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NEET SURFACE CHEMISTRY — PYQS

Max. Marks: 108 **Questions:** 27

Section A (MCQ) — 27 questions

Q.1 Which one is an example of heterogeneous catalysis? [NEET (UG) 2023]

(1) Hydrolysis of sugar catalysed by H^+ ions.

(2) Decomposition of ozone in presence of nitrogen monoxide.

(3) Combination between dinitrogen and dihydrogen to form ammonia in the presence of finely divided iron.

(4) Oxidation of sulphur dioxide into sulphur trioxide in the presence of oxides of nitrogen.

Scan or tap for the full solution

Q.2 Pumice stone is an example of - [NEET (UG) 2023]

(1) gel (2) solid sol (3) foam (4) sol

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Q.3 Given below are two statements

Statement-I: In the coagulation of a negative sol, the flocculating power of the three given ions is in the order $Al^{3+} > Ba^{2+} > Na^+$

Statement-II: In the coagulation of a positive sol, the flocculating power of the three given salts is in the order $NaCl > Na_2SO_4 > Na_3PO_4$

In the light of the above statements, choose the most appropriate answer from the options given below [NEET (UG) 2022]

(1) Both Statement-I and Statement-II are correct.

(2) Both Statement-I and Statement-II are incorrect.

(3) Statement-I is correct but Statement-II is incorrect.

(4) Statement-I is incorrect but Statement-II is correct.

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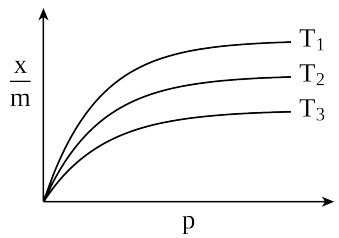
Q.4 Shown below are adsorption isotherms for a gas 'X' at temperatures T_1, T_2 and T_3 :



p and $\frac{x}{m}$ represent pressure and extent of adsorption, respectively. The correct order of temperatures for the given adsorption is : [NEET (UG) 2022 (Phase 2)]

(1) $T_1 = T_2 > T_3$ (2) $T_1 > T_2 > T_3$

(3) $T_3 > T_2 > T_1$ (4) $T_1 = T_2 = T_3$

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Q.5 The right option for the statement "Tyndall effect is exhibited by", is : [NEET (UG) 2021]

(1) Urea solution (2) NaCl solution

(3) Glucose solution (4) Starch solution

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Q.6 Measuring Zeta potential is useful in determining which property of colloidal solution? [NEET (UG) 2020]

(1) Solubility

(2) Stability of the colloidal particles

(3) Size of the colloidal particles

(4) Viscosity

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Q.7 Which mixture of the solution will lead to the formation of negatively charged colloidal [AgI] I^- sol. ? [NEET (UG) 2019]

(1) 50 mL of 2 M $AgNO_3$ + 50 mL of 1.5 M KI

(2) 50 mL of 0.1 M $AgNO_3$ + 50 mL of 0.1 M KI

(3) 50 mL of 1 M $AgNO_3$ + 50 mL of 1.5 M KI

(4) 50 mL of 1 M $AgNO_3$ + 50 mL of 2 M KI

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Q.8 On which of the following properties does the coagulating power of an ion depend? [NEET 2018]

(1) The magnitude of the charge on the ion alone

(2) Size of the ion alone

(3) Both magnitude and sign of the charge on the ion

(4) The sign of charge on the ion alone

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Q.9 Which one of the following statements is not correct? [NEET 2017]

(1) The value of equilibrium constant is changed in the presence of a catalyst in the reaction at equilibrium.

(2) Enzymes catalyse mainly bio-chemical reactions.

(3) Coenzymes increase the catalytic activity of enzyme.

(4) Catalyst does not initiate any reaction.

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Q.10 Fog is a colloidal solution of [NEET 2016 (Phase 1)]

(1) solid in gas (2) gas in gas

(3) liquid in gas (4) gas in liquid.

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Q.11 Which one of the following characteristics is associated with adsorption? [NEET 2016 (Phase 1)]

(1) ΔG and ΔH are negative but ΔS is positive.

(2) ΔG and ΔS are negative but ΔH is positive.

(3) ΔG is negative but ΔH and ΔS are positive.

(4) ΔG, ΔH and ΔS all are negative.

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Q.12 The coagulation values in millimoles per litre of the electrolytes used for the coagulation of As_2S_3 are given below :

I. (NaCl) = 52,

II. ($BaCl_2$) = 0.69,

III. ($MgSO_4$) = 0.22

The correct order of their coagulating power is [NEET 2016 (Phase 2)]

(1) I > II > III (2) II > I > III

(3) III > II > I (4) III > I > II

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Q.13 Which property of colloidal solution is independent of charge on the colloidal particles? [AIPMT 2015 (Cancelled)]

(1) Electro-osmosis (2) Tyndall effect

(3) Coagulation (4) Electrophoresis

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Q.14 Which of the following statements is correct for the spontaneous adsorption of a gas? [AIPMT 2014]

(1) ΔS is negative and, therefore, ΔH should be highly positive.

(2) ΔS is negative and, therefore, ΔH should be highly negative.

(3) ΔS is positive and, therefore, ΔH should be negative.

(4) ΔS is positive and, therefore, ΔH should also be highly positive.

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Q.15 Which property of colloids is not dependent on the charge on colloidal particles? [AIPMT 2014]

(1) Coagulation (2) Electrophoresis

(3) Electro-osmosis (4) Tyndall effect

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Q.16 In Freundlich adsorption isotherm, the value of $\frac{1}{n}$ is [AIPMT 2012 (Prelims)]

(1) between 0 and 1 in all cases

(2) between 2 and 4 in all cases

(3) 1 in case of physical adsorption

(4) 1 in case of chemisorption.

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Q.17 Which one of the following statements is incorrect about enzyme catalysis? [AIPMT 2012 (Prelims)]

(1) Enzymes are mostly proteinous in nature.

(2) Enzyme action is specific.

(3) Enzymes are denatured by ultraviolet rays and at high temperature.

(4) Enzymes are least reactive at optimum temperature.

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Q.18 The protecting power of lyophilic colloidal sol is expressed in terms of [AIPMT 2012 (Prelims)]

(1) coagulation value

(2) gold number

(3) critical micelle concentration

(4) oxidation number

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Q.19 If x is amount of adsorbate and m is amount of adsorbent, which of the following relations is not related to adsorption process? [AIPMT 2011 (Prelims)]

(1) x/m = f(p) at constant T
(2) x/m = f(T) at constant p
(3) p = f(T) at constant (x/m)
(4) $\frac{x}{m} = p \times T$

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Q.20 The Langmuir adsorption isotherm is deduced using the assumption [AIPMT 2007]
(1) the adsorption sites are equivalent in their ability to adsorb the particles
(2) the heat of adsorption varies with coverage
(3) the adsorbed molecules interact with each other
(4) the adsorption takes place in multilayers

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Q.21 A plot of log(x/m) versus $\log p$ for the adsorption of a gas on a solid gives a straight line with slope equal to [AIPMT 2006]
(1) $\log K$ (2) $-\log K$ (3) n (4) 1/n

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Q.22 Which one of the following forms micelles in aqueous solution above certain concentration? [AIPMT 2005]
(1) Dodecyl trimethyl ammonium chloride
(2) Glucose
(3) Urea
(4) Pyridinium chloride

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Q.23 Which of the following forms cationic micelles above certain concentration? [AIPMT 2004]
(1) Sodium dodecyl sulphate
(2) Sodium acetate
(3) Urea
(4) Cetyltrimethylammonium bromide.

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Q.24 According to the adsorption theory of catalysis, the speed of the reaction increases because [AIPMT 2003]
(1) the concentration of reactant molecules at the active centres of the catalyst becomes high due to adsorption
(2) in the process of adsorption, the activation energy of the molecules becomes large
(3) adsorption produces heat which increases the speed of the reaction
(4) adsorption lowers the activation energy of the reaction.

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Q.25 Position of non-polar and polar part in micelle [AIPMT 2002]
(1) polar at outer surface but non-polar at inner surface
(2) polar at inner surface but non-polar at outer surface
(3) distributed over all the surface
(4) are present in the surface only

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Q.26 Which is not correct regarding the adsorption of a gas on surface of a solid? [AIPMT 2001]
(1) On increasing temperature adsorption increases continuously.
(2) Enthalpy and entropy change is negative.
(3) Adsorption is more for some specific substance.
(4) It is a reversible reaction.

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Q.27 Which one of the following methods is commonly used for the destruction of a colloid? [AIPMT 2000]
(1) Dialysis
(2) Condensation
(3) Filtration by animal membrane
(4) By adding electrolyte

Scan or tap for the full solution

ANSWER KEY

Ques.	1	2	3	4	5	6	7
Ans.	**3**	**2**	**3**	**3**	**4**	**2**	**3, 4**
Ques.	8	9	10	11	12	13	14
Ans.	**3**	**1**	**3**	**4**	**3**	**2**	**2**
Ques.	15	16	17	18	19	20	21
Ans.	**4**	**1**	**4**	**2**	**4**	**1**	**4**
Ques.	22	23	24	25	26	27	
Ans.	**1**	**4**	**4**	**1**	**1**	**4**	