Topic: Chp#1 INTRODUCTION TO FUNDAMENTAL CONCEPTS OF CHEMISTRY

2000

1. One mole of ethanol and one mole of ethane have an equal:
   a) Mass
   b) Number of atoms
   c) Number of electrons
   d) Number of molecules

2. An oxide of titanium contains 60% Ti. What is its empirical formula for this oxide?
   a) TiO
   b) Ti_2O_3
   c) TiO_2
   d) Ti_2O_6

2001

3. Which one of the following is a pure compound?
   a) Dry air
   b) Ethanol
   c) Steel
   d) Tap water

4. The empirical formula of a liquid compound is C_2H_4O. What other information is needed to work out its molecular formula?
   a) The percentage composition of the compound
   b) The relative molecular mass of the compound
   c) The density of the compound
   d) The volume occupied by 1 mole of the compound

5. If four moles of sulphur dioxide are oxidized to sulphur trioxide. How many moles of oxygen are required?
   a) 0.5
   b) 1.0
   c) 2.0
   d) 4.0

2015

22. Atomic number of C is 6 and H is 1. How many electrons are present in 1.6 grams of methane?
    a) 6.02×10^{23}
    b) 1.204×10^{23}
    c) 1.806×10^{23}
    d) 2.408×10^{23}
    e) 3.01×10^{23}

2017

23. What is volume in cm^3 of 3.01×10^{23} molecules of O_2 gas at S.T.P?
    a) 1000 cm^3
    b) 11000 cm^3
    c) 1120 cm^3
    d) 11200 cm^3

2018

24. How many significant figures are there in 00.47932
    a) 3
    b) 4
    c) 5
    d) 6

6. The relative molecular mass of carbon dioxide is 44. What is the mass of 24 dm^3 of carbon dioxide at rtp?
   a) 44
   b) 22
   c) 11
   d) 12

7. When 0.24 g of magnesium is reacted with excess HCl, what volume of gas is liberated at rtp?
   a) 120 cm^3
   b) 240 cm^3
   c) 360 cm^3
   d) 3600 cm^3

2002

8. The number of atoms of nitrogen represented in the formula NH_4NO_3 is:
   a) 1
   b) 2
   c) 3
   d) 4

9. The formula which indicates the relative numbers of different kinds of the atoms in a molecule is called:
   a) Structural formula
   b) Empirical formula
   c) Molecular formula
   d) None of the above

2003

10. Characteristic of number 1000 (in log) is:
    a) 3
    b) 2
    c) 4
    d) 0

2005

11. Chemistry is the study of:
    a) Chemicals
    b) Acids
    c) Base
    d) Water
    e) None of the above

12. Which of the following is a chemical change:
a) Rusting of iron
b) Refractive index
c) Boiling of water
d) Conduction of electricity from Cu

2006

13. 1 gm of hydrogen contains how many number of molecules?
a) 6.02×10^{23} molecules
b) 3.01×10^{23} molecules
c) 0 molecules
d) 1.04×10^{23} molecules

2007

14. 80 gm Oxygen occupies the volume of ___ at STP.
a) 56 dm^3
b) 20 dm^3
c) 58.5 dm^3
d) 22.4 dm^3

2009

15. Given the equation:

$$C_3H_{8(g)} + 5O_{2(g)} \longrightarrow 3CO_{2(g)} + 4H_2O_{(g)}$$

At STP, how many liters of O_2 (g) are needed to completely burn 5.0 liters of C_3H_8 (g)?
a) 5.0
b) 10
c) 10.5
d) 15
e) 25

2010

16. Regarding Ethylene glycol all of the following are true EXCEPT:
a) It contains carbon, hydrogen and oxygen.
b) Its molecular mass is 62
c) It is used as an antifreeze
d) Empirical formula for ethylene glycol is CH_3O.
e) Molecular formula for ethylene glycol is CH_6O.

2011

17. By heating 25 g of limestone ($CaCO_3$), the weight of carbon dioxide produced is:
    a) 14 g
    b) 71 g
    c) 11 g
    d) 2 g
    e) 10 g

2012

18. 2 grams of H_2 molecules contain _____ molecules.
    a) 12.04×10^{23}
    b) 6.02×10^{23}
    c) 3.01×10^{23}
    d) 1.008
    e) 2

2013

19. In the final answer of the expression: $\frac{(29-20.2)(1.79 \times 10^{5})}{1.37}$ the number of significant figures is:
    a) 1
    b) 2
    c) 3
    d) 4

20. If we take 2.2 grams of CO_2, 6.02×10^{21} atoms of nitrogen and 0.03 gram atoms of sulphur,
    then the molar ratio of C, N and S atoms will be:
    a) 1:2:5
    b) 5:1:2
    c) 2:5:3
    d) 5:1:3

2014

21. The chemical analysis of a compound having molecular mass 188 gives, C = 12.8%, H = 2.1% and Br = 85.1%, its molecular formula is:
    a) CH_2Br
    b) $C_2H_4Br_2$
    c) C_2H_4Br
    d) $CH_2(Br)_2$
    e) $C_2H_2(Br)_2$

Topic: Chp#2 THE THREE STATES OF MATTER

GASES, LIQUIDS AND SOLIDS

2001

1. Which one of the following gases diffuses most rapidly?
   a) Bromine
   b) Carbon dioxide
   c) Methane
   d) Nitrogen

2. Ordinary air from the atmosphere contains about 21% oxygen whereas the proportion of oxygen in the mixture released by boiling river is 30%. The best explanation of the increase in percentage of oxygen is that:
   a) Oxygen is more soluble in water than nitrogen
   b) Carbon dioxide is more soluble in water than oxygen
   c) Nitrogen reacts with water
   d) The gases from boiled water contain no water vapour

3. For two substance to be separated by paper chromatography it is necessary that:
   a) They are both liquids
   b) They are both soluble in the same solvent
   c) They have different densities
   d) They have different colours

Not in Syllabus

4. What particles are present in solid lead (II) bromide and in molten lead (II) bromide?

Solid lead (II) bromide	Molten lead (II) bromide
a) Molecules	Atom
b) Molecules	Ions
c) Ions	Atoms
d) Ions	Ions

5. Which statement about carbon monoxide is correct?
   a) It is involved in photosynthesis
   b) It produces carbon when burnt
   c) It is a pollutant
   d) It is denser than air

6. Which of the following gases is least common in air?
   a) Argon
   b) Carbon dioxide
   c) Nitrogen
   d) Hydrogen

21. What is true about water density:
    a) It is less than that of ice
    b) It is more than that of ice
    c) It is equal
    d) None of the above

2006

22. Which has highest velocity among following at room temperature?
    a) H_2
    b) O_2
    c) CH_4
    d) All of these

23. The correct sequence of high power vapor pressure is:
    a) Water > Ethanol > Acetone > Ether
    b) Ether > Acetone > Ethanol > Water
    c) Ether > Ethanol > Acetone > Water
    d) Water > Ethanol > Acetone > Ether

24. At constant temperature, the volume of gas is 95 cm^3 at a pressure of 9.961×10^4 N/m^2. What would be its volume at 10.13×10^4 N/m^2?
    a) 1 cm^3
    b) 99 cm^3
    c) 93 cm^3
    d) 10 cm^3

25. The ratio of the rate of diffusion of two gases is 1:3, then ratio of their molecular weight is:
    a) 1:3
    b) 3:1
    c) 1:9
    d) 9:1

2007

26. What will be the product of Specific heat and molecular mass?
    a) Molar specific heat
    b) Molar mass
    c) Heat capacity
    d) Molar heat

2005

14. For Boyle's law to be true, process must be _____.
    a) Isothermal
    b) Isochoric
    c) Adiabatic
    d) Isobaric

15. The K.E. of molecules is:
    a) Linearly proportional to temperature
    b) Inversely proportional to temperature
    c) Linearly proportional to square root of temperature
    d) Inversely proportional to square root of temperature

16. The Kinetic molecular theory does not state:
    a) There are intermolecular forces in gases
    b) There is no volume in gases
    c) Collision course is elastic
    d) All of the above

17. Capillary action is due to:
    a) Surface tension
    b) Cohesion
    c) Adhesion
    d) Viscosity

18. What happens when number of moles of gas is doubled at a fixed volume:
    a) Pressure doubles
    b) Pressure is reduced to 1/2
    c) Pressure is reduced by 1/4
    d) Pressure stays the same

19. Which of the following has highest boiling point?
    a) Ethylalcohol
    b) Diethyl ether
    c) H_2O
    d) Acetone

20. The density of Methane at 27°C and 2 atm is?
    a) 0.6 gm/dm^3
    b) 9.1 gm/dm^3
    c) 1.8 gm/dm^3
    d) 0.91 gm/dm^3
    e) 1.3 gm/dm^3

7. Which of the following gases obtained by the fractional distillation of liquid air?
   a) Oxygen
   b) Carbon dioxide
   c) Hydrogen
   d) Methane

2002

8. The process in which a solid is directly converted to a gaseous state is called:
   a) Boiling
   b) Evaporation
   c) Sublimation
   d) Freezing

9. Which of the following techniques could be used to separate the coloured dyes from the black ink?
   a) Chromatography
   b) Filtration
   c) Fractional distillation
   d) Precipitation

Not in Syllabus

10. The heat require to change 1 mole of iodine (solid) to iodine (gas) is called:
    a) Heat of vapourization
    b) Heat of sublimation
    c) Heat of fusion
    d) Melting point

11. The formula for general gas equation is:
    a) $P_1V_1 = P_2V_2$
    b) $V_1/T_1 = V_2/T_2$
    c) $E = mc^2$
    d) $P_1V_1/T_1 = P_2V_2/T_2$

2003

12. S.I unit of viscosity is:
    a) Nsm^{-1}
    b) (Nsm^{-2})
    c) $Ns^{-1}m^{-2}$
    d) None of these

13. 1 poise can be defined as:
    a) 1 gm/m
    b) 1 gm/cm
    c) 1 gm/mm
    d) None of these

2011

38. A Child's balloon has a volume 3.80 dm^3, when temperature is 35°C. If the balloon is put in refrigerator and cooled to 5°C, the approximate volume of the balloon is (assume pressure inside the balloon is equal to atmospheric pressure):
   a) 3.00 dm^3
   b) 3.43 dm^3
   c) 3.08 dm^3
   d) 3.25 dm^3
   e) 0.54 dm^3

39. Which of the following statements is true for Amorphous solids?
   a) They possess symmetry
   b) They are isotropic
   c) They are anisotropic
   d) They cleave along particular direction
   e) They have definite shape

2012

40. Comparative rates of diffusion of He and SO_2 will be _____
   a) 8
   b) 2
   c) 4
   d) 16
   e) 64

41. The unit of viscosity is Poise
   a) Joule
   b) N/m^2
   c) Dyne /cm
   d) Poise
   e) Erg

2013

42. Equal weights of methane and hydrogen are mixed in an empty container at 25°C. The fraction of total pressure exerted by hydrogen is:
   a) 1/2
   b) 8/9
   c) 1/9
   d) 16/17

33. 950 torr corresponds to
    a) 3.5 atm
    b) 1 atm
    c) 3 atm
    d) 1.25 atm
    e) 2.25 atm

2010

34. A sample of argon occupies 50 L at standard temperature. Assuming constant pressure, what volume will the gas occupy if the temperature is doubled?
    a) 25 L
    b) 50 L
    c) 100 L
    d) 200 L
    e) 2500 L

35. All of the following statements underlie the kinetic molecular theory of gases EXCEPT:
    a) Gas molecules have no intermolecular forces
    b) Gas particles are in random motion
    c) The collision between gas particles are elastic
    d) Gas particles have no volume
    e) The average kinetic energy is proportional to the temperature of the gas

36. Example of Trigonal system is:
    a) $BaSO_4$
    b) $AgNO_3$
    c) $ZnSO_4$
    d) SiO_2
    e) SnO_2

37. Four containers of equal volume are filled as follows:
    I. 2.0 g H_2 at 0°C
    II. 1.0 g H_2 at 273°C
    III. 24 g O_2 at 0°C
    IV. 16 g CH_4 at 273°C
    Which container is at the greatest pressure?
    a) I only
    b) II only
    c) III only
    d) IV only
    e) I and II only

8. Which of the following pairs of gases has same rate of diffusion?

a) CO_2 and N_2O
b) CO_2 and CO
c) NO_2 and CO_2
d) CO_2 and N_2O_4

18

49. Real gas behave ideally at:

a) Low temperature and low pressure
b) Moderate temperature and low pressure
c) High temperature and low pressure
d) High temperature and high pressure

2014

43. The stability of ionic crystal depends principally on:
   a) High electron affinity of anion forming species
   b) Lattice energy of crystal
   c) Low ionization energy of cation forming species
   d) Low heat of sublimation of cation forming solid

2015

44. The unit cell with crystallographic dimensions $a = b \neq c$, $\alpha = \beta = \gamma = 90°$ is:
   a) Cubic
   b) Tetragonal
   c) Monoclinic
   d) Hexagonal

45. A bottle of cold drink contains 200 ml liquid in which CO_2 is 0.1 molar. Suppose CO_2 behaves like an ideal gas, the volume of dissolved CO_2 at S.T.P is:
   a) 0.224liter
   b) 0.448 liter
   c) 22.4 liter
   d) 2.24 liter
   e) 25.5 liter

46. Surface tension in a liquid is caused by:
   a) A lack of horizontal intermolecular forces
   b) Greater rate of evaporation at the surface than from the interior
   c) Reduced rate of intermolecular collisions at the surface
   d) Greater fluidity
   e) None of these

2017

47. 1 Liter of a gas weight 2 g at 300 K and 1 atm pressure. If the pressure is made 75 atm, at which of the following temperatures will 1 L of the same gas weight 1 g?
   a) 450 K
   b) 800 K
   c) 600 K
   d) 900 K
   e) Answer is not given

21. What is true about water density:
    a) It is less than that of ice
    b) It is more than that of ice
    c) It is equal
    d) None of the above

2006

22. Which has highest velocity among following at room temperature?
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    b) 3:1
    c) 1:9
    d) 9:1

2007

26. What will be the product of Specific heat and molecular mass?
    a) Molar specific heat
    b) Molar mass
    c) Heat capacity
    d) Molar heat

2008

27. Total pressure is equal to the sum of partial pressure of all the individual gases due to following reason:
   a) Collisions with the walls of the container
   b) Effective collision of all individual gases
   c) Collision with the bottom of the container
   d) None of the above

28. Compound having different crystalline forms, this statement is related to:
   a) Allotropy
   b) Isomerism
   c) Polymorphism
   d) Isomorphism

Diff forms of Crystalline (Polymorphism)

2009

29. Which gas is likely to deviate most from ideal gas behavior?
   a) HCl
   b) He
   c) CH_4
   d) N_2
   e) O_2

[CH_4]

30. The crystals formed as a result of Vander waal's interactions are
   a) Molecular crystals
   b) Covalent crystals
   c) Metallic crystals
   d) Ionic crystals
   e) None of the above

more than one Crystalline form [Allotropy]

31. When an element exists in more than one crystalline form, the phenomenon is termed as
   a) Isomorphism
   b) Allotropy
   c) Isomerism
   d) Anisotropy
   e) Enthalpy

Allotropy

32. The rain drop acquires spherical shape due to
   a) Surface tension
   b) Adhesive forces
   c) Viscosity
   d) Polarity
   e) Latent Heat of vaporization

Topic: Chp#3 THE ATOMIC STRUCTURE

2000

1. Rutherford discovered that the nucleus of an atom has _____ charge.
   a) no
   b) negative
   c) positive
   d) very less

2. The wavelength of radiation emits in Balmer seires is:
   a) between 4000 Å to 8000 Å
   b) $10000 < d < 18000$ Å
   c) $d < 8000$ Å
   d) None of the above

2001

3. Whose e/m ratio resembles with that of electrons?
   a) Alpha rays
   b) Beta rays
   c) Gamma rays
   d) X rays

4. The ions X^+ contain 23 particles in the nucleus and 10 electrons outside the nucleus. What does the nucleus of the ion X^+ contain?

Protons	Neutrons
a) 9	14
b) 10	13
c) 11	12
d) 12	11

5. Which of the following is not a property of gamma particles?
   a) They carry no charge
   b) They can penetrate aluminium foil about 15 cm – 20 cm
   c) They are a type of electromagnetic radiation
   d) They have a mass approximately equal to a helium nucleus.

2002

6. Alpha rays are:
   a) Single negatively charged particles
   b) Single positively charged particles
   c) Double negatively charged particles
   d) Double positively charged particles

7. Which is the lightest among following?
   a) An atom of hydrogen
   b) An electron
   c) A neutron
   d) A proton

8. "In an atom no two electrons can have same set of quantum numbers", this statement was give by:
   a) Uncertainty principle
   b) Pauli's exclusion principle
   c) Hund's rule
   d) Aufbau's principle

2003

9. For "f" orbital, value of l is:
   a) 3
   b) 2
   c) 0
   d) 1

10. Perrie Curie and Maire Curie isolated a new radioactive element which was
   a) Radium
   b) Thorium
   c) Uranium
   d) All of these

11. Faraday's experiment leads to the discovery of:
   a) Electron
   b) Positron
   c) Nucleus
   d) Proton

2005

12. Gases are good conductors of electricity at:
   a) High pressure
   b) Low temperature
   c) Low pressure
   d) None of the above

29. The amount of energy released by absorbing an electron in the valence shell is:
    a) Ionization energy
    b) Electron affinity
    c) Electro negativity
    d) Atomic radius
    e) Atomization Energy

30. Among the following electrons, which has the highest energy?
    a) $n = 3, l = 2, m = 0, s = +1/2$
    b) $n = 4, l = 0, m = 0, s = -1/2$
    c) $n = 3, l = 1, m = 1, s = -1/2$
    d) $n = 3, l = 0, m = 1, s = -1/2$

2014

31. Nitrogen and phosphorus have 3 of their valence electrons unpaired because of:
    a) Auf bau principle
    b) Heisenberg's principle
    c) Hund's rule
    d) Planck's theory
    e) None of the above

2015

32. Which of the following best describes the emission spectrum of atomic hydrogen?
    a) A discrete series of lines of equal intensity and equally spaced with respect to wavelength
    b) A series of only four lines
    c) A continuous emission of radiation of all frequencies
    d) Several discrete series of lines with both intensity and spacings between lines decreasing as the wavenumber increases with each series.

33. How many electrons can have the values $n = 2, l = 1$ and $s = +½$ in the configuration $1s^2, 2s^2, 2p^3$?
    a) 1
    b) 3
    c) 5
    d) 7
    e) 9

24. Which of the following statements is correct?
   a) Faraday's experiment indicates the existence of electrons
   b) Crooke's tube experiment shows the presence of electrons and protons in the atoms
   c) Radioactivity confirms the presence of electrons and protons
   d) Chadwick experiment shows the presence of neutrons
   e) All of the above

25. "In an atom no two elements can have the same set of four Quantum numbers" is stated by:
   a) Heisenberg's Uncertainty Principle
   b) Aufbau Principle
   c) Pauli's Exclusion Principle
   d) Hund's Rule
   e) (n + 1) Rule

26. The electronic configuration of Iron is:
   a) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^5, 4s^2$
   b) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^5, 4s^1$
   c) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^6, 4s^2$
   d) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^3, 4s^2$
   e) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^2, 4s^2$

27. The maximum possible number of electrons a shell 'n' can accommodate is given by
   a) n
   b) n^2
   c) $2n^2$
   d) n^3
   e) $3n^2$

28. The radii of the second orbit of the hydrogen atom calculated from Bohr's model is
   a) 0.529 Å
   b) 4.8 Å
   c) 2.12 Å
   d) 3.4 Å
   e) 1 Å

2006

13. Isotopes differ in:
a) Proton number
b) Neutron number
c) Atomic number
d) Electron number

2007

14. Who observed radioactivity first?
a) Henri Becquerel
b) Rutherford
c) Newton
d) Bohr

15. Which rule is violated in this $1s^2, 2s^2, 2p^6, 3p^6, 4s^2$
a) Aufbau Principle
b) Hund's Rule
c) Pauli's Exclusion Principle
d) All of these

16. An electron can use Excitation energy in the form of all of the following except:
a) Phosphorescence
b) Fluorescence
c) Heat
d) Radiation

2008

17. Hydrogen has ground state energy of
a) 1.5 e.v
b) 13.6 e.v
c) -0.8 e.v
d) 23.3 e.v

18. Azimuthal quantum number shows:
a) Orientation of orbitals in space
b) Size of the orbital
c) Shape of orbital
d) None of the above

34. If uncertainty in the position of an electron is zero, the uncertainty in its momentum is:
    a) 1
    b) Zero
    c) $2\pi r$
    d) $\geq h / 4\pi$
    e) Infinite

18

5. The phenomenon in which certain elements emit invisible radiations is called:
    a) Spectroscopy
    b) Radioactivity
    c) Gravimetric
    d) Chromatography

6. The Neutron was discovered by:
    a) Goldstein
    b) Rutherford
    c) J.J Thomson
    d) Chadwick

37. For the first time in 1911, Henry Moseley used X-rays for the determination of:
    a) Atomic number
    b) Atomic mass
    c) Molecular mass
    d) Equivalent mass

19. Rutherford discovered that the nucleus of an atom has _____ charge.

a) No
b) Negative
c) Positive
d) Very less

2009

20. The maximum number of electrons that an orbital can accommodate is/are

a) 0
b) 1
c) 2
d) 3
e) 4

21. The enthalpy change accompanied the gain of an electron by a neutral gaseous atom to form negative ion is called

a) Ionization potential
b) Electron negativity
c) Electron affinity
d) Lattice energy
e) Potential energy

2010

22. All of the following are true regarding Cathode Rays EXCEPT:

a) These rays carry a negative charge
b) These rays can also be easily deflected by an electrostatic field
c) These rays emerge normally from Cathode and can be focused by using a concave Cathode
d) These rays consist of particles now called Protons carrying a fixed unit of charge and a fixed mass
e) The Cathode rays are easily deflected by a magnetic field

23. The maximum number of electrons in a shell with the principal quantum number equal to 4 is:

a) 2
b) 10
c) 16
d) 32
e) 14

$2n^2$
$2(4)^2$
$2(16) = 32$
$16 \times 2 = 32$

Topic: Chp#4 CHEMICAL BONDING

1. What is the number of paired shared electrons in methane molecule?
   a) 1
   b) 2
   c) 3
   d) 4

2. The bond formed by the electrostatic attraction between negative end of one molecule and positive end of other is called:
   a) Covalent bond
   b) Hydrogen bond
   c) Ionic bond
   d) Co-ordinate covalent bond

3. The bond angle in a molecule having sp^3 hybridization with no lone pair is:
   a) 120°
   b) 180°
   c) 109°
   d) 90°

4. Excited state of C atom can be represented as:
   a) $1s^2\ 2s^2\ 2px^1 2py^1 2pz^0$
   b) $1s^1\ 2s^2\ 2px^1 2py^1 2pz^1$
   c) $1s^2\ 2s^1\ 2px^1 2py^1 2pz^1$
   d) None of these

5. Which one of the following bond has the most polar character:
   a) C-O
   b) C-F
   c) C-Br
   d) C-S

2007

6. Atoms of sulphur and oxygen are held in a thionate ion by?
   a) Ionic bond
   b) Covalent bond
   c) Dative bond
   d) Polar bond

7. How many lone pairs are present in H_2O?
   a) 2
   b) 4
   c) 1
   d) 3

8. The s-s bond is weaker than s-p or p-p because:
   a) Radius of s orbits is short
   b) Spherical distribution of charge in s orbital
   c) Distribution of charge at the Axis
   d) Distribution of charge at Nodal Planes

2008

9. Bond energy is needed to know
   a) Nature of compound
   b) Nature of ionic compound
   c) Nature of reaction
   d) Nature of bonding

2009

10. Linear combination of atomic orbitals (LCAO) results in the formation of
   a) Sigma bond
   b) Pi bond
   c) Bonding molecular orbitals only
   d) Bonding and anti-bonding molecular orbitals
   e) All of the above

11. Sigma bond is formed by:
   a) Transferring the electrons
   b) Head on overlapping of atomic orbitals
   c) Mutual but unequal sharing of electrons
   d) Parallel overlapping of atomic orbitals
   e) All of the above

17. The C–C bond distance is_____.
    a) 1.10 Å
    b) 1.20 Å
    c) 1.30 Å
    d) 1.54 Å
    e) 1.34 Å

2013

18. Which one of the following molecules has shortest distance of carbon atoms?
    a) $CH_3 - CH_3$
    b) $CH_2 = CH_2$
    c) $CH \equiv CH$
    d) $CH_3 - CH_2 - CH_3$
    e) $CH_2 = CH_2 - CH_3$

2014

19. Which is not a characteristic of pi bond?
    a) Pi bond is formed when sigma bond already exists
    b) Pi bond results from lateral overlap of atomic orbitals
    c) Pi bonds are formed from hybrid orbitals
    d) Pi bonds may be formed by the overlap of p orbitals

2015

20. The table shown below gives the bond dissociation energies of single covalent bo of carbon atom with elements A, B, C and D.

Bond	E dissociation (Kj.mole^{-1})
C – A	240
C – B	328
C – C	276
C – D	485

Which of the following is the smallest atom?
a) A
b) B
c) C
d) D

21. The hybridization of atomic orbitals of N is N_2, NO_3^- and NH_4^+ are respectivel
    a) sp, sp^2, sp^3
    b) sp, sp^3, sp^2
    c) sp^2, sp, sp^3
    d) sp^2, sp^3, sp

22. H_2O has a higher boiling point than HF because:
    a) H_2O is more polar than HF
    b) H_2O can form more hydrogen bonds
    c) H_2O has a higher molecular weight
    d) H_2O has more atoms
    e) H_2O does not have a higher boiling point than HF

2017

23. Ionic, covalent and co-ordinate covalent bonds are simultaneously present in the molecular geometry of:
    a) Ammonia
    b) Ammonium Hydroxide
    c) Hydrochloric acid
    d) Water
    e) Methane

2018

24. The number of bond(s) between carbon and nitrogen atoms in a Nitrile is:
    a) One sign and one pi
    b) Two sigma and one pi
    c) Only sigma
    d) One sigma and two pi

2010

12. All of the following are non-polar covalent bonds Except:
    a) Cl_2
    b) O_2
    c) N_2
    d) HF
    e) H_2

13. Water has the maximum density at what temperature?
    a) -4°C
    b) 4°C
    c) -20°C
    d) 20°C
    e) 10°C

2011

14. Bond energy:
    I. Is energy required to break a bond between two atoms in a diatomic molecule
    II. Is taken as the energy released in forming a bond from free atoms
    III. Is the measure of the strength of bond
    a) I only
    b) I and II only
    c) I and III only
    d) III only
    e) I, II and III

15. Which of the following molecules have zero Dipole moments?
    a) CCl_4
    b) CO_2
    c) Cl_2
    d) C_6H_6
    e) All of the above

2012

16. $Cl + e^- \longrightarrow Cl^-$ ΔH = -348 kJ / mol the value -348 kJ / mol in this case will be:
    a) Ionizationenergy
    b) Electronegativity
    c) Electronaffinity
    d) Entropy
    e) Free energy

REACTIONS

2000

1. Energy can neither be created nor destroyed but can be transferred and transformed. This is known as:
   a) Law of conservation of energy
   b) Law of conservation of mass
   c) Law of conservation of momentum
   d) Hess' Law

2. At what temperature standard enthalpy changes are measured?
   a) 298 K
   b) 273 K
   c) 293°C
   d) 298°F

298 K

3. Thermodynamics is the study of heat energy and Chemical energy relationship.
   a) activation
   b) kinetic
   c) chemical
   d) ionization

4. The law of conservation of energy is also called:
   a) Second law of thermodynamics
   b) First law of thermodynamics
   c) Third law of thermodynamics
   d) None of the above

1st Law of Thermodynamics

5. Which statement concerning energy change is false?
   a) Electrical energy is produced by the reaction in a battery
   b) Light energy is absorbed during photosynthesis
   c) Light energy is produced when methane is burned in oxygen
   d) Heat energy is absorbed when sodium reacts with water

2001

6. Which statement concerning energy change is false?
   a) Electrical energy is produced by the reaction in a battery
   b) Light energy is absorbed during photosynthesis
   c) Light energy is produced when methane is burned in oxygen
   d) Heat energy is absorbed when sodium reacts with water

2002

7. Properties of system, which depend upon the amount of substance present in the system are called:
   a) Chemical properties
   b) Intensive properties
   c) Extensive properties
   d) Physical properties

8. Enthalpy is the expression for the:
   a) Reaction rate
   b) Heat content
   c) Energy state
   d) Activation state

exotheomic ↓ stable
Endotheomic unstable.

2007

9. Hess's law is specially applied in the process?
   a) To find out the heat of formation
   b) To find out the specific heat of formation
   c) To find the total heat involved in the process where it cannot be directly calculated
   d) To determine the rate of reaction

2008

10. The heat absorbed at constant volume is equal to:
    a) External pressure
    b) Energy change
    c) Internal pressure
    d) All of the above
    e) Change in internal energy

Endotheomic unstable

11. Products of exothermic reaction are:
    a) Unstable
    b) Sometimes stable and sometimes unstable
    c) Stable
    d) None of the above

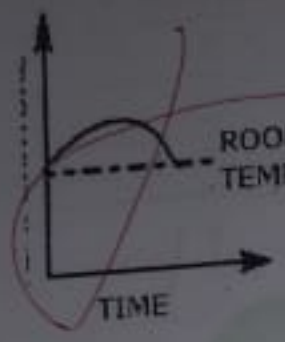
2009

12. The heat of a reaction can be calculated by using
    a) Joule's law
    b) Ohm's Law
    c) Hess's Law
    d) Faraday's Law
    e) Boyle's Law

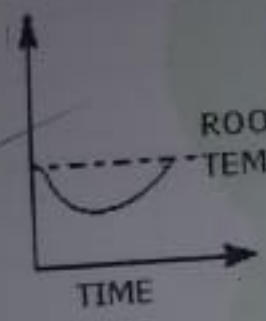
2013

16. Dissolution of ammonium nitrate in water is an endothermic process. Which of the following graph shows how the temperature alters as the ammonium nitrate is added to water and then the solution is left at room temperature?

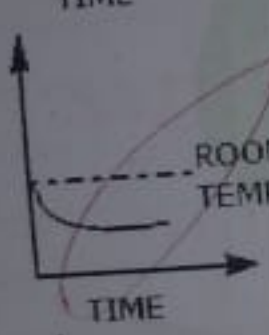
a)



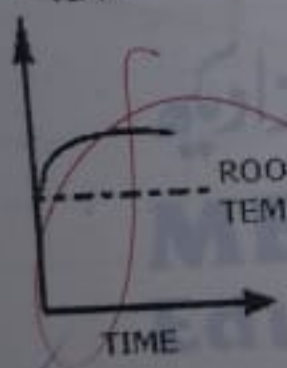
b)



c)



d)



2014

17. Which of the following statements is NOT true for the first law of thermodynamics?
    a) Total energy of the system and surrounding is conserved
    b) Energy can neither be created nor be destroyed
    c) It is the same as law of conservation of energy
    d) Total energy of the system is increasing

18. In those reactions where determination of enthalpy value is difficult by experiments, in such cases enthalpy value can be calculated by:
a) Hess's law
b) Henry's law
c) Kirchoff's law
d) Clapeyron equation
e) Boyle's Law

2017

19. Which of the following values of heat of formation indicates that the products is least stable?
a) –94 k cal
b) –231 k cal
c) +21.4 k cal
d) +64.8 k cal

2018

20. Which of the following properties depends upon the amount of matter present ion the system?
a) Density
b) Gibb's free energy
c) Pressure
d) Temperature

2011

13. If the matter in a given system at a given condition is divided into two equal parts, then the value of the extensive properties will become:
    a) Double of the original value
    b) Half of the original value
    c) Remain same as the original value
    d) One-fourth of the original value
    e) One-eighth of the original volume

14. The measurement of heat absorbed or given out in a chemical reaction is referred to as:
    a) Enthalpy
    b) Endothermic reaction
    c) Exothermic reaction
    d) Thermo chemistry
    e) Heat of formation

2012

15. The amount of heat provided to a system at constant pressure (q_p) is equal to_____.
    a) Change in internal energy (ΔE)
    b) Change in enthalpy (ΔH)
    c) Change in free energy (ΔG)
    d) Change in temperature only (ΔT)
    e) Change in pressure only (ΔP)

Topic: Chp#6 CHEMICAL EQUILIBRIUM

2000

1. In an equilibrium, Ksp is expressed as:

$BaSO_4 \longleftrightarrow Ba^{+2} + SO_4^{-2}$

a) $Ksp = [BaSO_4]$
b) $Ksp = \frac{[Ba^{+2}][SO_4^{-2}]}{[BaSO_4]}$
c) $Ksp = [Ba^{+2}][SO_4^{-2}]$
d) None of the above

Kc > Kp

2. In Haber's process

$N_2 + 3H_2 \longleftrightarrow 2NH_3$; increasing the pressure favours

a) the forward reaction
b) the reverse reaction
c) neither reaction
d) all of the above

2001

3. Ksp is called
a) solubility product
b) concentration
c) equilibrium
d) constant concentration

2002

4. Factors affecting the balance of a chemical equilibrium are following except:
a) Concentration
b) Temperature
c) Enthalpy
d) Pressure

2006

V-S = V-P

5. In a reaction:

$2NO + O_2 \longrightarrow 2NO_2 + heat$

Le-Chatelier's principle can be favored by:
a) High pressure - High Temperature
b) High pressure - Low temperature
c) Low pressure - Low temperature
d) Low pressure - High temperature

12. At equilibrium 18×10^{-3} moles/dm^3 of acetic acid, 22×10^{-3} moles/dm^3 of ethyl alcohol,
40×10^{-3} moles/dm^3 of ethyl acetate and 40×10^{-3} moles/dm^3 of water are present.
Find the value of equilibrium constant (K_e)

a) 4.04
b) 3.14
c) 3.04
d) 2.02
e) 1.04

13. According to law of mass action, "The rate of chemical reaction is proportional to the

a) Products
b) Product of molar concentration of reactants
c) concentration of products
d) Catalyst
e) Pressure

2010

For reaction $A + B \rightleftharpoons C + D$

14. The equilibrium constant can be expressed as:

a) $K_c = \frac{[A][B]}{[C][D]}$

b) $K_c = \frac{[C][B]}{[A][D]}$

c) $K_c = \frac{[C][D]}{[A][B]}$

d) $K_c = \frac{C.D}{A.B}$

e) $K_c = \frac{A.B}{C.D}$

18. $AgCl \rightleftharpoons Ag^+ + Cl^-$

The k_{sp} for the reaction will be:

a) $k_{sp} = \frac{[AgCl]}{[Ag^+][Cl^-]}$

b) $k_{sp} = \frac{[Ag^+][Cl^-]}{[AgCl]}$

c) $k_{sp} = [Ag^+][Cl^-]$

d) $k_{sp} = [AgCl]$

e) $k_{sp} = \frac{[Ag^+]}{[Cl^-]}$

2013

19. A system at equilibrium can be disturbed by:
    a) Concentration change
    b) Pressure change
    c) Temperature change
    d) All of the above

2014

20. In which of the following gaseous equilibrium, more yield of the product is formed by increasing pressure?
    a) $N_2 + O_2 \rightleftharpoons 2NO$
    b) $PCl_5 \rightleftharpoons PCl_3 + Cl_2$
    c) $2NO \rightleftharpoons N_2O_4$
    d) $2NH_3 \rightleftharpoons N_2 + 3H_2$

21. Which of the following statements is/are true with regard to the reaction
    $2SO_{3(g)} \rightleftharpoons 2SO_{2(g)} + O_{2(g)}$
    In which the forward reaction is exothermic?
    a) The forward reaction is favored at higher pressure and higher temperature
    b) The forward reaction is favored at lower pressure and higher temperature
    c) At constant temperature, more SO_3 is formed at equilibrium if the total pressure is increased
    d) At constant total pressure, more O_2 is formed at equilibrium if the temperature is increased.
    e) Both B and D

2015

22. The solubility product for $BaSO_4$ at 18-25°C is:
    a) 1.0×10^{-10} mole^2 dm^{-6}
    b) 8.7×10^{-36} mole^2 dm^{-6}
    c) 1.8×10^{-21} mole^2 dm^{-6}
    d) 8.4×10^{-28} mole^2 dm^{-6}
    e) 3.5×10^{-52} mole^2 dm^{-6}

23. How will the equilibrium of the following reaction be affected if additional nitrogen is added?
    $N_{2\,(g)} + 3H_{2\,(g)} = 2NH_{3\,(g)}$
    a) It will be shifted to the right
    b) It will be shifted to the left
    c) It will be unaffected
    d) The effect on the equilibrium cannot be determined without more information

2017

24. For the equilibrium reaction $2NO_2 \leftrightarrow N_2O_4 + 61$ kJ, increase of temperature would:
    a) Favour the formation of N_2O_4
    b) Favour the decomposition of N_2O_4
    c) No effect on equilibrium
    d) Stop the reaction

25. The value K for $H_2(g) + CO_2(g) \leftrightarrow H_2O(g) + CO_2(g)$ is 1.80 at 1000 °C. If 1.0 mole of each H_2 and CO_2 are place in 1 litre flask, the final equilibrium concentration of CO at 1000 °C will be:
    a) 0.295 M
    b) 0.385 M
    c) 0.57 M
    d) 0.473 M

2011

15. In a reaction

$A + B \rightleftharpoons 2C$

When equilibrium was attained, the concentration was

$[A] = [B] = 4$ moles/dm^3

$[C] = 6$ moles/dm^3

The equilibrium constant K_c of this reaction is:

a) 1.25
b) 2.25
c) 3.25
d) 2.75
e) 3.75

16. If the ratio of initial concentration of the reagents is greater than the K_c then

a) The reaction will shift towards the reverse direction.
b) More quantity of products is obtained
c) The ratio increases to the value of K_c
d) Equilibrium has been attained
e) There is no shifting of reaction

2012

17. Nitrogen dioxide decomposes on heating according to the following equation

$2NO_2\,(g) \rightleftharpoons 2NO\,(g) + O_2\,(g)$

When 4 mole of nitrogen dioxide were put into a 1 dm^3 container and heated to a constant temperature, the equilibrium mixture contained 0.8 mole of oxygen.

What is the numerical value of the equilibrium constant, K_c, at the temperature of the experiment?

a) $\frac{0.8^2 \times 0.8}{4^2}$

b) $\frac{1.6 \times 0.8}{2.4^2}$

c) $\frac{1.6^2 \times 0.8}{4^2}$

d) $\frac{1.6^2 \times 0.8}{2.4^2}$

e) None of the above

2018

28. 106 gram of Na_2CO_3 per dm^3 of solution of Na_2CO_3 in water, the concentration of the solution will be:
   a) 1 N
   b) 0.1 M
   c) 1 M
   d) 0.02 M

29. The normal pH of blood is:
   a) 7.75
   b) 7.35
   c) 7.25
   d) 7.05

30. Methyl orange is _____ in acidic solution.
   a) yellow
   b) pink
   c) orange
   d) red

31. In electro chemical series, elements are arranged in order of their standard electrode potentials, the correct decreasing reactivity order for metals is:
   a) Gold, silver, magnesium, aluminum
   b) Mercury, calcium, sodium, magnesium
   c) Sodium, aluminum, lead, cooper
   d) Potassium, silver, magnesium, aluminum

6. Point the incorrect statement in case of equilibrium state:
   a) It is dynamic in nature
   b) It readjusts itself in the changing conditions
   c) It can be attained from the side of reactants only
   d) It can be attained from either side of the reactions

2007

7. $N_2 + O_2 \longrightarrow 2NO$; Heat= +ve, the yield of N_2 can be increased in this reaction by:
   a) Increasing the pressure
   b) Increasing the temperature
   c) Decreasing the temperature
   d) Decreasing the pressure

2008

8. $NaNO_3$ + heat $\longrightarrow$ $NaNO_2 + O_2$ in this reaction
   a) Kp = Kc
   b) Kp > Kc
   c) Kp < Kc
   d) None of the above

9. When the reaction is in equilibrium;
   a) Product is equal to reactant
   b) Rate of forward reaction is equal to backward reaction
   c) Product is greater than reactant
   d) All of the above

10. Equilibrium is established when:
   a) Rate of forward reaction = rate of backward reaction
   b) Rate of forward reaction > rate of backward reaction
   c) Rate of forward reaction < rate of backward reaction
   d) None of the above

2009

11. For, the reaction

$N_2 + 3H_2 \rightleftharpoons 2NH_3$

The production of NH_3 will be favored at
   a) High pressure and catalyst
   b) Low pressure only
   c) Low pressure and catalyst
   d) High pressure only
   e) Catalyst only

Topic: Chp#7 Solution and Electrolyte

2000

1. How many grams of NaOH are required to completely neutralize 100 ml of 1M of H_2SO_4? (2000)
   a) 80 g
   b) 40 g
   c) 24 g
   d) 8 g

2. The pH of a solution contains 10^{-4} M $[H^+]$: (2000)
   a) 4
   b) 3
   c) -3
   d) 0

3. Electrolysis of dil. H_2SO_4 gives: (2000)

	Cathode	Anode
a)	H_2	SO_2
b)	H_2	O_2
c)	O_2	H_2
d)	SO_2	H_2

2001

4. A sample of air was bubbled into pure water. The pH of water slowly changes from 7 to 6. Which gas in the sample caused this change?
   a) Argon
   b) Carbon dioxide
   c) Carbon monoxide
   d) Oxygen

5. 10 g metal (relative atomic mass 40) are liberated by the passage of 0.5 moles of electrons through molten chloride. What is the formula of chloride?
   a) M_2Cl
   b) MCl
   c) MCl_4
   d) MCl_2

12. 18 gm of glucose in 1000 ml of solution of glucose. The molar concentration of Glucose is:

a) 1 M
b) 0.1 M
c) 0.02 M
d) 2 M

2007

13. Which one of the following compound dissociate more readily?

a) Chloroacetic acid
b) Formic acid
c) HCl
d) Ether

14. NH_3 dissolved in water will act as:

a) Proton acceptor
b) Proton donor
c) Electron donor
d) Both proton acceptor and electron donor

2009

15. If the NaCl produced in the equation
$FeCl_3 + NaOH \rightarrow Fe(OH)_3 + NaCl$
was dissolved in water to make a liter of solution, the molarity would be:

a) 0.1 M
b) 3M
c) 8M
d) 0.5M
e) 1.5M

2010

16. Which of the following will be the most electrically conductive?

a) Sugar dissolved in water
b) Salt dissolved in water
c) Salt dissolved in an organic solvent
d) An oil and water mixture
e) Oil

17. Phenolphthalein is an indicator used for:

a) Strong acid and weak base
b) Strong base and weak acid
c) Strong acid and strong base
d) Weak acid and weak base
e) Strong base and weak base

6. In which of the following instances is there no change in the concentration of the solution during electrolysis?
   a) Concentrated HCl between carbon electrodes
   b) Copper (II) sulphate solution between platinum electrodes
   c) Copper (II) sulphate solution between copper electrodes
   d) Dilute sulphuric acid between platinum electrodes.

7. Which one of the following correctly describes the process occurring at the electrodes when molten sodium chloride is electrolysed?

	Anode	Cathode
a)	Oxidation	Oxidation
b)	Reduction	Reduction
c)	Oxidation	Reduction
d)	Reduction	Oxidation

8. Which one of the following compounds in a 1 mol/dm^3 solution has the lowest pH value?
   a) Ammonia
   b) Hydrochloric acid
   c) Ethanoic acid
   d) Sodium hydroxide

2002

9. In the electrolysis of molten $CuCl_2$ (copper chloride) the substance liberated at the anode: (2002)
   a) Copper
   b) Chlorine
   c) Hydrogen
   d) Copper chloride

2005

10. What will make an electrolyte:
   a) Salt dissolved in water
   b) Sugar dissolved in water
   c) Salt dissolve in organic solvent
   d) All of the above

2006

11. What is the property of oxidizing agent?
   a) Electron gainer
   b) Electron donor
   c) Negative charge
   d) Loose hydrogen

2011

18. Aqueous solution of Na_2CO_3 is:
    a) Acidic
    b) Alkaline
    c) Both acidic and alkaline
    d) Neutral
    e) None of the above

19. Oxidation number of Nitrogen in HNO_3 is:
    a) +4
    b) +2
    c) +6
    d) +5
    e) +7

2012

20. The number of moles of solute dissolved per litre of solution is called:
    a) Normality
    b) Molality
    c) Molarity
    d) Percentage composition
    e) Mole fraction

21. The oxidation number of all the elements in free state is_____
    a) 1
    b) 3
    c) 0
    d) -1
    e) -3

2014

22. In the following reaction:

$$3Br_2 + 6CO_3^{-2} + 3H_2O \rightarrow 5Br^{-1} + BrO_3^{-1} + 6HCO_3^{-1}$$

    a) Bromine is reduced and water is oxidized
    b) Bromine is both reduced and oxidized
    c) Bromine is oxidized and carbonate is reduced
    d) Bromine is neither reduced nor oxidized

23. When the following reaction is balanced, what is the net ionic charge on the right side of the equation?

$$...H^+ ...MnO_4^- + ...Fe^{2+} \rightarrow ...Mn^{2+} + ...Fe^{3+} + ...H_2O$$

a) +5
b) +7
c) +10
d) +17
e) The net ionic charge on either side must be zero

2017

24. Which of the following statements is correct?
a) H_3PO_3 is dibasic and reducing
b) H_3PO_3 is tribasic and reducing
c) H_3PO_3 is tribasic and non-reducing
d) H_3PO_3 is dibasic and non-reducing

25. The amount of solute present in the given amount of solvent is called:
a) Molarity
b) Molality
c) Concentration
d) Solubility

26. In the reaction $2Fe + Cl_2 \leftrightarrow 2FeCl_3$
a) Fe is reduced
b) Fe is oxidized
c) Cl_2 is oxidized
d) None of the above

27. The process in which electric current is used to carry out a non-spontaneous redox reaction is called:
a) Electrolyte
b) Electrolysis
c) Metallic conductor
d) None of the above

Topic: Chp#8 INTRODUCTION TO CHEMICAL KINETICS

2000

1. Which one of the following is not essential for photosynthesis?
   a) Carbon dioxide
   b) Chlorophyll
   c) Sugar
   d) Light

2005

2. Which of the following will increase the rate of a reaction:
   a) Lowering the temperature
   b) Increasing the volume
   c) Reducing activation energy
   d) Increasing activation energy

2006

3. $H_2 + Br_2 \longrightarrow 2HBr$
   The rate expression is: Rate = $K [H_2] [Br_2]^{1/2}$, the order of the reaction is:
   a) 2
   b) 1.5
   c) 1
   d) Zero

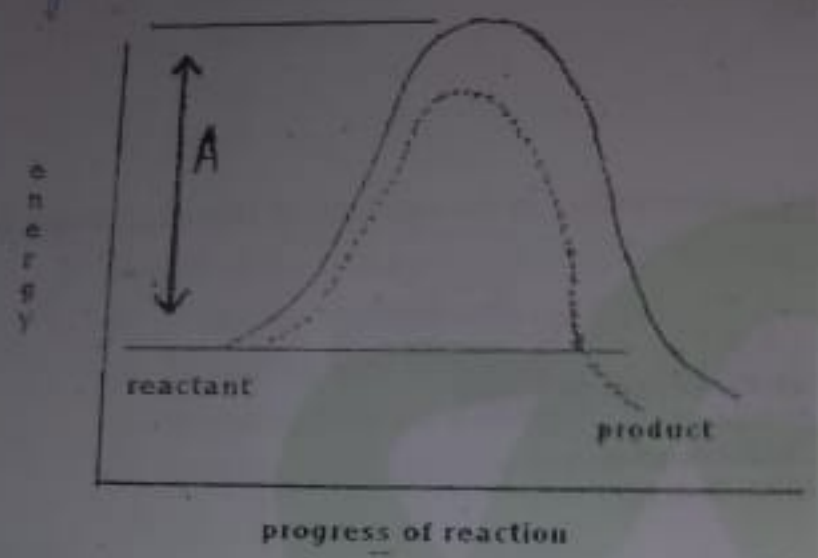
4. A catalyst can't initiate the reaction but speeds up a reaction which is possible:
   a) Physically
   b) Thermodynamically
   c) Chemically
   d) In laboratory

2007

5. Unit of specific Rate Constant for zero order reaction is:
   a) s^{-1}
   b) mol dm^{-3} s^{-1}
   c) dm^6
   d) mol^2 dm^{-6} s^{-1}

6. The energy that the reactants should gain in order to enter into reacting phase is called?
   a) Minimum energy
   b) Activation energy
   c) Threshold Frequency
   d) Kinetic energy

10. The energy profile diagrams for the reaction in presence and absence of a catalyst are shown below. In these profile A represents:



a) Threshold energy
b) Energy of activation in the absence of catalyst
c) Average internal energy of reactants
d) Energy of activation in the presence of catalyst
e) None of the above

2011

11. The unit of rate of reaction is:
a) Mole (dm^3) sec
b) Mole $(dm^3)^{-1}$ Sec^{-1}
c) Mole $(dm^3)^{-2}$ Sec^{-1}
d) Mole $(dm^3)^{-2}$ Sec^{-2}
e) Mole $(dm^3)^{-1}$ Sec^{-2}

12. A certain chemical reaction follows the following rate law:
Rate = $K [A] [B]^2$
The order of reaction is:
a) 1
b) 2
c) 3
d) 4
e) 5

2012

13. If the reaction

$$P + Q \rightarrow R + S$$

is described as being zero order with respect to P, it means that:

a) P is a catalyst in this reaction
b) No P molecules possesses sufficient energy to react
c) The concentration of P does not change during the reaction
d) The rate of reaction is independent of the concentration of P
e) The rate of reaction is proportional to the concentration of Q

14. Sum of all the exponents of molar concentration of the reactant present in the rate equation is known as_____

a) Molecularity
b) Order of reaction
c) Rate of reaction
d) Gradient
e) Slope

2013

15. Rate = K [N_2O_5] has _____ of reaction.

a) First order
b) Pseudo First order
c) Second order
d) Third order
e) Pseudo order

16. For a reaction $2A + B \rightleftharpoons C + D$ the active mass of B is kept constant and that of A is tripled. It is observed that the rate of reaction

a) Decreases three times
b) Decreases nine times
c) Increases six times
d) Increases nine times

2014

17. Catalyst used in reaction $CHCl_3 + 1/2\ O_2 \rightarrow COCl_2 + HCl$ is _____ and its nature is _____.

a) 5% methyl alcohol ...Negative
b) 2% Ethyl alcohol...Negative
c) V_2O_5 ...Positive
d) Al_2O_3 ...Negative

18. If products of a reaction act as catalyst, such catalyst is called:
    a) Positive catalyst
    b) Negative catalyst
    c) Auto catalyst
    d) Both A and B

19. The chemical reactions in which reactants require high amount of activation energy are generally:
    a) Slow
    b) First fast then slow
    c) First slow then fast
    d) Spontaneous

2016

20. The change in concentration of reactant or product per unit time is called:
    a) Rate constant
    b) Rate of reaction
    c) Rate of equation
    d) Rate law
    e) Both A and D

21. A catalyst:
    a) Increases the rate of forward reaction
    b) Increases the rate of both forward and reverse reaction
    c) Changes equilibrium position
    d) Increases the rate of reverse reaction

2018

22. The reaction $2CO + O_2 \rightarrow 2CO_2$ proceeds slower because of activation energy of CO.
    a) Equilibrium
    b) Constant
    c) Low
    d) High

23. The rate of chemical reaction is directly proportional to the product of active masses of the reactants, it is referred to as:
    a) Law of conservation of energy
    b) Law of mass action
    c) Law of conservation of mass
    d) Active mass law

2008

7. Rate of reaction depends upon all of the following except:
   a) Concentration
   b) Pressure
   c) Temperature
   d) Molecularity

2009

8. The sum of exponents of the molar concentration of the reactants in rate expression, is equal to
   a) Molecularity
   b) Polarity
   c) Activation energy
   d) Rate of reaction
   e) Order of reaction

2010

9. All of the following are true statements concerning reaction orders EXCEPT:
   a) The reaction order ranges from minimum 0 to maximum 3
   b) "Rate expression" leads to the concept of order of reaction
   c) If doubling the concentration of a reactant doubles the rate of the reaction, then the reaction is first order in that reactant
   d) Order of reaction is associated with total number of molecules present in a reaction, not with experimental measurement.
   e) The order of reaction is defined as sum of all the exponents of the concentration in terms of the reactants involved in the rate equation.