Objective type Questions & Answers

Multiple Choice Questions

1) The branch of chemistry which deals with the separation and analysis of a sample to indentified its components is called:
   a) Organic chemistry b) Inorganic chemistry
   c) Analytical chemistry d) Physical chemistry

2) Empirical and molecular formulas contains:
   a) Carbon b) Hydrogen c) Oxygen d) All of these

3) The frequency range of ultraviolet radiation is:
   a) $10^{15} - 10^{17}$ b) 10^{10-18} c) 10^{12-16} d) 10^{18-19}

4) The frequency range visible light is:
   a) 10^{15-16} b) 10^{14-16} c) $10^{18} - 10^{19}$ d) $10^{20} - 10^{22}$

5) The frequency range of infrared is:
   a) $10^{11} - 10^{12}$ b) $10^{14} - 10^{18}$ c) $10^{19} - 10^{20}$ d) $10^{10} - 10^{14}$

6) The frequency range of radio waves:
   a) $10^{6} - 10^{8}$ b) $10^{10} - 10^{12}$ c) $10^{11} - 10^{12}$ d) $10^{14} - 10^{19}$

7) The wavelength of IR infrared lies between:
   a) 2100nm – 2400nm b) 2500nm – 25000nm
   c) 2000 – 20000nm d) 2200 – 24000nm

8) The instrument which allows the radiation in interact with a sample of chemical and analyses the changes:
   a) Photometer b) Hydrometer c) Spectroscope d) None of these

9) The spectrum is produced by an instrument called as:
   a) spectrometer b) Spectroscope c) Photometer d) Hydrometer

10) The stronger peak at about $1720cm^{-1}$ corresponds to the:
   a) C – H bond b) C ≡ O bond c) C = H bond d) C ≡ H bond

11) The weaker absorptions at about $3000cm^{-1}$ corresponds to the:
   a) C – H bond b) C – O bond c) C = O bond d) C – X bond

12) The peak at about $3400cm^{-1}$ corresponds:
   a) O – H bond b) C – O bond c) C – H bond d) C – X bond

13) The colour of transition elements related to incompletely filled:
   a) π – orbital b) d – orbitals c) s – orbitals d) p – orbitals

14) The wavelength of infrared lies above:
   a) 700 b) 600 c) 500 d) 400

15) The wavelength of ultraviolet lies below:
   a) 500 b) 400 c) 300 d) 200

16) The wavelength of violet lies between:

a) 400 - 420nm b) 500 – 520nm c) 600 – 660nm d) 300 – 320nm

17) The wavelength of indigo lies between:
a) 400 - 420nm b) 420 – 440nm c) 500 – 800nm d) 400 – 500nm

18) The wavelength of orange lies between:
a) 600 – 620nm b) 500 – 540nm c) 420 – 660nm d) 400 – 600nm

19) The wavelength of red lies between:
a) 400 – 420nm b) 620 – 700nm c) 700 – 800nm d) 500 – 600nm

20) The wavelength of yellow lies between:
a) 400 – 440nm b) 500 – 520nm c) 600 – 640nm d) 580 – 600nm

21) In NMR the largest peak corresponds to the:
a) C_6H_5 b) CH_3 c) CH_2 d) CH_4

22) In NMR the second peak which is second largest corresponds to:
a) C_6H_5 b) CH_3 c) CH_2 d) CH_4

23) In NMR, the third peak corresponds to the:
a) C_6H_5 b) CH_3 c) CH_2 d) CH_4

24) The number of signals in the NMR spectrum corresponds to the number of different types of:
a) Protons b) Electrons c) Neutrons d) All of these

25) Absorption of infrared radiation causes covalent bonds with in the molecule to be promoted from one vibrational energy level to a:
a) Lower vibrational level b) Same level
c) Higher vibrational level d) None of these

26) If an organic compound absorbs UV–Vis radiation it means it contains:
a) Carbonyl group b) Conjugated double bond
c) Both a & b d) Aldehyde group

27) If an organic compound does not absorbs UV–Vis radiation it means the compound does not contains:
a) Conjugated double bounds b) Hydroxyl group
c) Alkynes group d) Ketone group

28) Which spectroscopy is concerned with the characteristic radiation produced when atoms are exited:
a) Absorption Spectroscopy b) Emission Spectroscopy
c) Both a & b d) Nuclear Spectroscopy

29) Which spectroscopy involves the absorption of radiant energy by neutral atoms in the gaseous states:
a) Atomic Absorption Spectroscopy b) Emission Spectroscopy
c) Nuclear Spectroscopy d) None of these

30) The instrument which turns atoms and molecules into ions and measure their masses:
a) Photometer b) Mass spectrometer
c) Spectrometer d) Electrometer

31) The first step in the mass spectrometer is:
a) Vaporization b) Ionization c) Acceleration d) Detection

32) Blue zone of a flame is characterize by:
a) No combustion b) Partial combustion
c) Complete combustion d) Incomplete combustion

33) Dark zone of flame is characterize by:
a) Complete combustion b) No combustion
c) Incomplete combustion d) None of these

34) Luminous zone of flam is characterize by:
a) Incomplete combustion b) No combustion
c) Complete combustion d) All of these

35) Non–luminous zone is characterize by:
a) Complete combustion b) No combustion
c) Incomplete combustion d) None of these

36) Mass spectroscopy is used to measure the:
a) Atomic number b) Masses c) Volume d) Density

37) The temperature of the Non–luminous zone lies between:
a) 2000°C b) 3000°C c) 4000°C d) 1000°C

38) The flame temperature of candle is:
a) 1,500 °C b) 1,400 °C c) 1,000 °C d) 1,800 °C

39) The application of chemistry to criminal investigation is called:
a) Bio chemistry b) Physical chemistry
c) Organic chemistry d) Forensic chemistry

40) Which method combines the feature of gas–liquid chromatography and mass spectrometry:
a) GC – MS b) LC – MS c) HPLC – MS d) MS

41) Which method combines the physical separation capabilities of liquid chromatography with the mass analysis capabilities of mass spectrometry:
a) GE – MS b) LC – MS c) MS d) NMS

Answers

1)	c	2)	d	3)	A	4)	b
5)	a	6)	a	7)	b	8)	C
9)	a	10)	b	11)	a	12)	a
13)	b	14)	a	15)	b	16)	a
17)	b	18)	a	19)	b	20)	d
21)	a	22)	b	23)	c	24)	a
25)	c	26)	c	27)	a	28)	b
29)	a	30)	b	31)	a	32)	c
					a	36)	b

37)	a	38)	b	39)	d	40)	a
41)	b						

Short Answers and Questions

Q1: Define analytical chemistry:

Answer

Analytical chemistry is the branch of chemistry which deals with the separation and analysis of a sample to identified its components.

Q2: What is Qualitative analysis?

Answer

The analysis which provides the identity of a substance i.e chemical composition of the substance is called qualitative analysis.

Q3: What is Quantitative analysis?

Answer

The analysis which determines the amount of each component present in the sample is called quantitative analysis.

Q4: Why formaldehyde dissolve in water?

Answer

Formaldehyde CH_2O, is unstable as a pure gas, readily forming a mixture of substance called trioxane and a polymer called paraformaldehyde, that is why it is dissolve in water.

Q5: What is spectroscopy?

Answer

Spectroscopy involved using instruments to examine the radiation emitted or absorbed by chemicals giving information about their molecular structure.

Q6: What is Infrared spectroscopy?

Answer

Infrared spectroscopy is the spectroscopy which measures the bonds and have wavelength longer than visible light i.e 2500nm and 25000nm.

Q7: Which bond give rise to the peak just below $3000cm^{-1}$?

Answer

The weaker absorption at $3000cm^{-1}$ corresponds to the C–H bond.

Q8: Which bond give rise to the peak at about $3400\ cm^{-1}$?

Answer

The peak at about $3400cm^{-1}$ is from the O–H bond.

Q9: Which bond give rise to the peak at about $1720cm^{-1}$?

Answer

The strong peak at about $1720cm^{-1}$ corresponds to the c = 0 bond.

Q10: What do you mean by visible and ultraviolet spectroscopy?

Answer

It is an example of H C visible emission spectrum, where a substance emite certain visible frequencies when its electrons have been excited by heating or by an electrical