B.Sc. (Part-III) (Semester-V)
Examination, March-2021
Physical Chemistry (Paper-IX)
Sub. Code :65823

Day and Date: Saturday, 03-10-2020   **Total Marks: 50**

Time: 03.00 a.m. to 04.00 p.m.

Instructions:
    1)   **Attempt any twenty five MCQ questions from thirty MCQ questions**
    2)   **Each questions carry two marks**
    3)   **Paste the correct answer option in the right square bracket**

==

1. The equation $I = I_0.\, 10^{-ax}$ represents……
   a] Lamberts law   b] Beers law
   c] Einstein law   d] None of these

2. In photosynthesis ……… acts as sensitizers.
   a] CO_2 b] H_2O
   c] Chlorophyll   d] All of these

3. An electrode at which reduction occurs is …………
   a] Cathode   b] Anode
   c] Null electrode   d] none of these

4. The cell that converts electrical energy into chemical energy is ……
   a] Galvanic cell   b] Voltaic cell
   c] Electrolytic cell   d] none of these

5. Homogeneous mixture of more chemical components is known as …..
   a] Solution   b] Solute
   c] Solvent   d] dilute solution

6. Solution which obey Raoults law at all concentrations and temperatures are called …….
   a] real solutions   b] binary solutions
   c] ideal solutions   d] all of these

7. Which of the following is incorrect
   a] $1kH_Z = 10^3 H_Z$ b] $1MH_Z = 10^6 H_Z$
   c] $1GH_Z = 10^{12} H_Z$ d] $1GH_Z = 10^9 H_Z$

8. The wavelength region in (m) of X-rays is

a] 1×10^{-8} to 1×10^{-12} b] 1×10^{-11} to 1×10^{-14}

c] 1×10^{-7} to 1×10^{-9} d] 1×10^{-12} to 1×10^{-14}

9. Which of the following is Hamiltonian energy

a] E   b] A

c] H   d] P

10. Wave particle duality was proposed by....

a] Heisenberg   b] De-brogile

 c] Plank   c] Schrodinger

11. Optical density (D) is ....

a] ε CX   b] I_t / I_O

 c] $I_t * I_O$ d] None of these

12. The quantity $(2J + 1)$ is known as......

a] Exited state   b] Spin paring

c] Ground state   d] Spin multiplicity

13. An electrode in contact with its electrolyte solution called ....

a] Electrolytic cell   b] Half-cell

c] electrochemical cell   d] All of these

14. The equation $\Delta G = -nEcF$ represents

a] free energy   b] Maximum work

c] electrical work   d] All of these

15. In the formation of an ideal solution ...... is evolved or absorbed.

a] Heat   b] Light

c] no heat   d] none of these

16. Real solutions of type-II show large ....deviations from Raoults law.

a] negative   b] positive

c] both a and b   d] none of these

17. If transition occurred in the rotational spectra, then its correct selection rule is

a] $\Delta J = 0$ b] $\Delta J = \pm 1$

c] $\Delta J = \pm 2$ d] $\Delta V = \pm 1$

18. The distance between the two successive troughs or crests is

a] Frequency   b] Wavenumber   c] Wavelength d]

All of these

19. Heisenberg Werner proposed

a]Wave particle duality   b] Uncertainty principle

c] Schrodinger equation   d] None of these

20. Which of the following condition is incorrect for well-behaved wave function Ψ?

a] Ψ must be single value   b] Ψ must be positive

c] Ψ must be finite   d] Ψ must be continuous

21. The ISC means

a] Internal System Conversion   b] Inter Solution Conversion   c] Inter System Crossing   d] Intra System Crossing

22. The Wavelength of 10,000 Å represents …………… region.

a] Infrared   b] Far Infrared

c] Ultraviolet   d] Visible

23. Two solutions of different compositions co-existing with one another are called as …… solutions.

a] Conjugate   b] true

c] miscible   d] all of these

24. The real solutions of type-III show large ………… deviations from Raoult's law.
a] positive   b] negative
c] both 'a' and 'b'   d] none of these

25. In concentration cells, emf is due to difference in ……

a] Activity   b] Concentration

c] both 'a' and 'b'   d] none of these

26. In Nernst equation for the calculation of emf of cell, Qa represents …..

a] Reaction quotient   b] Quantum

c] Einstein   d] none of these

27. Davisson and garner experiment demonstrated….

a] Particle wave nature of electromagnetic radiation   b] Natural width of spectral line

c] Wave character of electron   d] None of these

28. The designation of an orbital with n=4 and L= 1 is

a] 4p   b] 4d

c]4s   d] 4f

29. As a first approximation, the rotating diatomic molecule is considered to be….

a] Harmonic oscillator   b] Rigid rotor model   c] Oscillator   d] All of these

30. The intensity of any spectral line depends on

a] Wavelength b] Incident light

c] transition probability   d] None of these