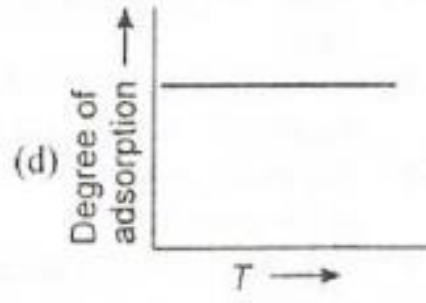
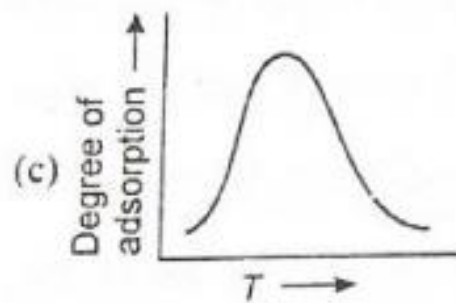
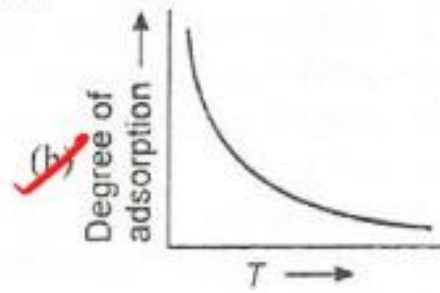
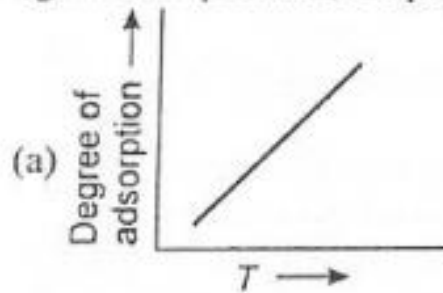
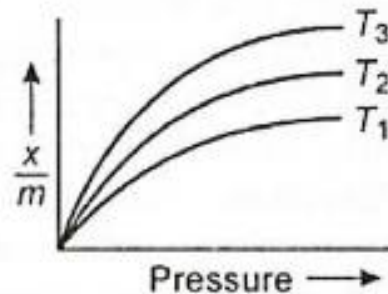


Which of the following represents correctly, the variation of degree of adsorption against temperature, for physisorption :



The variation of extent of adsorption with pressure at a given constant temperature is given in following figure :



at particular pressure

$\frac{x}{m} \downarrow$   $T \uparrow$

Which of the following relation between temperature of isotherms is correct?

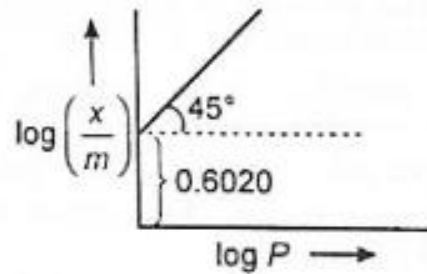
(a)  $T_1 = T_2 = T_3$

(b)  $T_1 < T_2 < T_3$

(c)  $T_3 < T_2 < T_1$

(d)  $T_1 < T_2 > T_3$

Graph between  $\log\left(\frac{x}{m}\right)$  and  $\log P$  is straight line at angle of  $45^\circ$  with the intercept of 0.6020.



$$\frac{x}{m} = k p^{1/2}$$

$$\log \frac{x}{m} = \log k + \frac{1}{2} \log p$$

$$= 0.602 + 1 \log 1$$

$$= 0.602$$

The extent of adsorption  $\left(\frac{x}{m}\right)$  at a pressure of 1 atm is :

- (a) 2  
(c) 6

- (b) 4  
(d) 8

$$\frac{x}{m} = 4$$

1. On which of the following properties does the coagulating power of an ion depend?

- (a) The magnitude of the charge on the ion alone
- (b) Size of the ion alone
- (c) Both magnitude and sign of the charge on the ion
- (d) The sign of charge on the ion alone (2018)

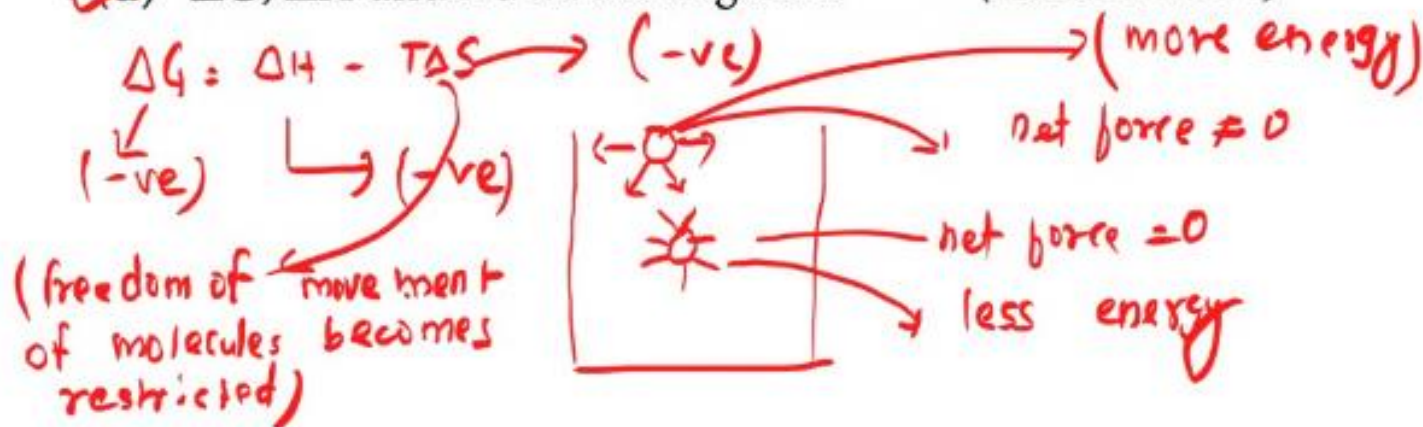
## HARDY & SCHULZE LAW

1. On which of the following properties does the coagulating power of an ion depend?
- (a) The magnitude of the charge on the ion alone
  - (b) Size of the ion alone
  - (c) Both magnitude and sign of the charge on the ion
  - (d) The sign of charge on the ion alone
- (2018)

2. Which one of the following statements is not correct?
- (a) The value of equilibrium constant is changed in the presence of a catalyst in the reaction at equilibrium.
  - (b) Enzymes catalyse mainly biochemical reactions.
  - (c) Coenzymes increase the catalytic activity of enzyme.
  - (d) Catalyst does not initiate any reaction. (2017)

5. Which one of the following characteristics is associated with adsorption?

- (a)  $\Delta G$  and  $\Delta H$  are negative but  $\Delta S$  is positive.
- (b)  $\Delta G$  and  $\Delta S$  are negative but  $\Delta H$  is positive.
- (c)  $\Delta G$  is negative but  $\Delta H$  and  $\Delta S$  are positive.
- (d)  $\Delta G$ ,  $\Delta H$  and  $\Delta S$  all are negative. (2016 Phase-I)



37. If  $x$  gram of gas is adsorbed by  $m$  gram of adsorbent at pressure  $P$ , the plot of  $\log \frac{x}{m}$  versus  $\log P$  is linear. The slope of the plot is  
( $n$  and  $k$  are constant and  $n > 1$ )

- (a)  $\log k$       (b)  $n$       (c)  $2k$       (d)  $\frac{1}{n}$

$$\log \frac{x}{m} = \log k + \frac{1}{n} \log P$$



19. The coagulation of 200 mL of a positive colloid took place when 0.73 g HCl was added to it without changing the volume much. The flocculation value of HCl for the colloid is

~~(a) 100~~

(b) 36.5

(c) 0.365

(d) 150

(2017)

flocculation value: the minimum conc in mmoles/Litre req<sub>d</sub> to cause precipitation of a sol in 2 hours is called flocculation

precipitating power ion ↑

∴ 200 ml sol req<sub>d</sub> =  $\frac{0.73 \text{ g HCl}}{36.5}$   
 = 0.02 moles  
 = 20 mmole

200 ——— 20 mmole  
 1000 ml ——— 100 mmole

$$\log \frac{x}{m} = \log k + \frac{1}{n} \log p$$

41. Adsorption of a gas on a surface follows Freundlich adsorption isotherm. Plot of  $\log x/m$  versus  $\log p$  gives a straight line with slope equal to 0.5, then ( $x/m$  is the mass of the gas adsorbed per gram of adsorbent)

- (a) adsorption is proportional to the pressure
- (b) adsorption is proportional to the square root of pressure
- (c) adsorption is proportional to the square of pressure
- (d) adsorption is independent of pressure.

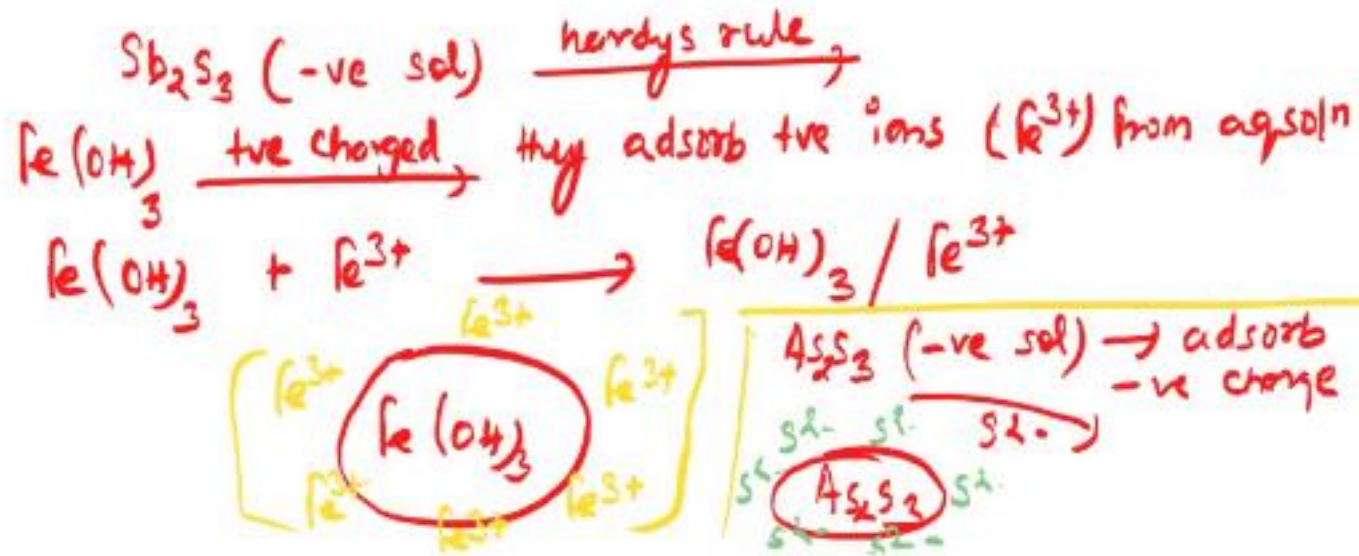
$$\frac{x}{m} = k p^{1/2}$$

47. Which of the following statements is incorrect regarding physisorption?

- (a) It occurs because of van der Waals forces.
- (b) More easily liquefiable gases are adsorbed readily.
- (c) Under high pressure it results into multimolecular layer on adsorbent surface.
- (d) Enthalpy of adsorption ( $\Delta H_{\text{adsorption}}$ ) is low and positive. (2009)

57. Among the electrolytes  $\text{Na}_2\text{SO}_4$ ,  $\text{CaCl}_2$ ,  $\text{Al}_2(\text{SO}_4)_3$  and  $\text{NH}_4\text{Cl}$ , the most effective coagulating agent for  $\text{Sb}_2\text{S}_3$  sol is

- (a)  $\text{Na}_2\text{SO}_4$  (b)  $\text{CaCl}_2$   
 (c)  $\text{Al}_2(\text{SO}_4)_3$  (d)  $\text{NH}_4\text{Cl}$  (2009)

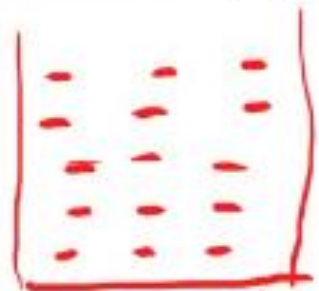
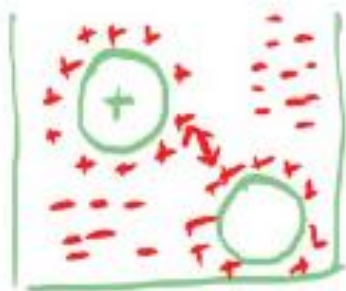


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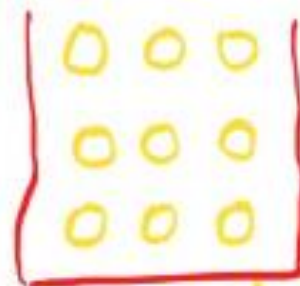
- (a)  $\text{Na}_2\text{SO}_4$   
 (c)  $\text{Al}_2(\text{SO}_4)_3$

- (b)  $\text{CaCl}_2$   
 (d)  $\text{NH}_4\text{Cl}$

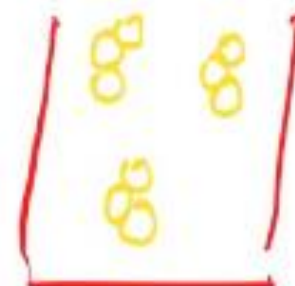
(2009)



$\text{Na}^+$  added  
to -ve sol

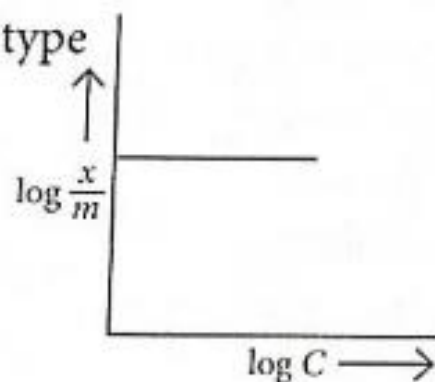


dis charged  
sol particles



Coagulated  
sol particles

14. For the adsorption of solution on a solid surface  $\frac{x}{m} = k C^{1/n}$ , adsorption isotherm of  $\log \left( \frac{x}{m} \right)$  and  $\log C$  was found of the type



This is when

(a)  $C = 0$

(b)  $\frac{1}{n} = 0$

(c)  $C = \text{constant}$

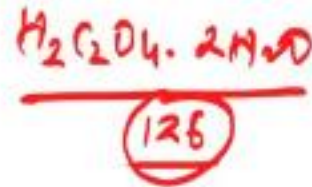
(d)  $C = 2 \text{ M}$

8. 50 mL of 1 M oxalic acid is shaken with 0.5 g wood charcoal. The final concentration of the solution after adsorption is 0.5 M. What is the amount of oxalic acid adsorbed per gram of carbon?

- (a) 3.15 g    (b) 3.45 g    (c) 6.30 g    (d) 9.05 g

Milli moles of Oxalic acid initially present = 50

$$50 = \frac{w}{126} \times 1000 = 6.30g$$



$$\frac{50}{1000} (1 - 0.5) \times 126 = 3.15g$$

Amount adsorbed per gm of charcoal

39.  $10^{-4}$  g of gelatin is required to be added to  $100 \text{ cm}^3$  of a standard gold sol to just prevent its coagulation by the addition of  $1 \text{ cm}^3$  of 10% NaCl solution to it. Hence, the gold number of gelatin is

- (a) 10 mg    (b) 1.0 mg    (c) 0.1 mg    (d)  0.01 mg

$$\text{Gd} = \frac{10^{-4}}{100} \times 10 = 10^{-7} \text{ g}, = 10^{-2} \text{ mg} = \underline{0.01 \text{ mg}}$$



Dettol

1. Mixture of chloroxylenol and terpineol acts as
- |                |                 |
|----------------|-----------------|
| (a) antiseptic | (b) antipyretic |
| (c) antibiotic | (d) analgesic.  |
- (2017)

39.  $10^{-4}$  g of gelatin is required to be added to  $100 \text{ cm}^3$  of a standard gold sol to just prevent its coagulation by the addition of  $1 \text{ cm}^3$  of 10% NaCl solution to it. Hence, the gold number of gelatin is

- (a) 10 mg    (b) 1.0 mg    (c) 0.1 mg    (d) 0.01 mg

Q) 3.6g of  $O_2$  is adsorbed on 1.2g of Metal powder.  
 What volume of  $O_2$  is adsorbed per gm of adsorbent  
 at 1 atm & 273 K. (2.1)

Ans Mass of  $O_2$  per g of adsorbent =  $\frac{3.6}{1.2} = 3$

no of mols =  $\frac{3}{32}$

$PV = nRT$  ,       $V = \frac{nRT}{P}$

39.  $10^{-4}$  g of gelatin is required to be added to  $100 \text{ cm}^3$  of a standard gold sol to just prevent its coagulation by the addition of  $1 \text{ cm}^3$  of 10% NaCl solution to it. Hence, the gold number of gelatin is

- (a) 10 mg    (b) 1.0 mg    (c) 0.1 mg    (d) 0.01 mg

Q) The coagulation of 100ml of a colloidal solution of Gold is completely prevented by the addition of 0.25g of starch to it. before adding 1ml of 10% NaCl solution  
gd (starch) ? (25mg) ✓

7. Chloramphenicol is an

- (a) antifertility drug                      (b) antihistaminic  
(c) antiseptic and disinfectant  
(d)  antibiotic-broad spectrum.

(2012)

2. Which of the following is an analgesic?

- (a) Streptomycin (antibiotic) (b) Chloromycetin (antibiotic)  
 (c) Novalgin (analgesic) (d) Penicillin (antibiotics)

Old Owl On tree top adjusting for a good voice

03 r 2 AF SIVAH

LZPDD

128	sensory
346	motor
rest	mixed

5. Antiseptics and disinfectants either kill or prevent growth of microorganisms. Identify which of the following statements is not true.
- (a) Dilute solutions of boric acid and hydrogen peroxide are strong antiseptics.
  - (b) Disinfectants harm the living tissues.
  - (c) A 0.2% solution of phenol is an antiseptic while 1% solution acts as a disinfectant.
  - (d) Chlorine and iodine are used as strong disinfectants.

9. Which one of the following is employed as a tranquilizer drug?

(a) Promethazine

(b) Valium

(c) Naproxen

(d) Mifepriston (2010)

13. Which is incorrect?

- (a) Novestrol — Antifertility
- (b) Serotonine — Tranquilizer
- (c) ~~Narrow~~<sup>broad</sup> spectrum — Chloramphenicol
- (d) Rantac — Antacid



8. Which one of the following is employed as Antihistamine?

- (a) Chloramphenicol                      (b)  Diphenylhydramine  
(c) Norothindrone                        (d) Omeprazole                      (2011)

24. The artificial sweetener that has the highest sweetness value in comparison to cane sugar is

- (a) sucralose (600)      (b) aspartame (100)  
(c) saccharin (500)      ✓ (d) alitame. (2000)

17. Tincture of iodine is
- (a) aqueous solution of  $I_2$
  - (b) solution of  $I_2$  in aqueous KI
  - (c) alcohol-water solution of  $I_2$
  - (d) aqueous solution of KI.

(Salvarsan)

16. Arsenic drugs are mainly used in the treatment of

(a) Jaundice

(b) Typhoid

(c) Syphilis

(d) Cholera.

(2016)

25. Which of the following is a bactericidal antibiotic?

- (a)  Ofloxacin                      (b) Tetracycline  
(c) Chloramphenicol              (d) Erythromycin

*(Online 2016)*

29. Aspirin is known as

- (a) phenyl salicylate                      (b) acetyl salicylate  
(c) methyl salicylic acid  
(d) acetyl salicylic acid.

(2012)

