Pakistan vast reserves of gas at Sui in Baluchistan, Sindh and Punjab.

Q11: Define fermentation.

Answer

The production of chemicals by the action of microorganisms is called fermentation.

Q12: Briefly describe destructive distillation of Coal.

Answer

Organic chemistry is the branch of chemistry which deals with the study of compounds of carbon and hydrogen and their derivatives.

Q13: Briefly discuss the uses of organic compounds.

Answer

They are used as food i.e. proteins, fats, clothing i.e. paints, power and transportation

i.e. natural gas, petroleum products etc..

Q14: Briefly explain Bucky balls.

Answer

Bucky balls named it after an architect Buckminster, who designed a Bucky balls shaped building in Montreal. Bucky balls are used as semi-conductors and lubricants. They have carbon atom ranging from forty to hundred. The carbon atoms are arranged in a hollow cage like structure.

Q15: Define functional group. Give example.

Answer

A functional group is an atom or group of atoms in a molecule that gives the molecule its characteristic chemical properties. Example: —Cl , —Br , —OH .

Q 16: Define sublimation.

Answer

The process in which the solids directly changes it into vapours without undergoing liquid phase is called sublimation.

Q17: What are terpenoids?

Answer

A large class of natural products consisting of isoprene units are called terpenoids.

Q18: Define homologous series.

Answer

A homologous series is the series of compound in which adjacent members differ by CH_2 group and molecular mass 14.

For Example

| | |
|---|-----------|
| $\text{CH}_3 - \text{CH}_3$ | (Ethane) |
| $\text{CH}_3 - \text{CH}_2 - \text{CH}_3$ | (Propane) |
| $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$ | (Propane) |
| $\text{CH}_3 - \text{CH}_3 - \text{CH}_3 - \text{CH}_2 - \text{CH}_3$ | (Propane) |

Q20: How carbon and hydrogen are detected in organic compounds?

Answer

Carbon and hydrogen can be detected by heating small amount of organic compound with CuO in a glass test tube and then passing obtained gases through dry CuO & lime water.

Q21: How nitrogen is detected in organic compound?**Answer**

Take one portion of Lassaigne's filtrate, a few drops of NaOH is added to make it alkaline, then freshly prepared ferrous sulphate is added to it. The solution is boiled to it. The solution is boiled and a few drops of FeCl₃ solution and HCl are added to it. The appearance of blue or greenish blue (Prussian blue) colour or ppt proves the presence of nitrogen in organic compound.

Q22: Give sulphur test for the identification of sulphur.**Answer**

The second portion of Lassaigne's filtrate is acidified with acetic acid and boiled to expel H₂S gas which turns lead acetate the presence of sulphur in the compound.

Q23: Give sodium test for the identification of Halogens.**Answer**

A third portion of Lassaigne's solution is boiled with nitric acid to expel cyanide ion and sulphide ion and the AgNO₃ solution is added. The formation of precipitate shows the presence of the halogen, a white ppt. Soluble in NH₄OH shows the presence of chlorine a pale yellow ppt partially soluble in NH₄OH shows the

presence of chlorine a pale yellow ppt partially soluble in NH_4OH shows the presence of bromine and a deep yellow ppt insoluble in NH_4OH indicates iodine.

Q24: Give copper wire test (Beilstein's Test)

Answer

The copper wire flattened at one end heated in an oxidizing Bunsen flame till it ceases to impart any green colour to the flame. A small quantity of substance under investigation is now taken on the flattened end of the wire which is re-inserted in the Bunsen flame, upon heating for a while, the halogen present in the substance is converted to a volatile copper halide which imparts blue or green color to the flame. A substance like urea which contains no halogen also colors the flame green.

Q25: How oxygen is detected in the organic compound?

Answer

The substance is heated alone in a dry test tube, preferably in an atmosphere of nitrogen. Formation of droplets of water on cooler parts of the tube obviously shows the presence of oxygen.

Q26: How phosphorus is detected in the organic compound?

Answer

The solid substance is heated strongly with an oxidizing agent such as concentrated nitric acid and mixture of sodium carbonate and potassium nitrate. The residue is extracted with water, boiled with some nitric acid, and then a hot

solution of ammonium molybdate is added to it in excess. A yellow coloration of precipitate indicated the presence of phosphorus.

Q27: How metals are detected in organic compounds?**Answer**

The substance is strongly heated in a crucible, preferably of platinum, till all reaction ceases. An incombustible residue indicated the presence of a metal in the substance. The residue is extracted with dilute acid and the solution is test for the presence of metallic radical by the usual scheme employed for inorganic salts.

Q28: What is oxidation?**Answer**

The loss of electrons or the gain of oxygen to a substance is called oxidation.

For Example:

**Q29: What is reduction?****Answer**

The gain of protons or hydrogen and the loss of oxygen to a substance is called reduction.

Q30: What are volatile substances?**Answer**

Those substances which have very low boiling or melting point are called volatile substances. E.g. ether, petrol etc.

Q31: What are precipitates?

Answer

The solid crystals which are left when the substance is extensively boiled.

Q32: What is oxidizing agent?

Answer

Those substances which add electrons or oxygen to a substance are called oxidizing agent. Examples are KMnO_4 , $\text{K}_2\text{Cr}_2\text{O}_7$ etc.

Q33: What is reducing agent?

Answer

Those substances which added protons or hydrogen or remove oxygen from a substance are called reducing agents. Example Al_2C_3 , NH_3 , NH_3 etc..

Q34: What are anhydrous compounds?

Answer

Those compounds which remove are called anhydrous compounds.

Q35: What is filtrate?

Answer

The residue which left when the substance or liquid is passing through the filter paper is called filtrate.

Q35a): What is use of Quinine? And how is it obtained.

Answer

Quinine is used as antimalarial and antipyretic medicine. It is obtained from the quinine tree.

b) What is use of Nicotine? And how it is obtained?

Answer

Nicotine is used as insecticide. It is obtained from tobacco.

Q37: What is use of Menthol? And how it is obtained?

Answer

It is used as dilation of the capillaries and an increase in blood circulation. It is obtained from the mint i.e. Mentha species.

Q38: What is Rutin? And how it is obtained?

Answer

Rutin is used for the treatment of capillary fragility. It is obtained from citrus species

e.g. orange, grapefruit etc.

Q39: What is use of cocaine? And how it is obtained?

Answer

Cocaine is used as an anesthetic. It is obtained from coca plant.

Q40: What is use of caffeine? And how it is obtained?

Answer

Caffeine is CNS stimulant. It is obtained from tea, coffee and coca.

Q41: What is use of Bromelain? And how it is obtained?

Answer

Bromelain is anti-inflammatory drug. It is obtained from pineapple..

