CHEMISTRY

JEE MAIN AND ADVANCED

MOCK TEST 21

Example

1. Give the correct order of initials T(true) or F(false) for following statements.

(a) Micelles formation takes place only above

craft temperature

(b)ZSM-5 is a type of zeolites used as a catalyst in petrochemical industries.

(c)A micell is an aggregation of surfactants in in aqueous solution, often spherical

(d) Lyophilic sols are irreversible sols

A. T F F T

B. T T F F

C. T T T F

D. F T T F

Answer: C

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2. In an adsorption experiment, a graph of log(x/m) versus log P was found to be linear with a slope of 45°, and the the intercept of of 0.3010. The amount of gas adsorbed per gram charcoal under a pressure of 0.8 bar is

A. 1.2

B. 1.4

C. 1.6

D. 1.8

Answer: C

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3. Which gas will be adsorbed on solid to greater extent?

A. A gas having non polar molecules with lowest critical temperature (T_c)

B. A gas having non polar molecules with highest critical pressure (P_c)

C. A gas having polar molecules with highest critical temperature (T_c)

D. A gas having non polar molecules with lowest critical pressure (P_c)

Answer: C

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4. According to the adsorption theory of catalysis, the speed of the reaction increases because:

A. In the process of adsorption, the concentration of the molecules decreases at the surface of catalyst

B. Adsorption produces heat which increases the speed of the reaction

C. Adsorption lowers the activation energy of the reaction

D. Adsorption increases the activation energy of the reaction

Answer: C

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5. Which of the following justify the enthalpy driven spontaneity of adsorption process?

A. It is a spontaneous endothermic processin which randomness increases

due to force of repulsion between adsorbent and adsorbate

B. It is a a spontaneous exothermic process in which randomness decreases due to force of attraction between adsorbent and adsorbate

C. It is a spontaneous adiabatic process in which randomness increases due to free expansion of molecule between adsorbent and adsorbate

D. Itis a non spontaneous endothermic process in which randomness decreases due to force of repulsion between adsorbent and adsorbate

Answer: B

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6. Choose the incorrect statement pertaining to the adsorption of gas on a solid surface

A. Adsorption is always exothermic

B. Physisorption may transform into chemisorption at high temperature

C. Physisorption increases with increasing temperature but chemisorption decreases with increasing temperature

D. Chemisorption is more exothermic than physisorption, however it is very slow due to higher energy of activation

Answer: C

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7. Among the following, the surfactant that will form micelles in aqueous solution at the lowest molar concentration at ambient condition is

A. $CH_3(CH_2)15N^+(CH_3)_3Br^-$

B. $CH_3(CH_2)_{11}N^+(CH_3)_3Br^-$

C. $CH_3(CH_2)_6COO^-Na^+$

D. $CH_3(CH_2)_{11}OSO3^-Na^+$

Answer: A

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8. Which of the following is lyophilic sol?

A. Silver sol

B. As_2S_3 sol

C. Sulphur sol

D. Gelatin sol

Answer: D

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9. Which of the following is an incorrect statement?

A. Most heterogeneous catalytic reactions involve the solid surface of the catalyst

B. Heterogeneous catalyst primarily function by lowering the activation energy of the reaction

C. A solid catalyst present in the power form is more effective as it has large surface area

D. The catalyst may be deactivated by heating it to a high temperature in vacuum

Answer: D

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10. Which of the following Freundlich adsorption isotherm represents the adsorption of a gas by a solid (P_s=Saturation pressure)

A. 

B. (##AAK_MCP_21_NEET_CHE_E21_010_Q02##)

C. (##AAK_MCP_21_NEET_CHE_E21_010_Q03##)

D. 

Answer: A

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11. Which of the following methods could be e employed for the preparation of As_2S_3 sol?

A. Colloidal mill method

B. Double decomposition method

C. Bredig's arc method

D. Peptization

Answer: B

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12. Surface tension of lyophobic sols is usually

A. Lower than dispersion medium

B. More than dispersion medium

C. Equal to dispersion medium

D. Can't predict

Answer: A

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13. Which of the following is true is respect of chemical adsorption (chemisorption)?

A. $\Delta H < 0,\ \Delta S > 0,\ \Delta G > 0$

B. $\Delta H < 0,\ \Delta S < 0,\ \Delta G < 0$

C. $\Delta H > 0,\ \Delta S > 0,\ \Delta G < 0$

D. $\Delta H > 0,\ \Delta S < 0,\ \Delta G > 0$

Answer: B

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14. 10% sites of catalyst bed have adsorbed H_2 . On heating, H_2 gas is evolved from sites and collected at 0.03 atm and 300K in a small vessel of $2.46cm^3$. Number of sites available is $7.2 \times (10)^{16}$ per cm^2 and surface area is $1000cm^2$. The number of surface sites are occupied by one molecule of H_2 is [Given: $N_A = 6 \times (10)^{23}$]

A. 1

B. 2

C. 3

D. 4

Answer: D

15. Bredig's arc method involves

A. Only dispersion of metal

B. Only condensation of metal

C. Dispersion as well as condensation

D. Neither dispersion nor condensation

Answer: C

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16. The electrical charge on the the colloidal particles is indicated by

A. Ultramicroscope

B. Molecular sieves

C. Electrophoresis

D. Brownian movement

Answer: C

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17. The gold number of protective colloids A,B,C and D are 0.02, 0.002, 10 and 30 respectively. then the protective powers of A,B,C and D are in the order

A. $D > C > A > B$

B. $D > C > B > A$

C. $A > B > C > D$

D. $B > A > C > D$

Answer: D

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18. For the coagulation of 40ml of ferric hydroxide sol, 10ml of 0.4 M KCI is required. Then, coagulation value of KCI is

A. 10

B. 50

C. 100

D. 40

Answer: C

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19. Which of the following given statements is/are correct?

(a) cold cream is an example of (W/O) type emulsions,

(b)electrical conductance of aqueous

emulsions is less than that of oil emulsions

(c) emulsions cannot be broken into constituent liquids by heating or freezing

(d) an emulsion can be diluted with water, then it forms (O/W) type emulsion

A. (a) and (d)

B. only (a)

C. (a), (b) & (c)

D. (a) ,(c) & (d)

Answer: A

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20. Range the following electrolytes in the increasing order of coagulating power for the coagulation of As_2S_3 sol

(I) $MgSO_4$

(II) $BaCl_2$

(III) $NaCl$

A. $III > I > II$

B. $I > II > III$

C. $III > II > I$

D. $I > III > II$

Answer: C

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21. The factors responsible for the stability of lyophilic sols are

A. Charge and solvation of colloidal particles

B. Large particle size only

C. Electrical charge only

D. Brownian movement and larger size

Answer: A

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22. To stop bleeding from an injury ferric chloride can be applied. Which of the following comment (s) about the statement is justified?

(a) it is not true, ferric chloride is highly

poisonous

(b) it is true, Fe^{3+} ions coagulate blood which is negatively charged sol.

(c) it is true, coagulation takes place because of formation of negatively charged sol with Cl^- ions

(d) it is not true, Cl^- ions form positively charged sol, profuse bleeding takes place (e) it is not true, ferric chloride is ionic and gets into blood stream

A. only (c)

B. (b) & (c)

C. only (b)

D. (a), (d) & (e)

Answer: C

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23. Match the items given in column-I with that in column-II column-I (I) Fool's gold (II) Corundum (III) Diaspore (IV) Calamine column-II

(a)Al_2O_3 (b) Sulphide ore (c)$ZnCO_3$ (d) $Al_2O_3H_2O$ (e) Sulphide of zinc

A. I(c), II(d), III(a), IV(e)

B. I(b), II(a), III(d), IV(c)

C. I(e), II(d), III(a), IV(c)

D. I(d), II(c), III(b), IV(a)

Answer: B

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24. A certain metal M ocas in four compounds namely A,B,C and D. A has 20% of M, B has 68% of M, C has 73% of M and D has 60% of M. If metal M is extracted from A,B,C and D, it costs Rs 35 per kg, Rs 40 per kg, Rs 100 per kg and Rs 45 per kg respectively. which mineral can be considered as an effective ore of M?

A. A

B. B

C. C

D. D

Answer: B

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25. The incorrect statement regarding froath floatation process is

A. It is based on the difference in gravities of the ore

B. Uses Cresols as froath stabilizers

C. Uses of pine oil as frothing agent

D. Uses sodium ethyl xanthate, $C_2H_5OCS_2Na$ as collector

Answer: A

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26. Which of the following given properties of colloidal particles is its optical property?

A. Brownian movement

B. Colligative properties

C. Electro-osmosis

D. Tyndall effect

Answer: D

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27. Match the methods of concentration of ore given in column-I with the different ores given in column-II and select the correct option.

column-I (I) magnetic separation (II) froth

flotation (III) hydraulic washing column-II (a) Cu_2S (b) Fe_3O_4 (c) $Al_2(SiO_3)$

A. I(a), II(b), III(c)

B. I(b), II(a), III(c)

C. I(c), II(a), III(b)

D. I(b), II(c), III(a)

Answer: B

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28. Oxidation state of the metal in the minerals haematite and magnetite respectively are

A. II, III in haematite and III in magnetite

B. II, III in haematite and II in magnetite

C. II in haematite and II,III in magnetite

D. III in haematite and II,III in magnetite

Answer: D

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29. Which of the following statements is/are incorrect?

(a) Cassiterite is not the ore of tin

(b) Metallurgy is a process of mixing of ore

(c) concentration of chromite ($FeO.\ Cr_2O_3$) is done by magnetic separation

(d) ZnS with depressant NaCN forms $Na_2\left[Zn(CN)_4\right]$

A. (a) & (b)

B. only (a)

C. (b),(c) & (d)

D. (c) & (d)

Answer: A

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30. On addition of 1 ml of solution of 10% NaCl to 100ml corporate gold sol in presence of 0.25g of starch, the coagulation is just prevented. The gold number of starch is

A. 0.025

B. 0.25

C. 2.5

D. 25

Answer: D

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