T.Y.B.Sc. Semester 5 Mock Exam Question Paper

Chemistry Paper I – Physical Chemistry

Multiple Choice Questions

Q1 **Vapour pressure of a liquid solvent ………………..when a non volatile solute is dissolve in it.**   1M
- a) Increase
- b) Decrease
- c) no change
- d) Expand

Q2 **Raoult's law is expressed by………………………..**
- a) $\dfrac{P° - P}{P°} = X_2$
- b) $\dfrac{P - P^0}{P°} = X_2$
- c) $\dfrac{P - P^0}{P} = X_2$
- d) $\dfrac{P - P^0}{P°} = X$

Q3 **……………… is used in Rast method because it has a high value of K_f.**

- a)   Camphor
- b)   Bi phenyl
- c)   Naphthalene
- d)   Sodium chloride

Q4 **Boiling point elevation of the solution ΔT_b is given as………**
- a) $\Delta T_b = T - T_0$
- b) $\Delta T_b = T_0 - T$
- c) $\Delta T_b = T + T_0$
- d) $\Delta T_b = T \times T_0$

Q5 The unit for activation of energy is _____
- a) $kJ\ mol^{-1}$
- b) $kJ\ K^{-1}$
- c) $kJ\ K^{-1}\ mol^{-1}$
- d) $kJ\ R^{-1}$

Q6   Geiger – Muller counter works in the region of ----------- volts.
      a. 100 to 150
      b. 10000 to 15000
      c. 10 to 15
      d. 1000 to 1500

Q7   **The different types of energies associated with a molecule are**
_____
a) Electronic energy   b) Vibrational energy
c) Rotational energy   d) All of the mentioned

Q8   **Vibrational spectrum can be obtained in the _____ region of**
electromagnetic spectrum.
a) Radio frequency   b) Microwave
c) UV-rays   d) Infrared

Q9   **Based on dipole moment, geometries of BF_3 and NH_3 are respectively.**

a) pyramidal and planar   b) planar and pyramidal
c) pyramidal and cubic   d) cubic and planar

Q10 **The moment of Inertia (I) = _____**
a) μr^2 b) μ / r^2 c) μr d) μ / r

Q11 **If Raman shift is negative then Raman spectrum will produce**
a) Stoke's line   b) Antistoke's line
c) Rayleigh line   d) both Stoke's and
Antistoke's line

Q12 **Collision theory is application for_____.**
      a) Unimolecular reaction
      b) Bimolecular reaction
      c) Rearrangement reaction
      d) **Polyatomic reaction**

Q13 . The average life time of a radioactive element is the reciprocal of its ---------------
      a. rate of disintegration
      b. initial concentration
      c. half life period
      d. disintegration constant

Q14 The fundamental equation which can be used to calculate energy change in the
nuclear reaction is _____
      a. $E = mc^2$

b. $E = gmc^2$

c. $E = mc$

d. $E = gc$

Q15 In nuclear reaction, the minimum amount of energy that has to be supplied to the reactants for the reaction to occur is called ---------
a. kinetic energy
b. potential energy
c. threshold energy
d. electrical energy.

Q16 In nuclear reactor control rods are usually made up of either ------------------.
a. copper or magnesium
b. Boron or Cadmium
c. hydrogen or nitrogen
d. phosphorus of zinc

Q17 Which of the following statement is not correct?
a) Physical adsorption is due to Van der Waal's forces
b) Chemical adsorption decreases at high temperature and low pressure
c) Physical adsorption is reversible
d) Adsorption energy for a chemical adsorption is generally greater than that of physical

Q18 Which of the following is less than zero during adsorption?
a) Gibb's free energy
b) entropy
c) enthalpy
d) all the above

Q19 The migration of positively charged colloidal particles, under an electrical field, toward the cathode is called
a) Electrophoresis
b) Electro-osmosis
c) Sedimentation
d) Electro-dialysis

Q20 Helmholtz model represents _____ model
a) diffused layer
b) fixed layer
c) half diffused and half fixed layer
d) none of the above

21 **A semipermeable membrane is permeable to .... molecules only.**

a) **Solvent**
b) **Solute**
c) **Solution**
d) **Solid particles**

22 Langmuir isotherm holds good at low pressure but fails at
    a) low temperature
    b) high pressure
    c) intermediate pressure
    d) none of these

23 Which of the following postulates is incorrect in deriving B.E.T. equation.
    a) the adsorbed layer is unimolecular in thickness
    b) Langmuir's assumptions apply to each layer
    c) the characteristic of adsorption is applicable to only the 1st layer
    d) after 1st layer, the heat of adsorption is equal to the heat of condensation of vapour

Answer Key

Question No.	Answer Key
1	b
2	a
3	a
4	a
5	c
6	d
7	d
8	d
9	a
10	a
11	b
12	b
13	d
14	a
15	c
16	b
17	b
18	d
19	a
20	b
21	a
22	b
23	a