

SURFACE CHEMISTRY

SURFACE CHEMISTRY

Value Based Question

Q1. Parminder noticed that the barber applied alum on his face after shaving. He also observed his wife dissolving alum to Purify muddy water .He thinks that it is all about colloidal chemistry and the properties of colloidal solution. He discussed these values with his wife as she is from humanities background.

Now answer the following questions.

- (i) What values are associated with this Parminder's actions?
- (ii) What do you mean by the term coagulation?
- (iii) How can the coagulation of lyophilic sols be done?
- (iv) Write the properties of colloidal solution.

Ans. (i) Parmender is a keen observer, learner, teacher

(ii) The coagulation and the settling down of colloidal particle is known as population or precipitation of the sol.

(iii) By adding suitable electrolyte and a suitable solvent like alcohol and acetone, coagulation of lyophilic sols can be done.

(iv) Colloidal Solutions are heterogeneous in character. They cannot be seen by naked eyes. They pass through an ordinary filter paper but not through any fine membrane. Colloidal particles are bigger aggregates.

Q2. Wasim went to purchase bricks to build house from a brick manufacturing unit. He was shocked after seeing a lot of smoke, dust and other gases coming out of chimney. He observed that these products were leading to pollution in nearby areas too. He decided to do something about it.

Now answer the following questions

- (i) what type of colloidal system is smoke ?
- (ii) As a chemist ,which process will you suggest the manufacturing unit on a to manage smoke and gases ?
- (iii) How is artificial rain caused ?
- (iv) Write value shown by Wasim.

Ans. (i) Aerosol

(ii) Electrical precipitation of smoke can be used to manage smoke and gases. Smoke is a colloidal solution of particles like carbon, arsenic and dust in air. This precipitator contains plates having an electrical charge opposite to smoke particle so they get precipitated.

(iii) Clouds are colloidal dispersion of charged water particles in air .On throwing electrified sand or spring a sol carrying charge opposite to the one on clouds ,coagulation of charged water particles take place causing rain.

(iv) Concern for air pollution, concern for environmental protection and social awareness.

SURFACE CHEMISTRY - VALUE BASED QUESTION	
1	<p>Rahul observed that families from nearby localities bring loads of laundry to wash in the river practically every day, while others bring their cars, taxis and rickshaws and wash them clean by using water from the river. The same water was being consumed by people living downstream. When he tried to stop people from washing clothes and cleaning vehicles Nisar Khadim a local resident objected. "It makes no difference if we wash our cars and clothes here. It is a gift from nature," he said.</p> <p>After reading the above passage, answer the following questions: a) Who do you think is right Rahul or the taxi driver? Give a reason for your answer. b) What are the values associated with the answer?</p>
ANS	<p>a) Rahul is right as he knows that detergents are surface-active agents, which tend to produce stable, copious foams in rivers. These foams generally form a thick and dense layer over the surface of the water, extending over several hundred yards of the river water. The foamy water is unsafe for both humans and fish</p> <p>b) Rahul is concerned for all types of life he is aware that chemicals in soaps and detergents are not only harmful for humans, but are also threatening to aquatic life.</p>
2	<p>The Government tried to distribute oral contraceptives to the women in the villages. The villagers strongly reacted as they felt that children are God gift and consuming pills will be harmful.</p> <p>a) How will you justify the villagers concern? Give a reason for your answer b) Justify the step taken by the government giving reasons.</p>
ANS	<p>a) Lack of knowledge on the part of villagers make them feel that these pills would be harmful. Birth control pills contain a mixture of synthetic estrogen and progesterone which suppresses ovulation and has no ill effects on health.</p> <p>b) The Government took the right step as it will help to control population. Increasing population has caused many social problems in terms of food resources, environmental issues and employment etc.</p>
3	<p>Maya was having sleepless nights as she was under severe depression a friend advised her to take sleeping pills. She went to the chemist shop to buy the tablets but the chemist refused and asked for the doctor's prescription. Do you feel the chemist was right?</p>
ANS	<p>A doctor should always be consulted before taking any medicine as most of the drugs taken in doses higher than recommended can cause harmful effect and can act as poison.</p>
4	<p>What is an universal solvent and has unique properties . List any two properties of water and write the value that you can relate to each .</p>

ANS	<p>Universal solvent-all encompassing. Amphoteric—adaptability. It is an universal solvent, because it is polar in nature.</p>	
5	<p>“Shake well before use” is a very common precaution written on syrup take as medicine. Why is it so? If Raghvendra didn't followed the instruction ever after reading the precaution, what value do you observe defeated in the this case.</p>	
ANS	<p>Syrups are liquid in liquid colloidal solution (emulsion) which are unstable i.e. ; two liquids may be separated on standing for a long time .So heavy medicines had settled to the bottom and lighter liquid rose to the top of the bottle. The two ingredients had to become one substance for the medicine to be useful. Value: We should follow the instructions/precautions written on the medicines or provided by the doctor.</p>	
6	<p>People who prepare for fire fighting use mask preferably in place of covering their face completely. Why do they so? Write the value associated with.</p>	
ANS	<p>Gas mask adsorb the poisonous gases and can prevent the life in such situations. Value:Self protection is as important as protection of society.</p>	
7	<p>There was crowded place where fire broke out abruptly, a person Mr. David who was standing there advised to other person to put Gas Mask in, so that poisonous gases could be adsorbed. Does it adsorb gases like N₂ and O₂ equally? Explain your answer citing a suitable value possessed by Mr. David.</p>	
ANS	<p>The extent of adsorption depends upon the nature of gas .So gas N₂ and O₂ adsorb to different extent on the gas mask. Value:Mr. David was helpful and caring person. He also has the knowledge of science.</p>	
8	<p>Milk and Cold cream are the examples of colloidal system. Which type of colloid are they? Can we dilute them by adding water? Mrs.Nainy being student of chemistry brought the samples of Milk and Cold cream and tried to dilute them and performed experiment before writing answer. Why did she do so is there any value do you find here.</p>	
ANS	<p>Milk and cold cream are liquid in liquid colloids i.e. ; emulsion. She wants to identify the types of emulsions i.e. oil in water or water in oil by dilution. Milk is diluted on addition of water.So it is oil in water emulsion But cold cream does not dilute by addition of water. So it is water in oil emulsion Value: Persons who are stiff or rigid do not mix up well with others but those who are friendly and flexible can easily mix up with others like milk. So we should be flexible.</p>	

SURFACE CHEMISTRY

Value based questions:

1. Rahul observed that the barber applied alum on his face after shaving. He also observed his wife dissolving alum to purify muddy water. He thinks it is all about colloidal chemistry. He discussed these values with his wife as she is from humanities background.

Now answer the following questions:

- (i) What values are associated with Rahul's actions?
- (ii) What do you mean by term coagulation?
- (iii) How can the coagulation of lyophilic sol be done?
- (iv) Write the properties of colloidal solution.

Ans. (i) Keen observer, learner, curious by nature

(ii) The settling down of the colloidal particles.

(iii) By adding suitable electrolyte & a suitable solvent

(iv) Heterogeneous in nature, scattering of light, not filtered by ordinary filter paper but by ultra filter.

2. Wasim went to purchase bricks to build his house from a brick manufacture unit. He was shocked after seeing a lot of smoke, dust, & other gases coming out of the chimney. He observed that these products were leading to pollution in nearby areas too. He decided to do something about it.

Now answer the following questions:

- (i) What type of colloidal system is smoke?
- (ii) As a chemist which process will you suggest the manufacturing unit owner to manage smoke & why?
- (iii) Write any two values shown by Wasim.

Ans. (i) Aerosol

(ii) Cottrell smoke precipitator, smoke is a colloidal solution of particles like carbon, arsenic & dust in air. The precipitator contains plates having charge opposite to smoke particles so that they get precipitated.

(iii) Concern for air pollution, social awareness, and environmental friendly

3. Rahul & Anmol went for an excursion to sugar industry. They saw that the sugarcane juice from which the sugar prepared was brown in colour & after passing it through a black substance it got decolorize. Rahul being the student of chemistry explained the process.

On the basis of above paragraph give answer of the following questions.

- (i) Name the black substance through which sugarcane juice was passed & it got decolourise.
- (ii) Name the phenomenon involved in above.
- (iii) What are the values shown by Rahul?
- (iv) Give any other application of above phenomenon.

Ans(i). Animal Charcoal

(ii) Adsorption

(iii) Knowledge of chemistry

(iv) Gas masks