PHYSICAL CHEMISTRY

NEET

CRASH COURSE

SURFACE CHEMISTRY

SMART ACHIEVERS

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SURFACE CHEMISTRY

Q.1 Which of the following statements about physical adsorption is not correct ?
(1) It is usually monolayer
(2) It is reversible in nature
(3) It involves van der Waals interactions between adsorbent and adsorbate
(4) It involves small enthalpy of adsorption as compared to chemisorption.

Q.2 Which of the following statements regarding adsorption is not correct ?
(1) Extent of adsorption of gases on charcoal increases with increase in pressure of the gas
(2) Extent of adsorption is independent of temperature
(3) Extent of chemisorption by a given mass of adsorbent is limited
(4) Extent of adsorption is dependent on the nature of adsorbent

Q.3 Which of the following statements about chemisorption is not applicable?
(1) It involves chemical forces between adsorbent and absorbate
(2) It is irreversible in nature
(3) It involves high heat of adsorption
(4) It involves low activation energy

Q.4 Which of the following is not characteristic of chemisorption?
(1) it is irreversible (2) it is specific
(3) it is multilayer phenomenon (4) heat of adsorption of about – 400 kJ

Q.5 Which one is false in the following statement ?
(1) A catalyst is specific in its action
(2) A very small amount of the catalyst alters the rate of a reaction
(3) The number of free vacancies on the surface of the catalyst increases on sub-division
(4) Ni is used as a catalyst in the manufacture of ammonia

Q.6 A catalyst increases rate of reaction by :
(1) decreasing enthalpy (2) decreasing internal energy
(3) decreasing activation energy (4) increasing activation energy

Q.7 Tyndall effect is observed in :
(1) solution (2) precipitate (3) sol (4) vapour

Q.8 Gold number of a lyophilic sol is such property that:
(1) the larger its value, the greater is the peptising power
(2) the lower its value, the greater is the peptising power
(3) the lower its value, the greater is the protecting power
(4) the larger its value, the greater is the protecting power

Q.9 Which of the following ions is most effective in the coagulation of an arsenious sulphide solution ?
(1) K^+ (2) Mg^{2+} (3) Al^{3+} (4) C

Q.10 Which of the following ions is most effective in the coagulation of ferric hydroxide solution ?
(1) K^+ (2) Mg^{2+} (3) Al^{3+} (4) C

Q.11 Gold number gives :
(1) the amount of gold present in the colloid.
(2) the amount of gold required to break the colloid.
(3) the amount of gold required to product the colloid.
(4) none of the above.

Q.12 Gelatin is mostly used in making ice cream in order to :
(1) prevent making of a colloid.
(2) stabilize the colloid and prevent crystallization.
(3) stabilize the mixture.
(4) enrich the aroma.

Q.13 Which one of the following will have the highest coagulation power for a ferric hydroxide sol ?
(1) NaCl (2) $BaCl_2$ (3) K_2CrO_4 (4) $K_3[Fe(CN)_6]$

Q.14 At CMC, the surfactant molecules :
(1) Decomposes (2) Become completely soluble
(3) Associate (4) Dissociate

Q.15 Some type of gels like gelatin loose water slowly. The process is known as :
(1) synerisis (2) thixotropy (3) peptisation (4) imbibition

Q.16 Gold numbers of protective colloids A, B, C and D are 0.50, 0.01, 0.10 and 0.005, respectively. The correct order of their protective powers is
(1) C < B < D < A (2) A < C < B < D
(3) B < D < A < C (4) D < A < C < B

Q.17 The coagulating power of electrolytes having ions Na^+, Al^{3+} and Ba^{2+} for arsenic sulphide sol increases in the order :
(1) $Al^{3+} < Ba^{2+} <$ Na^+ (2) $Na^+ < Ba^{2+} < Al^{3+}$
(3) $Ba^{2+} < Na^+ < Al^{3+}$ (4) $Al^{3+} < Na^+ < Ba^{2+}$

Q.18 Rate of physisorption increases with
(1) decrease in temperature (2) increase in temperature
(3) decrease in pressure (4) decrease in surface area

Q.19 Adsorption of gases on solid surface is generally exothermic because
(1) enthalpy is positive (2) entropy decreases
(3) entropy increases (4) free energy increases

Q.20 Among the following, the surfactant that will form micelles in aqueous solution at the lowest molar concentration at ambinent condition is :
(1) $CH_3(CH_2)_{15}N^+(CH_3)_3Br^-$ (2) $CH_3(CH_2)_{11}OSO_3^-Na^+$
(3) $CH_3(CH_2)_6COO^-Na^+$ (4) $CH_3(CH_2)_{11}N^+(CH_3)_3Br^-$

Q.21 Among the electrolytes Na_2SO_4, $CaCl_2$, $Al_2(SO_4)_3$ and NH_4Cl, the most effective coagulating agent for Sb_2S_3 sol is :
(1) Na_2SO_4 (2) $CaCl_2$ (3) $Al_2(SO_4)_3$ (4) NH_4Cl

Q.22 The number of phases present in colloidal solution is :–
(1) 2 (2) 4 (3) 3 (4) 1

Q.23 Butter is a colloid formed when :–
(1) Fat is dispersed in fat (2) Fat is dispersed in water
(3) Water is dispersed in fat (4) Suspension of casein in water

Q.24 Lyophobic colloids are :–
(1) Reversible (2) Irreversible (3) Water loving (4) Solvent loving

Q.25 The gold number of A, B, C & D are 0.04, 0.002, 10 & 25 respectively. The protective powers of A, B, C & D are in the order :–
(1) A > B > C > D (2) B > A > C > D (3) D > C > B > A (4) C > A > B > D

ASSERTION & REASON

Directions : Each of these questions contains an Assertion followed by reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements.

(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If Assertion is true but reason is false.
(4) If both assertion and reason are false.

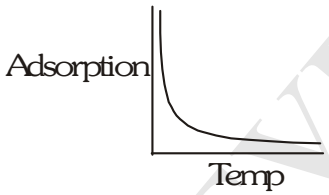
Q.26 **Assertion :–** Langmuir adsorption is a single layer phenomenon.
Reason :– It is due to Vanderwaal's forces.

Q.27 **Assertion :–** Physical adsorption of molecule on the surface requires activation energy.
Reason :– Because the bonds of adsorbed molecules are broken.

Q.28 **Assertion :–** Filtration of colloidal particles is not possible by filter paper.
Reason :– Size of colloidal particle is less than filter paper pores.

Q.29 **Assertion :–** A gas mixed with another gas forms a colloidal solution.
Reason :– Mixture of gases is homogenous system.

Q.30 **Assertion :–** The graphical representation of physical adsorption with temp is.



Reason :– This is weak adsorption & adsorption is exothermic process.

ANSWER KEY

Q.1	1	Q.2	2	Q.3	4	Q.4	3	Q.5	4	Q.6	3	Q.7	3
Q.8	3	Q.9	3	Q.10	3	Q.11	4	Q.12	2	Q.13	4	Q.14	3
Q.15	1	Q.16	2	Q.17	2	Q.18	1	Q.19	2	Q.20	1	Q.21	3
Q.22	1	Q.23	3	Q.24	2	Q.25	2	Q.26	3	Q.27	1	Q.28	3
Q.29	1	Q.30	1										