# CHEMISTRY

# BOOKS - NTA MOCK TESTS

# SURFACE CHEMISTRY TEST

**Single Choice**

**1.** The coagulating power of electrolytes having ions $Na^{2+} > Al^{3+}$ and $Ba^{2+}$ for arsenic sulphide sol increase in the order,

A. $Ba^{2+} < Na^+ < Al^{3+}$

B. $Al^{3+} < Na^+ < Ba^{2+}$

C. $Al^{3+} < Ba^{2+} < Na^+$

D. $Na^+ < Ba^{2+} < Al^{3+}$

**Answer: D**

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**2.** Which of the following charecteristics is not correct for physical adsportion?

A. Adsorption increase with increase in temperature.

B. Adsorption is spontaneous.

C. Both enthalpy and entropy of adsorption are negative

D. Adsorption on saolids in reversible.

**Answer: A**

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**3.** One desires to prepare a poditively charged charged silver iodide sol. This can be achieved by

A. Adding a little $AgNO_3$ solution ko KI solution in slight excess

B. Adding a little KI solution to $AgNO_3$ solution in slight excess

C. Mixing equal volums of equimolar solutions of $AgNO_3$ and KI

D. None of these

**Answer: B**

**4.** 5 mL of 0.3 acetic acid is shaken with 5 g active charcole. The concentration of acetic acid is reduced to $1/3$ oforiginal molarity. The weight of acetic acid adsorbed per g of charcol is

A. $2 \times 10^{-4} g.$

B. $1.2 \times 10^{-2} g.$

C. $2 \times 10^{-2} g$.

D. $3 \times 10^{-2} g$.

**Answer: B**

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**5.** A cationic collodial electrolyte forms micelle at $10^{-4} M$ concentration in water. If $1 mm^3$ solution contains $10^{12}$ micelle structure, then the number of cations involved in one micelle are $(N_A = 6 \times 10^{23})$,

A. 20

B. 40

C. 60

D. 80

**Answer: C**

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**6.** Which of the folloeing processes are based

on adsorption?

a. Separation of noble gases using coconut

charcoal

b. Thin layer chrematography

c. Concentration of sulphide ore by front flotation

d. Reduction of ethene using $Ni - A1$ Allow/ $NaOH$

e. Foemation of delta where the river meets the sea

    A. a, b & c but not d & e

    B. c, d & e but not a & b

    C. a, d & e but not b & c

D. a, b, c & d but not e

**Answer: D**

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**7.** Jellies are an example of:

    A. solid dispersed in gas.

    B. liquid dispersed in liquid.

    C. liquid dispersed in gas.

    D. liquid dispersed in solid.
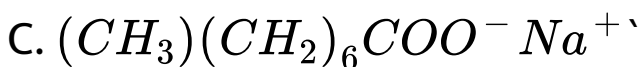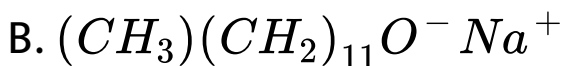
**Answer: D**

**8.** Lyophilic sols are
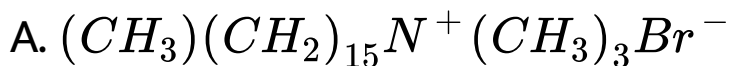
    A. irreversible sols.

    B. prepared for inorganic compound.

    C. coagualated by adding electolyters.

    D. self stablising.

**Answer: D**

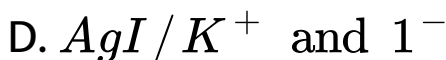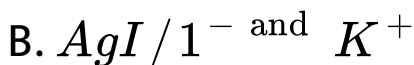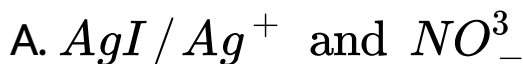**9.** Which of the following surfactant has the lowest CMC in ambient conditions?

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

B. $(CH_3)(CH_2)_{11}O^-Na^+$

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

D. (CH_3)(CH_2)_11N^+(CH_3)_3 Br^(-)`

**Answer: A**

**10.** 500 mL of 0.3 M $AgNO_3$ are added to 600 mL of $0.5MKI$ solution. The ions which will move towards the cathode and anode, respectively, are

    A. $AgI/Ag^+$ and $NO^3_-$

    B. $AgI/1^{-}$ $^{and}$ $K^+$

    C. $K^+$ and $AgI/1-$

    D. $AgI/K^+$ and $1^-$

**Answer: C**

11. Which of the following impurity can be separated from a solution by electrodialysis?

   A. Glucose

   B. Alum

   C. Suger

   D. Starch

**Answer: B**

12. Potassium stearate in an example of

    A. multi-moleculae colloid.

    B. associated colloid

    C. macromolecular colloid

    D. intrinsic colloid

**Answer: B**

**13.** Volume of a colloidal particle, $V_C$ as compared to the volume of a solute particle in a true solution, $V_S$ could be

A. $\dfrac{V_C}{V_S} \approx 1$

B. $\dfrac{V_C}{V_S} \approx 10^{23}$

C. $\dfrac{V_C}{V_S} \approx 10^{-3}$

D. $\dfrac{V_c}{V_S} \approx 10^{3}$

**Answer: D**

**14.** The disperse phase in colloidal iron (III) hydroxide and colloidal gold is pasitively and negatively charged, respectively. Ehich of the following statement is not correct?

A. magnesium chloride solution coagulates the gold sol less readily, than the iron (III) hydroxide sol.

B. Sodium sulphate solution causes

coaglation in both sols.

C. Mixing the sols has no effect.

D. Coagulation in both sols can be brought

about by electrophoresis.

**Answer: C**

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**15.** A chlloidal sol of substance 'X' is a reversible sol and is highly stable towards coagulation by addition of electrolyte. 'X' may be colloidal sol of

A. metal.

B. metal sulphide.

C. gum.

D. sulphur.

**Answer: C**

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**16.** To coagulate 100 ml of a colloid, 1 litre of $0.03N$ $MgCl_2$ is required. Then, The flocculation value of $MgCl_2$ is

A. 150.

B. 300.

C. 100.

D. 600.

**Answer: A**

17. Under the influence of an electric field, The particles in a sol migrate towards cathode. The coagulation of the same sol is stupid using $NaCl$, Na_2SO_4 and Na_3PO_4` solutions of the same molatrity. Coagulation value would be

A. maximum for $Nacl$.

B. maximum for $Na_2SO_4$.

C. maximum for $Na_3SO_4$.

D. same for all.

**Answer: A**

**18.** Milk can be preserved for long by adding a few dropsn of $HCHO$, which acts as

    A. an emulsifier.

    B. a coagulating agent.

    C. a peoptizing agent.

D. a demulsifier.

Answer: A

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19. Colloidal solution $A \xrightarrow[\text{process}]{\text{Physical}} B + C.$ Osmotic pressure of B and C are found to be higher and lower than A, respectively. Then

A. both B and C are suspensions.

B. both B and C are true solutions.

C. B is a true solution and C is suspension.

D. C is a true solution and B is a suspension.

Answer: C

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20. A freshly perpared $Fe(OH)_3$ perecipitate is paptised by adding $FeCl_3$ solutioin. The charge on the colloidel particle is due to preferential absorption of

A. $CI^-$ ions

B. $Fe^{3}$ ^ $(+)$ions

C. $OH^-$ ions

D. none of these.

**Answer: B**

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21. Sulphu colloid is prepred by:

A. mechanical dispetrsion.

B. oxidation.

C. electrical dispersion.

D. reduction.

**Answer: B**

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**22.** The simplets way, To check whether a system is a colloid, is by

A. Tyndall effect

B. Brownian movement

C. Electrodialysis

D. Finding out particle size

**Answer: A**

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**23.** The fresh percipitate can be transformed in colloibal state by

A. Peptization

B. Coagulation

C. Diffusion

D. None of these

**Answer: A**

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**24.** Cow milk, anexample of natural emulsion is stabilised by

A. Fat

B. Water

C. Casein

D. $Mg^{2+}$ ions

Answer: C

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**25.** A positively charged solution can be formed by

A. passing $H_2S$ in $AsCl_3$ solution.

B. adding excess of KI in $Agno_3$ solution.

C. adding $FeCI_3$ solution drop wise in

boiling water.

D. All of these

Answer: C

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**26.** Chemical adsorption

A. increases with increase in temperature.

B. decreases with increase in temperature.

C. first increases then decreases with

increases in temperature.

D. first decreases then increases eith

increses in temperature.

**Answer: C**

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**27.** In the adsorption on a solid surface in Langmuir's model

   A. the rate of dissociation of the adsorbed molecules from the surface does not depend on the surface covered.

   B. the absorption at one sing site on the surface may involve multiple molecule at the same time.

C. the mass of a gas striking a given area of the surface is proportional to the pressure of the gas.

D. the mass of a gas striking a given area of the surface is independent to the pressure of the gas.
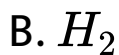
**Answer: C**

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**28.** The most a adsorbed gas on activated charcoal is:

A. $N_2$

B. $H_2$

C. $CO_2$

D. $CH_4$

**Answer: C**

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**29.** Which is correct in case of Van der Waals' absorption?

    A. High temperature, low pressure.

    B. Low temperature, High pressure.

    C. Low temperature, low pressure.

    D. High temperature, high pressure.

**Answer: B**

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**30.** $2.0g$ of charcoal is placed in $100mL$ of $0.5M$ $CH_3$ $COOH$ to form an adsorbed mono-acidic acid molecules and thereby, the molarity of $CH_3$ $COOH$ reduces to $0.49M$. The surface area of charcoal is $3 \times 10^2 m^2 g^{-1}$. The surface area of charcole adsorded by each molecule of acetic acid is $\left(\text{Take} N_A = 6 \times 10^{23}\right)$

    A. $1.0 \times 10^{-18} cm^2$

    B. $1.0 \times 10^{-19} cm^2$

    C. $1.0 \times 10^{13} cm^2$

D. $1.0 \times 10^{-14} cm^2$

**Answer: D**

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