

S.S.R. DEGREE COLLEGE, (AUTONOMOUS)
NIZAMABAD (C.C:5029)
I-SEMESTER INTERNAL ASSESSMENT – II EXAMINATIONS
CHEMISTRY
QUESTION BANK

I. MULTIPLE CHOICE

1. The rate law for a reaction is $\text{rate} = k[A]^2[B]$. What is the overall order of the reaction?
A) 1 B) 2 C) 3 D) 0
✓ Correct Answer: C
2. The rate of a reaction depends on:
A) Temperature B) Concentration of reactants
C) Catalyst D) All of the above
✓ Correct Answer: D
3. In the Arrhenius equation $k = Ae^{-E_a/RT}$, E_a represents:
A) Energy of reaction B) Activation energy
C) Threshold energy D) Heat of reaction
✓ Answer: B) Activation energy
4. The first law of photochemistry is also known as:
A) Planck's law B) Beer–Lambert law
C) Grotthuss–Draper law D) Einstein's law
5. According to the Grotthuss–Draper law, only light that is _____ can cause a chemical change.
A) Reflected B) Absorbed
C) Transmitted D) Scattered
Answer: ✓ B) Absorbed
6. Quantum yield is defined as:
A) Number of photons absorbed / molecules reacted
B) Number of molecules reacted / photons absorbed
C) Molecules emitted / photons absorbed
D) None of these
Answer: ✓ B) Number of molecules reacted / photons absorbed
7. According to de Broglie, the wavelength associated with a moving particle is:
A) $\lambda = h / mv$ B) $\lambda = mv / h$ C) $\lambda = hv$ D) $\lambda = c / \nu$
✓ Answer: A) $\lambda = h / mv$
8. The mathematical form of the uncertainty principle is:
A) $\Delta x \cdot \Delta p \geq h$ B) $\Delta x \cdot \Delta p \geq h / 2\pi$
C) $\Delta x \cdot \Delta p \geq h / 4\pi$ D) $\Delta x \cdot \Delta p = 0$
✓ Answer: C) $\Delta x \cdot \Delta p \geq h / 4\pi$
9. In an emulsion, the dispersed phase and dispersion medium are:
A) Solid and liquid B) Liquid and liquid
C) Gas and liquid D) Gas and solid
Answer: B) Liquid and liquid

10. Tyndall effect is observed due to:

- A) Reflection of light B) Refraction of light
C) Scattering of light by colloidal particles D) Dispersion of light

✓ Answer: C) Scattering of light by colloidal particles

11. The dispersed phase and dispersion medium in butter are respectively:

- A) Liquid in solid B) Solid in liquid
C) Solid in solid D) Liquid in liquid

✓ Answer: A) Liquid in solid

12. Which of the following is an example of physical adsorption?

- A) O_2 on charcoal B) NH_3 on charcoal
C) H_2 on finely divided Ni D) CO on Fe

✓ Answer: A) O_2 on charcoal

13. In chemisorption, the adsorbate is held by:

- A) Weak van der Waals forces B) Covalent or ionic bonds
C) Hydrogen bonds D) Gravitational force

✓ Answer: B) Covalent or ionic bonds

14. Which of the following compounds shows geometrical isomerism?

- A) 1-butene B) 2-butene C) 2-methylpropene D) Propene

✓ Answer: B) 2-butene

15. Which type of isomerism is exhibited by lactic acid ($CH_3CH(OH)COOH$)?

- A) Functional isomerism B) Optical isomerism
C) Geometrical isomerism D) Chain isomerism

✓ Answer: B) Optical isomerism

16. Which pair of compounds represents functional isomerism?

- A) Ethanol and Dimethyl ether B) Butane and 2-methylpropane
C) Propene and Cyclopropane D) Ethene and Ethyne

✓ Answer: A) Ethanol and Dimethyl ether

17. In a titration between hydrochloric acid (HCl) and sodium hydroxide (NaOH), phenolphthalein is used as an indicator. At the endpoint, the solution:

- A) Remains colorless B) Turns pink C) Turns yellow D) Turns blue

Answer: B) Turns pink

18. In a redox titration, potassium permanganate ($KMnO_4$) is often used because it:

- A) Acts as a primary standard B) Changes color at the endpoint
C) Is colorless in solution D) Is a strong acid

Answer: B) Changes color at the endpoint

II. FILL IN THE BLANKS

1. The rate of a chemical reaction is defined as the change in _____ per unit time.

Answer: concentration of reactant or product

2. A reaction whose rate depends only on the concentration of a single reactant is called a _____ reaction.

Answer: first-order

3. The _____ constant of a reaction increases with an increase in temperature, according to the Arrhenius equation.

Answer: rate

4. The half-life of a first-order reaction is _____ of the initial concentration.

Answer: independent

5. In photochemical reactions, the substance that absorbs light and initiates the reaction is called a _____.

Answer: photosensitizer or chromophore

6. According to the Grotthuss–Draper law, only the light _____ by a substance can bring about a photochemical change.

Answer: absorbed

7. The _____ law states that the number of molecules reacting is directly proportional to the number of photons absorbed.

Answer: Stark–Einstein law

8. The Heisenberg uncertainty principle states that it is impossible to simultaneously know the exact _____ and momentum of a particle.

Answer: position

9. The de Broglie wavelength of a particle is inversely proportional to its _____.

Answer: momentum

10. Compounds with the same molecular formula but different structural arrangements are called _____.

Answer: isomers

11. In geometrical isomerism, the isomers differ in the spatial arrangement around a _____.

Answer: double bond

12. Compounds that have the same molecular formula and sequence of bonded atoms but differ in three-dimensional orientation are called _____ isomers.

Answer: stereoisomers

13. Functional isomerism occurs when compounds have the same molecular formula but different _____ groups.

Answer: functional

14. A colloidal system in which solid particles are dispersed in a liquid is called a _____.

Answer: sol

15. The phenomenon in colloids where light is scattered by colloidal particles is known as the _____ effect.

Answer: Tyndall

16. Electrolytes adsorbed on the surface of colloidal particles give them a charge, making the colloid stable due to _____ repulsion.

Answer: electrostatic

17. The reduction in surface tension of a liquid due to the addition of a substance is called _____ action.

Answer: surface-active or surfactant

18. A solution of known concentration used to determine the concentration of another solution is called a _____.

Answer: standard solution

19. In acid-base titration, the point at which neutralization is just complete is called the _____.

Answer: equivalence point

20. The indicator used in titration changes color at or near the _____ point.

Answer: end

III. QUESTIONS

1. First order rate equation and half life time equation

2. Quantum yield

3. conformational isomerism

4. Acid base titration

5. emulsions and gels