



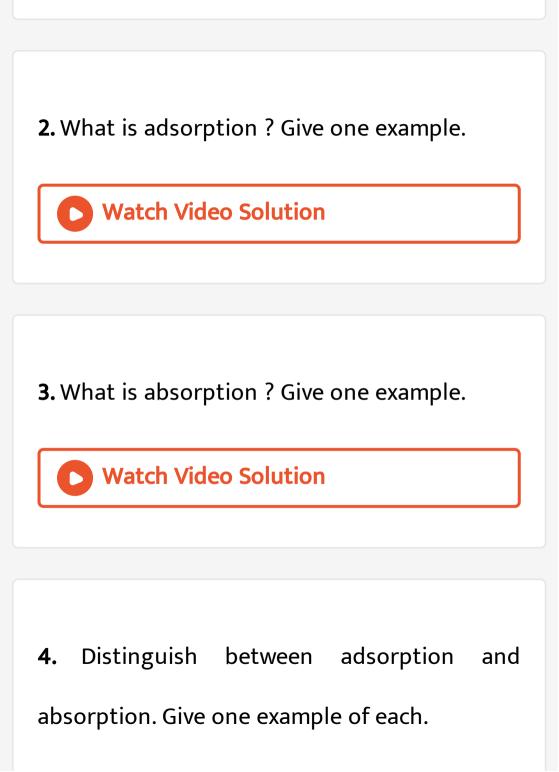
## **CHEMISTRY**

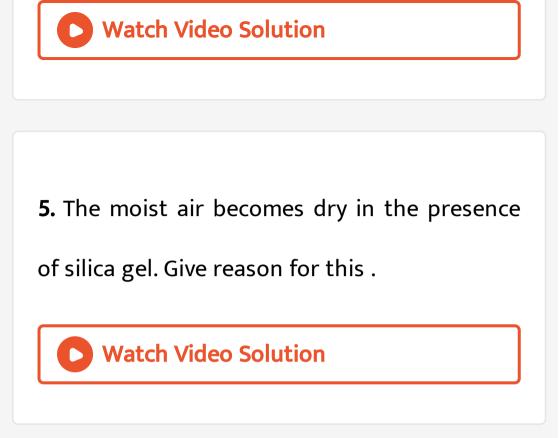
# BOOKS - VIKRAM PUBLICATION ( ANDHRA PUBLICATION)

# SURFACE CHEMISTRY

Vert Short Answer Questions

**1.** What is an interface ? Give one example.





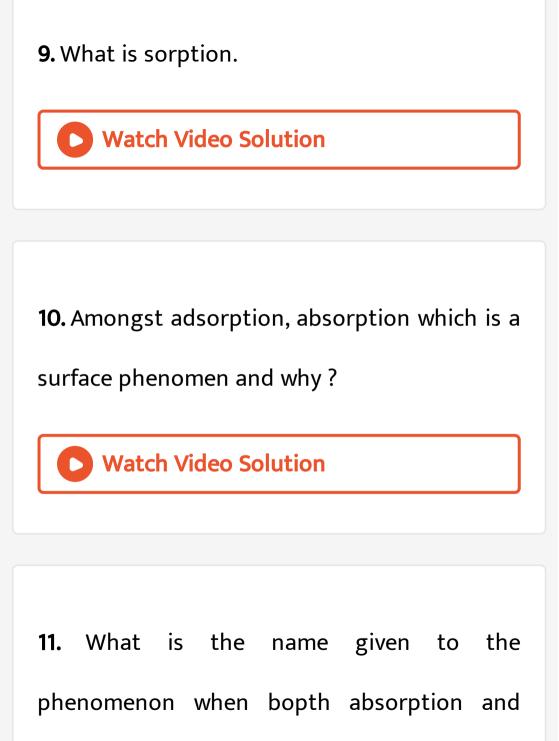
**6.** Methylene blue solution when shakes with animal charcoal gives a colourless filtrate on filteration. Give the reason.



7. A small amount of silica gel and a small amount of anhydrous calcium chloride are placed seperately in two corners of a vessel containing water vapour. What phenomena will occur ?

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8. What is desorption ?



adsorption take place together ?



**12.** Chalk stick dipped in an ink solution exhibits the surface of the stick retains the colour of the ink.

Explain the observations.



**13.** Chalk stick dipped in an ink solution exhibits the Breaking the chalk stick, it is found still white from inside.

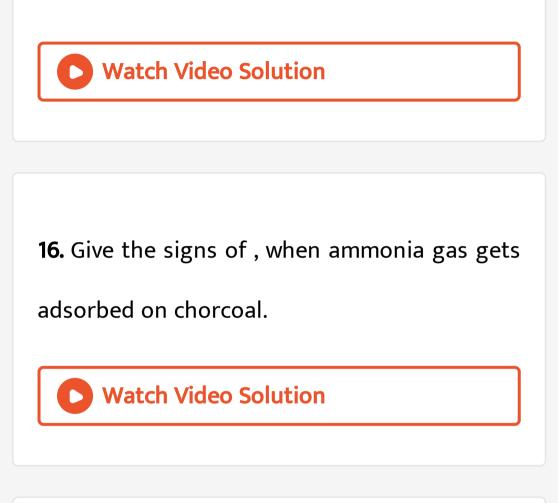
Explain the observations.



14. What are the factors which influence the

adsorption of a gas on a solid ?

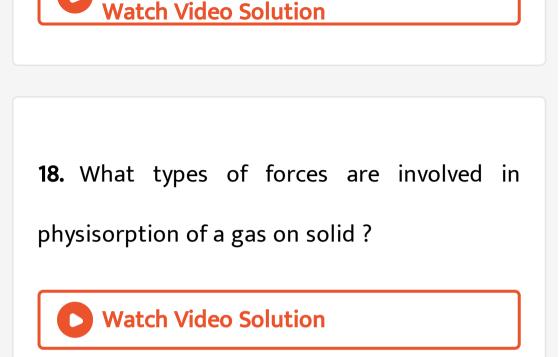
**15.** Why is adsorption always exothermic?



17. How many types of adsorption are known?

What are they ?





19. What type of interaction occuring between

gas molecules and a solid surface is responsible for chemisorption of a gas on solid. **20.** Why chemisorption is called activated adsorption ?



#### 21. What is difference between physisorption

and chemisorption ?

22. Out of physisorption and chemisorption ,

which can be reversed .

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23. How is adsorption of a gas related to its

critical temperature ?

**24.** The critical temperature of  $SO_2$  is 630 K and that of  $CH_4$  is 190 K . Which is adsorped easily on activated charcoal ? Why ?



# **25.** Easily liquefiable gases are readily adsorbed on solids . Why?



**26.** Amongst  $SO_2, H_2$  which will be adsorbed more readily on the surface of charcoal and why?



#### 27. Compare the enthalpy of adsorption for

physisorption and chemisorption.



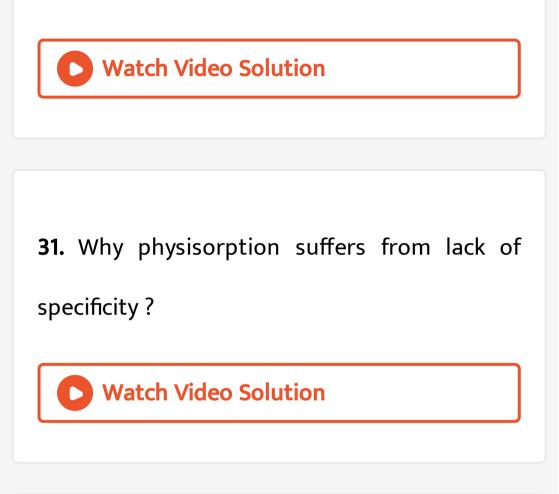
**28.** What is the magnitude of enthalpy of physical adsorption ? Give reason for this magnitude.



**29.** What is the magnitude of enthalpy of chemisorption ? Give reason for this magnitude.



**30.** Give any two applications of adsorption.



32. What is an adsorption isotherm ? Write the

equation of Freundlich adsorption isotherm.





**33.** In the Freundlich adsorption isotherm, mention the conditions under which, following graph will be true ?

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### **34.** What role does adsorption play in

heterogenous catalysis ?

**35.** What is the role of  $MnO_2$  in the preparation of  $O_2$  from  $KClO_3$  ?

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36. Define "promoters" and "poisons" in the

phenamenon of catalysis ?

37. What is homogeneous catalysis ? How is it

different from heterogeneous catalysis ?



**38.** Give two examples for homogeneous

catalytic reactions.



39. Give two examples for heterogeneous catalysis.Watch Video Solution

**40.** Give two examples which indicate the

selectivity of heterogeneous catalysts.

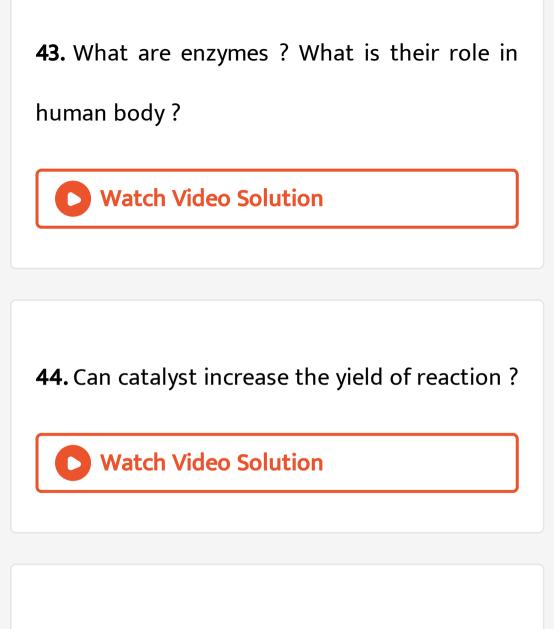
41. Why zeolites are treated as shape selective

catalysts ?

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42. Which zeolite catalyst is used to convert

alcohols directly into gasoline ?



**45.** Name any two enzyme catalyzed reactions.

Give the reactions



**46.** Name the enzymes obtained from soyabean source.

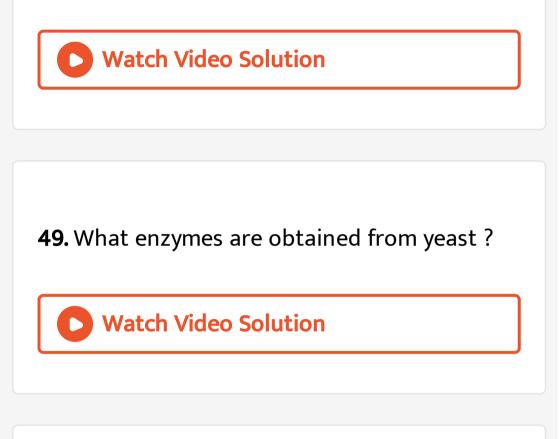
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47. Name the enzymes used in Decomposition

of urea into ammonia.

48. Name the enzymes used in Conversion of

proteins into peptides in stomach.



50. At what ranges of temperature and pH,

enzymes are active ?





51. Represent diagrammatically the mechanism

of the enzyme catalyis.



**52.** Name any two industrially important

heterogeneous catalytic reactions mentioning

the catalysts used.

**53.** What is a colloidal solution ? How is it different from a true solution with respect to dispersed particle size and homogeneity ?



**54.** Name the dispersed phase and a dispersion medium in the fog colloidal systems.



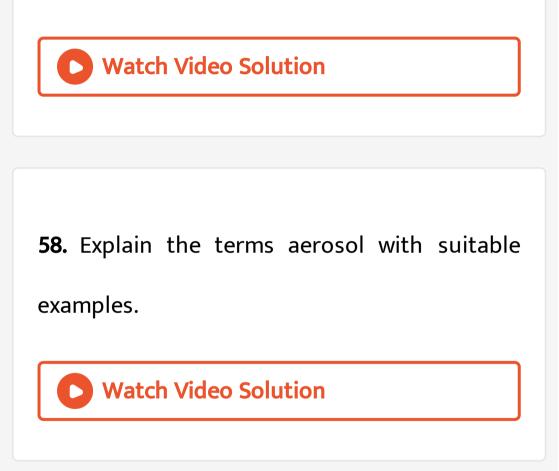
**55.** Name the dispersed phase and a dispersion medium in the smoke colloidal systems.

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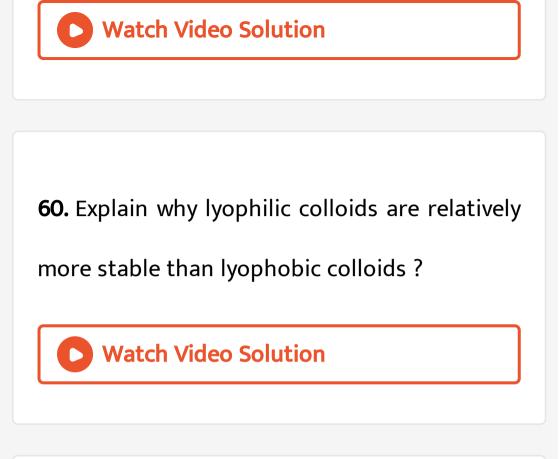
**56.** Name the dispersed phase and a dispersion medium in the milk colloidal systems.

57. What are lyophilic and lyophobic sols ? Give

one example for each type.



**59.** Explain the terms hydrosol with suitable examples.



**61.** Give two examples of colloidal solutions of liquids dispersed in solid. What is the name given to the colloidal solution ?

**62.** What is the dlfferenee between multmolecular and macromolecular colloids ?

Give one example for each.

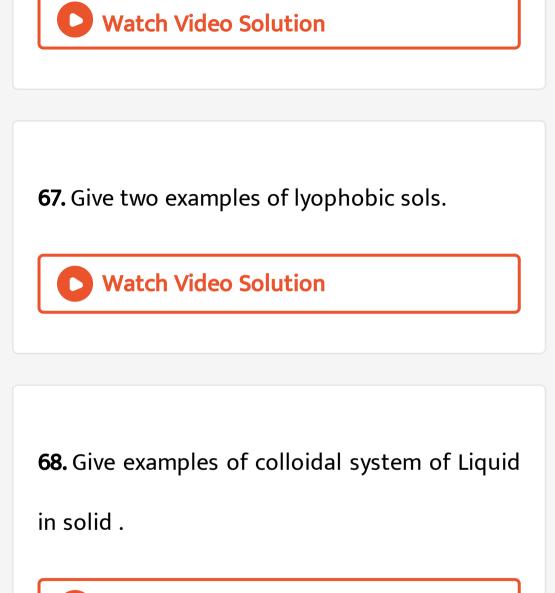
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**63.** What are micelles ? Give one example.

64. How do micelles differ from a normal colloidal solutions? Watch Video Solution **65.** Give two examples of associated colloids. Watch Video Solution

66. Can the same substance act both as colloid

and crystalloid ?



69. Give examples of colloidal system of Gas in

solid.



# **70.** What type of substances form lyophobic

sols?



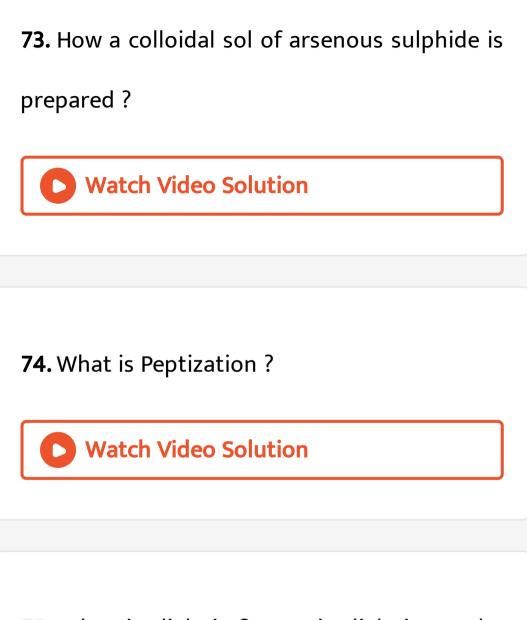
71. What is critical micelle concentration (CMC)

and kraft temperature  $(T_k)$ ?

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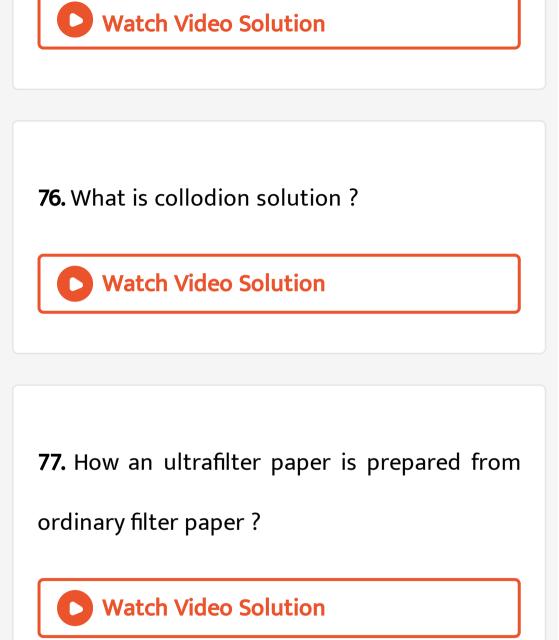


irreversible colloids ?

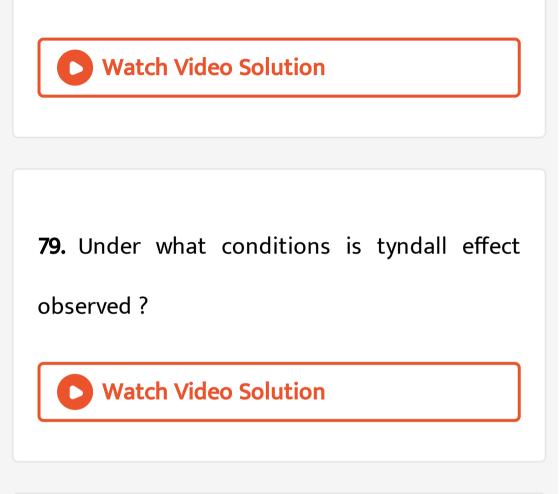


**75.** What is dialysis ? How is dialysis can be

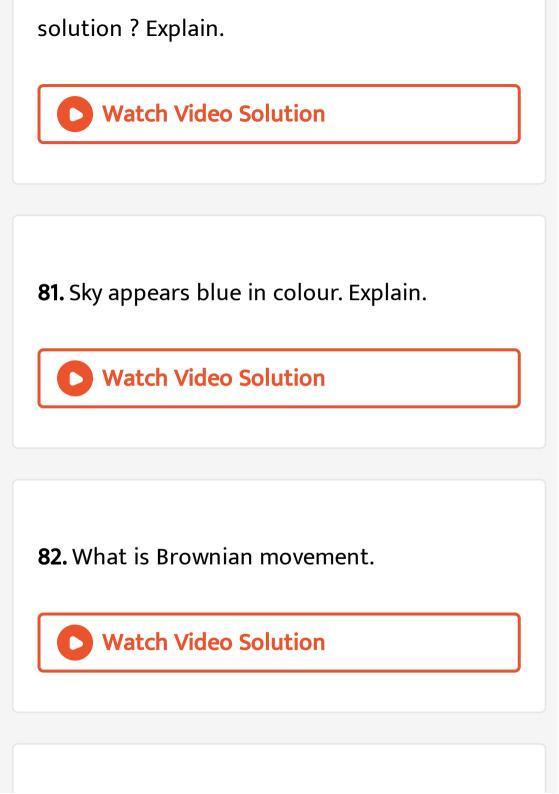
made fast?



78. What is dall effect ?

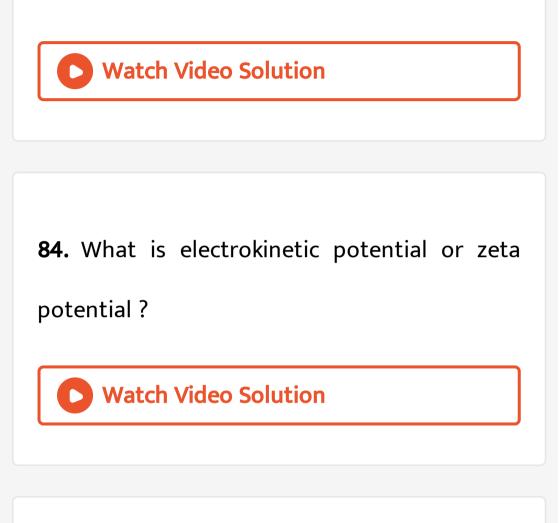


**80.** Can Tyndall effect be used to distinguish between a colloidal solution and a true



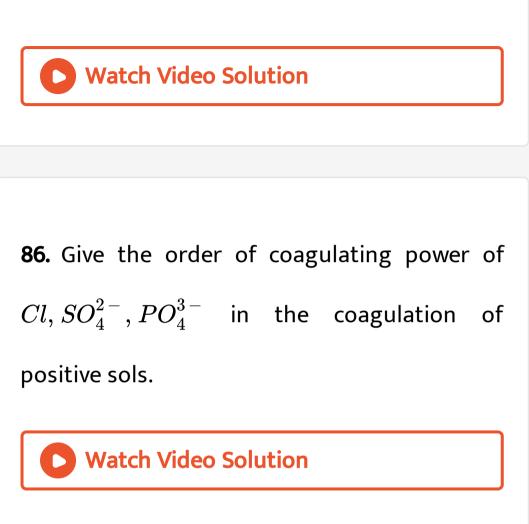
83. What is the main cause for charge on a

colloidal solution ?



**85.** Write the chemical formula of positively charged and negatively charged hydrated

ferrlc oxide colloidal solutions.



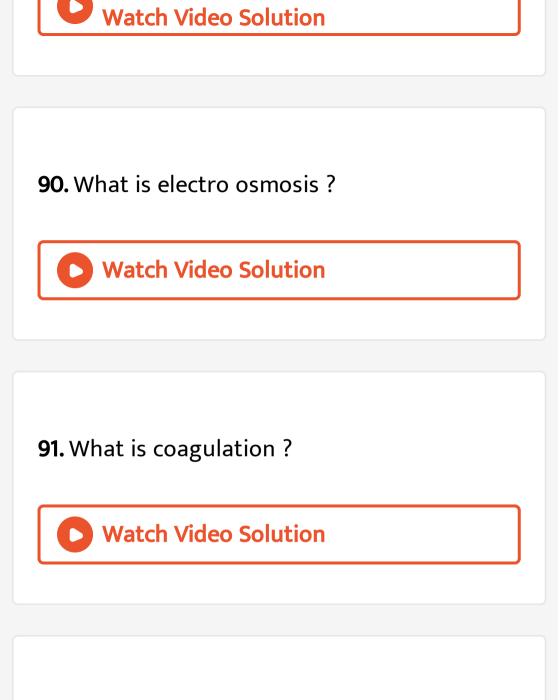
87. Amongst  $Na^+, Ba^{2+}, Al^{3+}$ , which coagulates negative sol readily and why ?

**88.** A colloidal solution of Agl is positively charged when prepared from a solution containing excess of  $Ag^+$  ions and negatively charged when prepared from a solution containing excess of  $I^-$  ions Explain.

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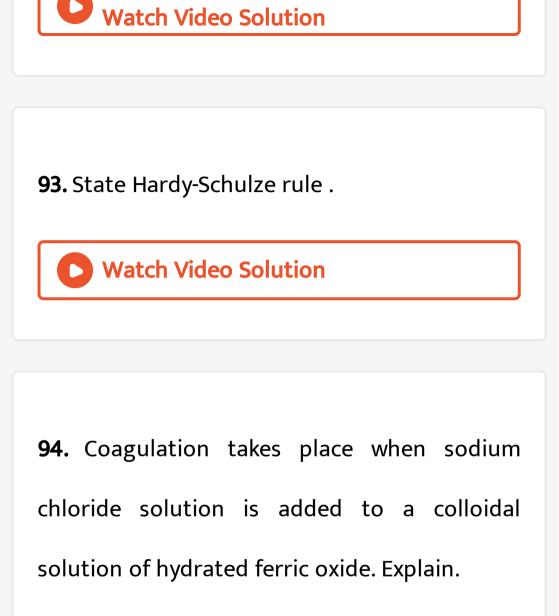
**89.** What is electrophoresis ?





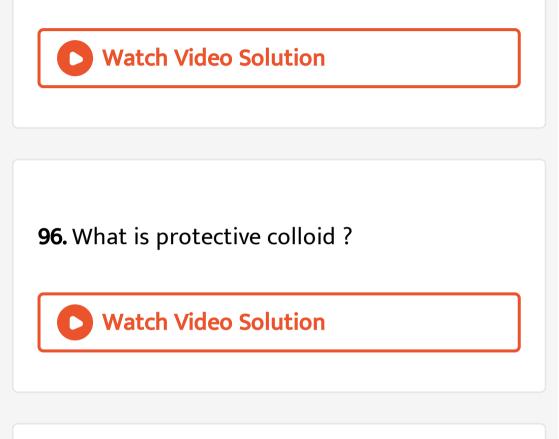
92. Define flocculation value.





95. How are lyophobic solutions protected

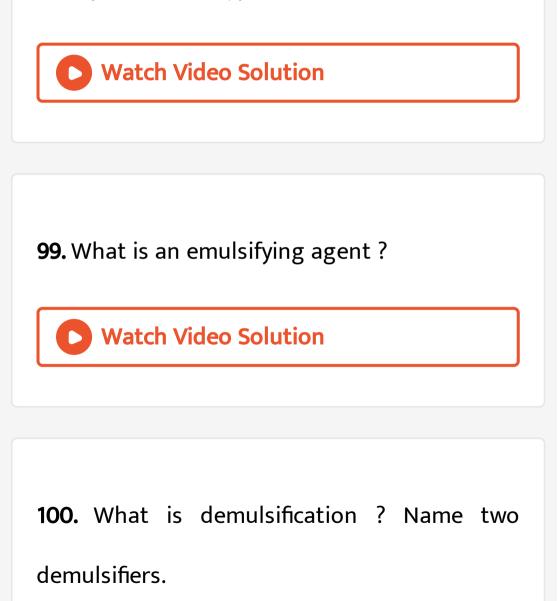
from phenomenon of coagulation.

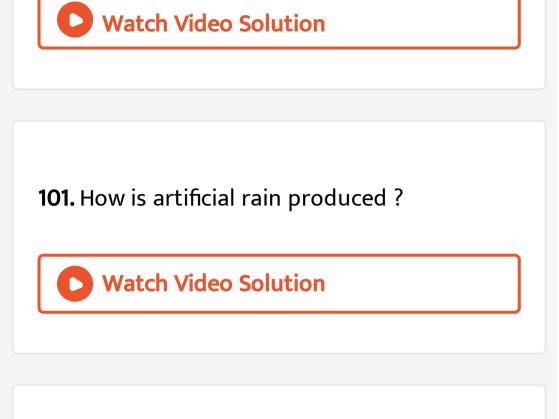


97. What is an emulsion ? Give two examples.

98. How emulsions are classified ? Give one

example for each type of emulsion.





#### 102. Bleeding from fresh cut can be stopped by

applying alum. Give reasons.

103. Deltas are formed at the points where

river enters the sea. Why?

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**104.** Name any two applications of colloidal solutions.

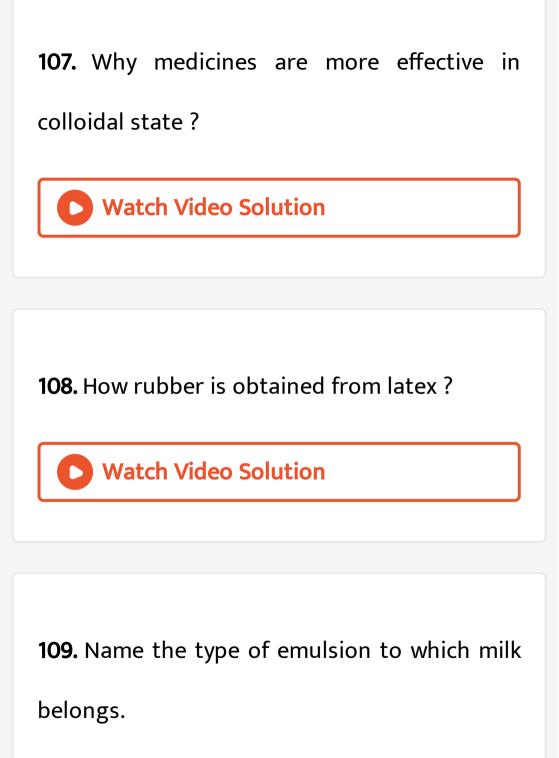


105. How can aerial pollution by colloidal particles of smoke be prevented ? Explain.Watch Video Solution

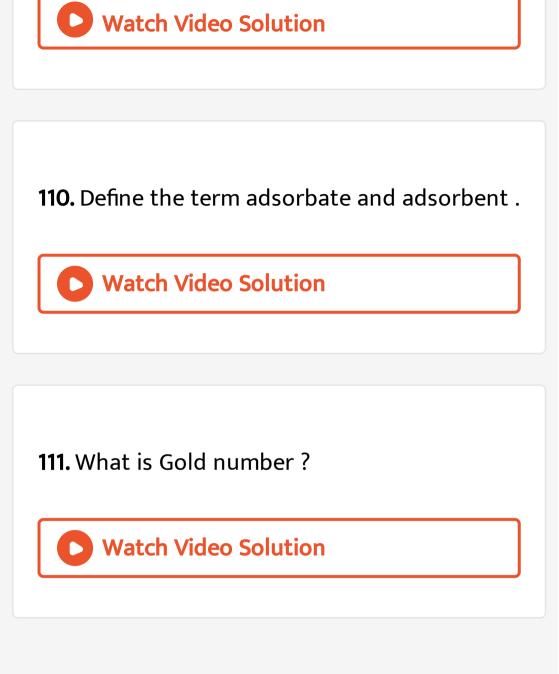
**106.** Alum is used to purify water obtained

from natural sources. Explain.





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Short Answer Questions

1. What is adsorption ? Discuss the mechanism

of adsorption of gases on solids.



2. What are different types of adsorption ?

Give any four differences between

characteristics of these different types.

**3.** What do you understand by the term absorption. **Watch Video Solution**

What do you understand by the term
 Adsorption.



5. What do you understand by the term Adsorption and Adsorbate

6. Adsorption of a gas on the surface of solid

is generally accompanied by decrease entropy.

Still it is a spontaneous process. Explain.



7. How can the constants k and n of the Freundlich adsorption equation be calculated ?



**8.** How does the extent of adsorption depend upon Increasing the surface area per unit mass of adsorption.



9. How does the extent of adsorption depend

upon Increasing temperature of the system.

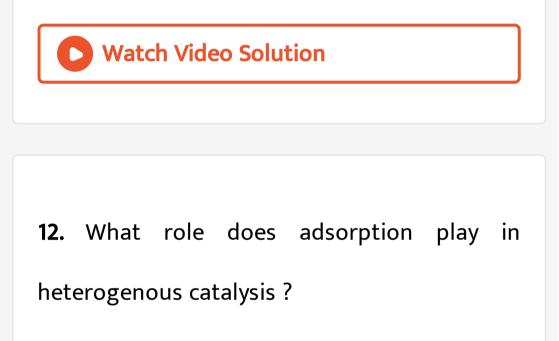


10. How does the extent of adsorption depend

upon Increasing pressure of the gas.

11. What is catalysis ? How is catalysis classified

? Give two examples for each type of catalysis.





13. Discuss some features of catalysis by zeolites.Watch Video Solution

14. Give brief account of mechanism of enzyme

catalysis with suitable diagrams.

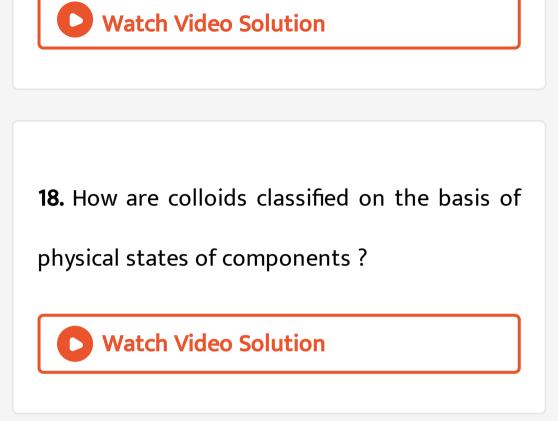


15. Discuss the factors that influence the catalytic activity of enxymes.
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**16.** Name any six enzyme catalysed reaction.

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**17.** What do you mean by activity and selectivity of catalyst ?



19. How are colloids classified on the basis of

nature of the dispersion medium ?

**20.** How are colloids classified on the basis of interaction between dispersed phase and dispersion medium ?

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21. What is the difference between a colloidal

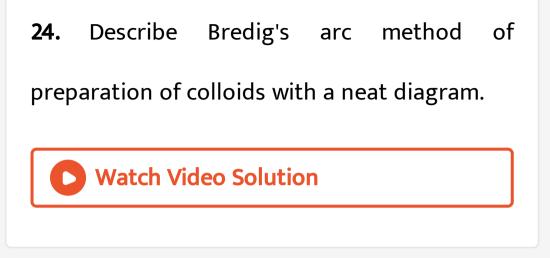
sol, get, emulsion and a foam ?

22. What are lyophilic and lyophobic sols ?

Give one example for each type.

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23. Name a substance whose molecules consist of lyophilic as well as lyophobic parts. Give its use in our daily life.



**25.** Name any four examples of preparation of colloids by chemical methods with necessary chemical equations.

**26.** Describe the purification of colloidal solution by the phenomenon of dialysis with a neat diagram.



**27.** Explain the formation of micelles with a neat sketch.

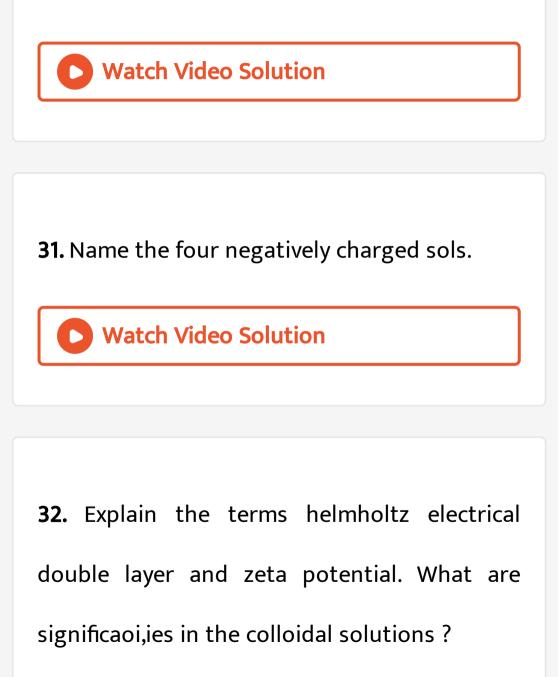
28. Action of soap is due to emulsification and

micelle formation. Comment.

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**29.** Explain the phenomenon of Brownian movement giving reasons for the occurrence of this phenomenia.

**30.** Name the four positively charged sols.



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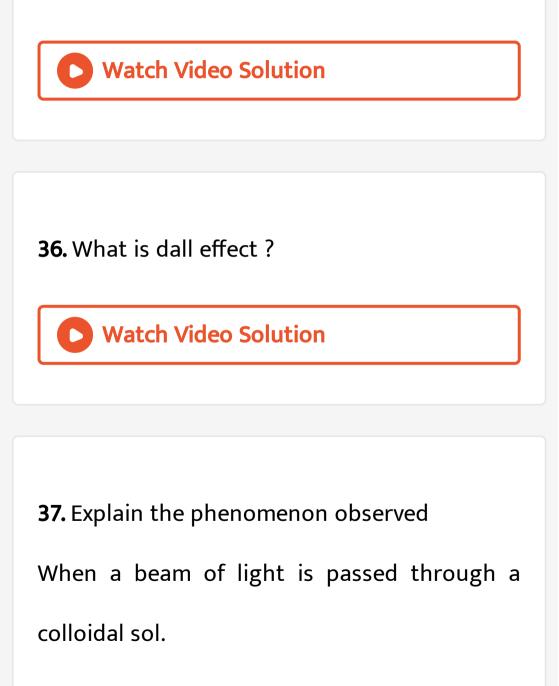
# **33.** Explain with a neat sketch the

phenomenon of electrophoresis.

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**34.** What is electrophoresis ?

**35.** Explain the Coagulation.





# 38. Explain the phenomenon observed

An electrolyte, NaCI is added to hydrated ferric

oxide.



### **39.** Explain the phenomenon observed

An eleetrlc current is passed through a

colloidal solution.





40. Describe cottrell smoke precipitator with a

neat diagram.



**41.** Amoung NaCl,  $Na_2SO_4$ ,  $Na_3PO_4$ electrolytes,  $Na_3PO_4$  which is more effective for coagulation of hydrated ferric oxide sol and why?

**42.** Discuss how a lyophilic colloids protect a

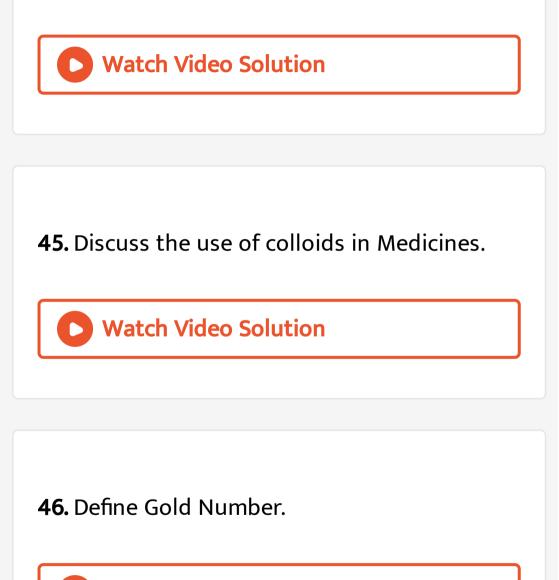
lyophobic colloids.



### 43. Discuss the use of colloids in Purification of

drinking water.

**44.** Discuss the use of colloids in Tanning.



47. How do emulsifiers stabilize emulsion ?

Name two emulsifiers.

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48. Explain any 2 methods for the preparation

of colloids.



**49.** What are emulsion ? How are they classified ? Describe the applications of emulsions.



# 50. What is adsorption ? Explain different

types of adsorptions with suitable examples.



Long Answer Question

**1.** Explain the terms absorption, adsorption and sorption. Describe the different types of adsorption.

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Discuss the characteristics of physical adsorption.

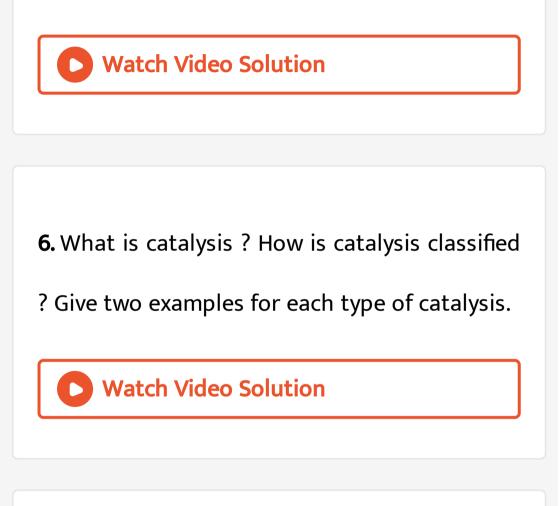
3. Compare and contrast the phenomenon of

physisorption abd chemisorpion.

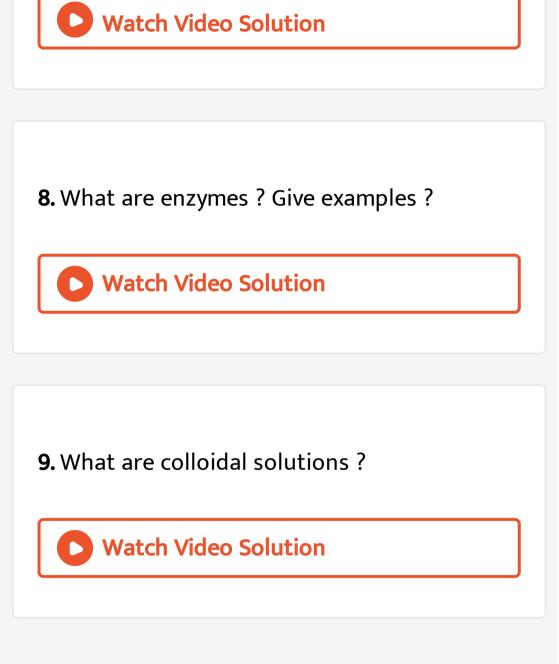


**4.** What is an adsorption isotherm? Discuss the phenomenon of adsorption of gases on solids with the help of Freundllich adsorption isotherm.

5. Give any two applications of adsorption.



**7.** Discuss the mechanism of heterogeneous catalysts.

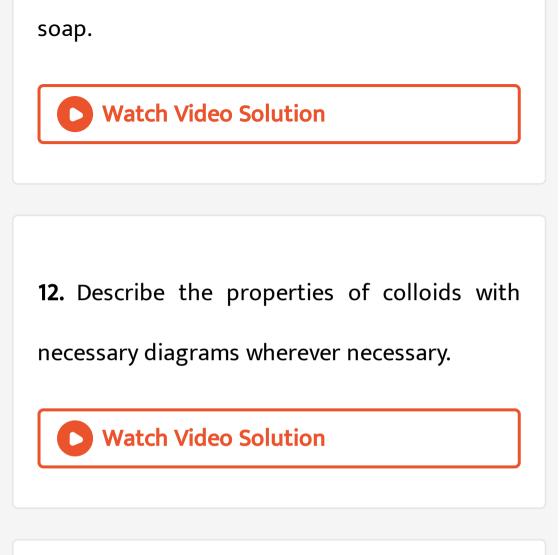


**10.** How are colloids classified on the basis of the nature of interaction between a dispersed phase and a dispersion medium ? Describe an important characteristic of each class. Which of the sols need stabilising agents for preservation ?

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11. What are micelles ? Discuss the mechanism

of micelle formation and cleaning action of



13. How emulsions are classified ? Give one

example for each type of emulsion.



**Intext Questions** 

1. Write any two characteristics of

Chemisorption.



2. Why does physisorption decrease with the

increase of temperature ?

**3.** Why are finely powdered substances more effective adsorbents than their non powdered crystal forms ?

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**4.** Hydrogen used in Haber's process is obtained by reacting methane with steam in presence of NiO as catalyst . The process is known as steam reforming . Why is it necessary to remove CO formed in steam reforming when ammonia is obtained by

Haber's process ?



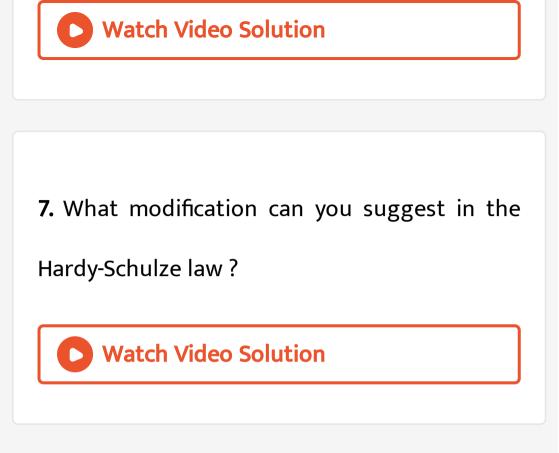
5. Why is ester hydrolysis slow iin the

beginning but is fast after sometime ?

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**6.** What is role of desorption in the process of

adsorption catalysis .



8. Why is it essential to wash the precipitate in gravimetric chemical analysis with wash liquid before drying and weighing it quantitatively ?



