

VALUE BASED QUESTIONS

Chemistry in everyday life

- 1.) Kalavati wanted to give her baby a medicine for fever. She added boiled and cooled water as per the instruction, to the contents of the bottle, up to the mark. She shook the bottle. Then gave a spoonful of the medicine to the baby. As a student of chemistry answer the following questions:
- a.) Why did she shake up the contents? What is the process called? (2)
- b.) What is the value associated with selling medicine in this form?(1)

Ans:

- a. She shook the contents of the bottle to bring the contents into the form of a sol. Absorption of medicine are easier in the colloidal form. This process of agitating a precipitate into colloidal sol is called as peptization. b. When the medicine is sold in anhydrous form it has a higher shelf life and thus can be stored for a longer time. This is a way of being thrifty by not wasting the available resources

- 2.) Ashraf is 50 years old and has diabetes. He uses saccharine as sweetening agent in tea and coffee and sugar free in sweets. Lakshmi too is diabetic. She controls her sugar level in diet by using less sugar and by exercising.
- a.) Who is able to handle diabetes more efficiently and why? (1)
- b.) What value do you derive from this? (1)
- c.) What are the harmful effects of artificial sweeteners? (1)

Ans:

- a.) Lakshmi is able to handle diabetes better, because exercises activate the pancreases to produce insulin. Exercise keeps one fit and fine.
- b.) It is necessary to lead a disciplined life.
- c.) Researches have shown that the artificial sweeteners have harmful effect on the body because they are not excreted easily.
- 3.) Almelu did not like the costlier brand of dish washer because she was not satisfied by using less quantity of the dishwasher, so she bought the cheaper brand of dish washer and used large amounts of it.
- a.) As a student of chemistry what would you advise Almelu to use? (1)
- b.) Why? Explain. (1)
- c.) What value did you impart to Almelu? (1)

Ans:

- a.) I would advise Almelu to use smaller quantities of the costlier detergent.
- b.) Almelu was pouring detergents into the drain. These detergents are not biodegradable. Branched detergents are highly non- degradable because the microbes cannot attack it. Straight chain detergents are being prepared these days

to reduce the pollution problem. The costlier detergent contains straight chain hydrocarbon.

b. The value imparted was to use environmentally friendly substances.

4.) Pradeep had very high fever. He was given strong antibiotics. But after recovering from fever he was not able to digest food and was feeling too weak. The grandmother who lived in his neighborhood suggested him to take lots of fruits and vegetables.

a.) Why? (1)

b.) What is the remedy for this? (1)

c.) What was the value that Pradeep had by taking fruits and vegetables? (1)

Ans:

a.) Rise in temperature denatures the proteins in our body. The enzymes which are also proteins get denatured. The body has to regenerate these enzymes. Till then Pradeep will continue to feel weak as the enzymes to digest food and for respiration are destroyed due to high temperature and change in pH. Even after the enzymes are regenerated, vitamins which act as prosthetic groups in enzyme action are to be taken from an external source.

b.) By taking fruits and vegetables Pradeep is actually taking in vitamins.

c.) He obeyed an elderly person's advice.

5.) Swapnesh, living in Ooty, was washing clothes in cold water. He found that the clothes were not getting clean. Geeta, his niece, suggested that he wash the clothes in warm water. Washing of clothes with soaps or detergents is easier in Luke warm water than cold water.

a.) Why?

b.) What value do you derive from this?

Ans:

a) Action of soaps is due to formation of micelles. But the formation of micelles takes place at a minimum temperature called 'Kraft temperature'. This temperature is reached in lukewarm water. (2)

b) Be humble to accept a scientific fact from a younger person

6.) Ruben is a football player. After playing he had sever muscle pain. His brother's friend Suhail asked him to take ENO along with the medicine.

a.) Why?

b.) What value can you get from this fact?

Ans:

a.) Analgesic relieves Pain from muscular cramps. But it causes acidity in the stomach. To relieve from acidity antacid is given. ENO is an antacid.

b.) Be open minded to accept a suggestion from a friend because friend in need is a friend indeed.

7.) Rahul's father recovered from a massive heart attack. As follow up doctor gave him Aspirin.

a.) Why?

After some time he started to develop some stomach ache. Then his wife gave him some butter milk

b.) Why?

c.) What value do you get from this?

Ans:

a.) Aspirin is a blood thinner. Hence for a patient suffering from heart attack is given Aspirin. Aspirin is acetylated salicylic acid. In the presence of acid in the stomach it undergoes hydrolysis to form two acids salicylic acid and acetic acid. This increases the acidity in the stomach. (1)

b.) To neutralize this acidity butter milk is also given. (1)

c.) Being dedicated and faithful.

