## Chemistry

1. pH of a substance is:
A) $\log \left[\mathrm{H}^{+}\right]$
B) $-\log \left[\mathrm{H}^{+}\right]$
C) $\log \left[\mathrm{H}^{-}\right]$
D) $-\log \left[\mathrm{H}^{-}\right]$
2. Which order has the identical unit of rate of reaction and rate constant?
A) Fractional Order Reaction
B) Zero Order Reaction
C) First Order Reaction
D) Second Order Reaction
3. Which of the following statement is correct?
A) ( $n-1$ )d subshell has lower energy than ns subshell
B) $(n-1) d$ subshell has higher energy than $n s$ subshell
C) $(n+1) d$ subshell has lower energy than $n f$ subshell
D) nf subshell has lesser energy than ns subshell
4. The specific conductance of an electrolyte is:
A) Increases with dilution
B) Decrease with dilution
C) Either may increase or decrease
D) No change
5. What happens to entropy in the evaporation of water?
A) It decreases
B) It increases
C) It does not change
D) Remains zero
6. Which is the correct option for sulphur solution?
A) Lyophilic Colloid
B) Lyophobic Colloid
C) Gel
D) Emulsion
7. In the reduction of dichromate by $\mathrm{Fe}(\mathrm{II})$, the number of electrons involved per chromium atom is:
A) 3
B) 4
C) 2
D) 1
8. A real gas is expected to behave more or less ideally at:
A) Low temperature and low pressure
B) Low temperature and high pressure
C) High temperature and low pressure
D) High temperature and high pressure
9. Which of the following represents a multimolecular colloidal particles?
A) Sol of sulphur
B) Lipids
C) Carbohydrate
D) Proteins
10. Which one of the following molecule / ion shows regular tetrahedral structure?
A) $\mathrm{SO}_{2}$
B) $\mathrm{BF}_{4}^{-}$
C) $\mathrm{XeF}_{6}$
D) $\left[\mathrm{Ni}(\mathrm{CN})_{4}\right]^{2-}$
11. Which of the following statements is correct for carbon monoxide?
A) A double bond between carbon and oxygen
B) $1 \sigma, 1 \pi$ and 1 coordinate bond between carbon and oxygen
C) One lone pair of electrons only on oxygen atom
D) $1 \sigma \& 2 \pi$ bonds between carbon and oxygen.
12. Which of the following is the Alicyclic Compounds?
A) Aromatic Compounds
B) Aliphatic Cyclic Compounds
C) Heterocyclic Compounds
D) Aliphatic compound
13. Which among the following is the Baeyer's reagent?
A) Alkaline permanganate solution
B) Acidified permanganate solution
C) Neutral permanganate solution
D) Aqueous bromine solution
14. Which of the following expressions gives the de Broglie relationship?
A) $p=h / v$
B) $K=\mathrm{h} / \mathrm{mv}$
C) $h=m v / \kappa$
D) $K=v / p$
15. At $25^{\circ} \mathrm{C}$, the highest osmotic pressure is exhibited by 0.1 M solution of:
A) Glucose
B) $\mathrm{K}_{3}\left[\mathrm{Fe}(\mathrm{CN})_{6}\right]$
C) $\mathrm{Ca}\left(\mathrm{NO}_{3}\right)_{2}$
D) $\mathrm{Al}_{2}\left(\mathrm{SO}_{4}\right)_{3}$
16. Which of the following shows a negative deviation from Raoult's law?
A) Acetone -Benzene
B) Acetone -Ethanol
C) Acetone -Chloroform
D) Benzene -Methanol
17. $\mathrm{Al}^{3+}$ has lower ionic radius than $\mathrm{Mg}^{2+}$ ion because:
A) Al atom has less number of neutrons than Mg
B) Their electro negativities are different
C) Mg has a higher ionization potential than Al
D) $\mathrm{Al}^{3+}$ has a higher nuclear charge than $\mathrm{Mg}^{2+}$
18. Which of the following correctly represents Thermoplastics?
A) Intermolecular forces are strong
B) Intermolecular forces are weak
C) They cannot be remoulded into any shape
D) They have very high glass transition temperature
19. Lithium is the strongest reducing agent among alkali metals due to which of the following factors?
A) Ionisation energy
B) Electron affinity
C) Hydration energy
D) Lattice energy
20. Gallium doped with germanium is $a$ :
A) n-type semiconductor
B) p-type semiconductor
C) p-n type semiconductor
D) p-n-p type semiconductor
21. The EAN of the complex $\left[\mathrm{Co}\left(\mathrm{NH}_{3}\right)_{6} \mathrm{Cl}_{3}\right]$ is:
A) 33
B) 35
C) 36
D) 38
22. In $\mathrm{K}_{4}\left[\mathrm{Fe}(\mathrm{CN})_{6}\right]$ complex. What is the hybridization of Fe ?
A) $d^{2} s p^{2}$
B) $d^{2} s p^{3}$
C) $\mathrm{dsp}^{2}$
D) $\mathrm{sp}^{3}$
23. Which one is the correct IUPAC name of Iso butyl bromide?
A) 1-bromo butane
B) 2-bromo butane
C) 1-bromo-2-methyl propane
D) 2-bromo-2-mehtyl butane
24. What is the indication for the appearance of red colour in Victor Meyer's test?
A) $1^{0}$ Alcohol
B) $2^{0}$ Alcohol
C) $3^{0}$ Alcohol
D) Phenol
25. Which catalyst is used in the equation, $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CHO}+\mathrm{CH}_{3} \mathrm{COCH}_{3} \rightarrow \mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CH}=\mathrm{CHCOCH}_{3}$ ?
A) NaOH
B) $\mathrm{KMNO}_{4}$
C) $\mathrm{K}_{2} \mathrm{Cr}_{2} \mathrm{O}_{7}$
D) $\mathrm{LiAlH}_{4}$
26. Which one of the following protein act as antibodies?
A) Albumin
B) Haemoglobin
C) Actin
D) Gamma globulins
27. What is a biochemical messenger called as?
A) A transport protein
B) A harmone
C) An enzyme
D) An antigen
28. The conversion of an amide to amine by reaction with $\mathrm{Br}_{2}$ and KOH is called as:
A) Carbyl amine reaction
B) Hoffman's reaction
C) Parkin's reaction
D) Aldol reaction
29. $2 \mathrm{SO}_{2}+\mathrm{O}_{2} \rightleftarrows 2 \mathrm{SO}_{3}+185.2 \mathrm{k}$ According to Le Chatelier's principle, best yields of sulphur trioxide are obtained using:
A) High pressure and high temperature
B) High pressure and low temperature
C) Low pressure and high temperature
D) Low pressure and low temperature
30. What is the electron configuration for Berkelium?
A) $[\mathrm{Xe}] 7 \mathrm{~s}^{2} 5 f^{9}$
B) $[X e] 7 s^{2} 5 f^{9} 6^{\prime} d^{1}$
C) $[R n] 7 s^{2} 5 f^{9}$
D) $[R n] 7 s^{2} 5 f^{9} 6 d^{1}$
