

Solid state

VALUE BASED QUESTION

Q.1 In India, we have shortage of electricity. Electricity is being produced by Hydel Power, Thermal Power, Gas and Nuclear Power etc. which needs a lot of fuel which is limited in our country. Non-conventional sources like wind, tidal, solar energies is being used to some extent to generate power. Solar energy can be converted into electricity by special type of substances called photovoltaic material.

Use of CFL and LED lamps can also save lot of electricity.

- (i) Name one Photovoltaic Material
- (ii) Why solar power generation better than conventional way of generating power? Give one Reason.
- (iii) Why is Solar Power not very popular in India?
- (iv) What are the values associated with above passage?

Ans: (i) Amorphous Silicon

(ii) Solar Power is pollution free, while conventional sources such as Thermal Power produces pollution.

(iii) Solar Power is expensive as the appliances used are costly.

- (v) We use reduce consumption of electricity as it is generated by very valuable natural resources which are on the verge of depletion.

Q.2 The conductance of metal decreases with increase in temp. and increases with decrease in temp. Some metals offer no resistance at low temp. These are best for electrical transmission.

(i) What is the name given to metals which practically offer no resistance at low temp? In Japan, fastest train makes use of these substances.

(ii) Are these Diamagnetic or Paramagnetic?

(iii) How does the use of superconductors for electrical transmission helps in economy of a country?

Ans: (i) Superconductors

(ii) Superconductors are Diamagnetic in nature.

(iii) Electric energy isn't lost as heat due to negligible resistance present.

Q. 3 Graphite has typical hexagonal structure. Carbon atoms are arranged in different layers and it is soft and slippery. It is used in pencils, dry-cells and other cells.

(i) Why is Graphite used as lubricant at high temp. in machine parts?

(ii) Why is Graphite a good conductor of electricity although it is a covalent solid?

(iii) Is use of Graphite threat to environment?

Ans: (i) it is composed of loosely packed layers which slip over one another and also has a very high melting point as it is a network covalent crystal. Hence can be used in machineries which operate in high temperature.

(ii) Graphite Carbons are sp^2 hybridized and its unhybridized p orbital have delocalized electrons (free electrons).

(iii) No.

VBQ From Solid State

1. Earth receives enormous amount of energy from sunlight. The problem of shortage of power can be solved if we could convert solar energy into electricity. A device which generates electrical power from sunlight is called solar cell or photovoltaic cell. Solar cells are made up of silicon doped with arsenic and silicon doped with boron. Answer the following questions:
 - (i) When silicon is doped with arsenic, what type of semiconductor is obtained? Explain.
 - (ii) What type of semiconductor is obtained by doping silicon with boron?
 - (iii) Give any two applications (other than solar cells) of semiconductors.

Ans. (i) When silicon is doped with arsenic, it forms an n-type semiconductor. Arsenic has five electrons in its valence shell. After forming four bonds with silicon atoms, one electron is left on arsenic atom. This electron is responsible for conduction. Thus, silicon doped with arsenic conducts electricity through movement of free electrons and behaves as an n-type semiconductor.

(ii) A p-type semiconductor is obtained by doping silicon with boron.

(iii) They are used to make diodes which are used as rectifiers. • They are used to make transistors which are used to detect or amplify radio signals.

2. Chetan asked his father, “ How should a relationship be ? “ His father gave him a piece of solid Iron and said that the relationship should be like this. After reading this passage, answer the following questions

(i) Why do solids have a definite shape and a definite volume?

(ii) Mention the values associated with the above conversion.

Ans. (i) Due to stronger attractive interactions between particles

(ii) Knowledgeable, Scientific approach and Social concern

3. Solids have fixed shape and volume but experimentally it has been observed that solids are also defective. Two types of defects are found in solids, namely, point defect and line defect. After reading the above passage, answer the following questions-

(i) What type of defect can arise when a solid is heated?

(ii) How many types of point defects are there?

(iii) Mention the values associated with the above information.

Ans. (i) Vacancy defects

(ii) Two types

(iii). Keen observer and scientific skill

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Solid State

CLASS - XII

Sub.-Chemistry

Value Based Questions -

Q.1:- Raman and Rajan were studying the properties of solids. A solid 'X' showed same physical properties (thermal conductivity and refractive index) in all directions while another solid 'Y' showed different physical properties in different directions. Raman classified the solid 'X' as crystalline and solid 'Y' as amorphous. Rajan did not agree

with Raman's classification. Answer the following questions -

- (i) Whom do you favour, Raman or Rajan and why ?
- (ii) What is the name of the property exhibited by solid 'X' ?
- (iii) Will liquids show behaviour similar to solid 'X' or solid 'Y' ?

Ans (i) Rajan because Y is anisotropic in nature.

(ii) X is isotropic in nature.

(iii) Super cooled liquids behaves as X.

Q.2:- Pure silicon is a poor conductor of electricity because it has a network structure of

four strong covalent bonds. The conductivity of pure silicon can be increased by adding an appropriate amount of a suitable impurity and the process is called doping.

These produce n-type and p-type semiconductors. The desired conducting power

can be achieved by adjusting the proportion and type of impurity. The combination

of n-type and p-type semiconductors known as n-p junctions find interesting applica-

tions in electronic devices. Answer the following questions -

- (i) When silicon is doped with arsenic, what type of semiconductor is obtained ?
- (ii) What type of semiconductor is obtained when silicon is doped with boron .
- (iii) List any two applications of these types of semiconductors.

Ans (i) n-type semiconductors.

(ii) p-type semiconductors

(iii) Used for making transistor, rectifiers etc.

Q.3:- Diamond and Graphite are two allotropic forms of carbon. Both are covalent solids.

These two forms have different structures and hence differ in physical properties.

Both have their own importance in being used in everyday life. Diamond is popularly

used in jewellery and graphite is extensively used as electrodes in many industrial

processes. Answer the following questions -

(i) Which of two allotropes is a good conductor of electricity.

(ii) Besides the above uses of diamond and graphite, give one other use of these.

(iii) Give hybridization state of C in diamond and graphite.

Ans (i) Graphite

(ii) Graphite is used as a lubricant and diamond is used as abrasive.

(iii) Diamond ; sp^3 , graphite ; sp^2 .

KENDRIYA VIDYALAYA G.C.F.-1

Solid State

CLASS - XII
Sub.-Chemistry

4 Marks

questions

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SOLUTION - Bank Solutions

Value Based Questions

1. Bharath went to his grandfather's house in winter this year. As usual he went for fishing. His grandmother told him there will be no fishes in the lake. He noticed that it was more difficult to find fishes in winter. The fishes were deep inside the river. Whereas in summer they were on the surface and hence he was able to catch fishes.

a) Why are fishes on the surface in water than in the depth in summer? (2)

b) What value can be derived from this? (1)

Ans: a) According to Henry's law at low temperature gases are more soluble and hence as more oxygen gets dissolved in water fishes survive better even in depth of the river. In summer as the oxygen is less in water the fishes come to the surface. b) The value that I derive from this is wisdom is superior to knowledge

2. Shubham's father is suffering from high blood pressure. Shubham's mother cooks food with very little salt in it.

a. Why?

b. Doctor did not advise him not to consume salt at all. Why?

c. What value do you get from this?

Ans: a. As salt ionizes the ionic balance is disturbed and the blood pressure rises.

b. Salt acts as a cofactor in enzyme action. Hence some amount of salt is required in our diet.

c. Caring for your kith and kin.

3. Srisha wanted to keep ice creams without melting. So he had to keep it on ice taken in a container. His grandmother advised him to pour salt on the ice.

a. Why?

b. What is the value in this?

Ans: a. Adding salt to ice decreases the melting point of ice. Hence the decrease in temperature of ice.

b. Obey your elders.

4. Sneha's grandmother lives in Simla. In winter there is lot of snow in front of the house. She asked Sneha to clear the snow from the front of the house. Sneha added salt to snow to clear it.

a. Why?

b. What is the value in this?

Ans: a) Adding salt to ice decreases the melting point of snow. The snow melts. Hence snow can be removed.

b) Keep your surroundings clean

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

SOLUTION - Value based questions (4 marks)

Q.1 Scuba divers when come towards the surface, the pressure gradually decreases resulting in the released of dissolved gases leading to formation of bubbles of nitrogen gas in the blood which blocks the capillaries and thus harmful kinds are created. To avoid bends and toxic effects of high concn of nitrogen gas, the air is diluted with helium. After reading the above passage, answer the following questions.

- i) Why is the harmful condition of bends overcome by the use of helium.?
- ii) Which law is used to calculate the concentration of gases in solution.?
- iii) Mention the value associated with providing divers air diluted with helium.?

Ans (I) Helium is less soluble in blood than Nitrogen.

(ii) Henry's Law.

(iii) To avoid bends and toxic effects of high concn of nitrogen gas, the air should be diluted with helium.

Q.2 Ram takes an open pan to cook vegetables at a hill station while shyam cook the same vegetables in a pressure cooker at the same place.

- (a) Who will cook vegetable faster.?
- (b) Mention the reason for the delay in cooking.?
- (c) Which value is learnt by the student in the process of cooking the food in pressure cooker?

Ans (a) Shyam.

(b) In pressure cooker boiling point is increased and food gets cooked easily.

(c) Cooking food in pressure cooker will save money and time.

VALUE BASED QUESTIONS (Electrochemistry)

Q.1 People are advised to limit the use of fossil fuels resulting in Green House Effect leading to a rise in the temperature of earth. Hydrogen provides an ideal alternative and its combustion in fuel cells

- a. Write electrode reaction in H₂-O₂ fuel cell.
- b. How is green house effect reduced by the use of fuel cells?
- c. Write the values associated with preference of using fuel cells to fossil fuel.

Ans. 1. a. Cathode: $O_2 (g) + 2H_2O (l) + 4e^- \rightarrow 4OH(aq)$

Anode: $2H_2 (g) + 4OH^-(aq) \rightarrow 4H_2O (l) + 4e^-$

- b. no any pollutant is being formed as product of cell reaction.
- c. Environmental conservation

Q.2 In Apollo Space programs, hydrogen-oxygen fuel cell was used.

- (a) Explain why, fuel cell is preferred in space programme.?
- (b) Mention the values associated with the decision of using fuel cell?

Ans 2. a. No any pollutant is formed only water is formed which is used for drinking purpose.

b. Environmental conservation

Q.3 Ira a student of science went with her grandfather to buy a battery for their inverter and camera. They found two types of batteries, one a lead storage battery and other a NickelCadmium storage battery. Later was more expensive but lighter in weight. Ira insisted to purchase costlier Nickels-Cadmium battery.

- (a) In your opinion, why Ira insisted for Nickel-Cadmium battery? Give reasons
- (b) Write the values associated with above decision?

Ans 3. a. Pollution free, No poisoning of lead as in lead storage battery.

b Environmental conservation, Concern for workers associated with lead storage battery repairment.

Q.4 Shyam's father wants to buy a new car. In the market various options are available. Shyam persuades

his father to buy a hybrid car which can run both on electricity as well as on petrol.

- a. Mention the values associated with this decision.
- b. Name the battery used for running the car.
- c. Write the reactions taking place at the anode and cathode of battery.

Ans 4. a Environmental conservation, Energy Conservation

b. Lead Storage Battery c. Anode: $\text{Pb(s)} + \text{SO}_4^{2-}(\text{aq}) \rightarrow \text{PbSO}_4(\text{s}) + 2\text{e}^-$

Cathode: $\text{PbO}_2(\text{s}) + \text{SO}_4^{2-}(\text{aq}) + 4\text{H}^+(\text{aq}) + 2\text{e}^- \rightarrow \text{PbSO}_4(\text{s}) + 2\text{H}_2\text{O}(\text{l})$

Q.5 Reema the student of class XII Science suggested her father to place a pouch of silica gel in the opening of iron pipes when he was preparing a shed for parking his car?

- a. How does Reema apply the knowledge of chemistry?
- b. What value was associated with this decision?
- c. How she shows the concern to society?

Ans 5. I. Silica gel is a good adsorbent therefore prevent from rusting

- ii. Knowledge is useful when it is put in practice
- iii. She shows her concern to the environment.

ELECTROCHEMISTRY - VALUE BASED QUESTIONS

(Q.1) People are advised to limit the use of fossil fuels resulting in Green House Effect leading to a rise in the temperature of earth. Hydrogen provides an ideal alternative and its combustion in fuel cells.

- Write electrode reaction in H₂-O₂ fuel cell.
- How is green house effect reduced by the use of fuel cells?
- Write the values associated with preference of using fuel cells to fossil fuel.

Ans.

- Cathode: $O_2(g) + 2H_2O(l) + 4e^- \rightarrow 4OH^-(aq)$
Anode: $2H_2(g) + 4OH^-(aq) \rightarrow 4H_2O(l) + 4e^-$
 - no any pollutant is being formed as product of cell reaction.
 - Environmental conservation

(Q.2) In Apollo Space programs, hydrogen-oxygen fuel cell was used.

- Explain why, fuel cell is preferred in space programme.?
- Mention the values associated with the decision of using fuel cell?

(Ans)

- No any pollutant is formed only water is formed which is used for drinking purpose.
- Environmental conservation

(Q.3) Ira a student of science went with her grandfather to buy a battery for their inverter and camera. They found two types of batteries, one a lead storage battery and other a Nickel-Cadmium storage battery. Later was more expensive but lighter in weight. Ira insisted to purchase costlier Nickels-Cadmium battery.

- In your opinion, why Ira insisted for Nickel-Cadmium battery? Give reasons
- Write the values associated with above decision?

Ans.

- Pollution free, No poisoning of lead as in lead storage battery.
- Environmental conservation, Concern for workers associated with lead storage battery repairment.

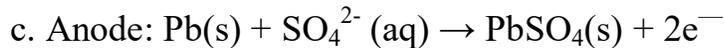
(Q.4) Shyam's father wants to buy a new car. In the market various options are available. Shyam persuades his father to buy a hybrid car which can run both on electricity as well as on petrol.

- Mention the values associated with this decision.

- b. Name the battery used for running the car.
- c. Write the reactions taking place at the anode and cathode of battery.

Ans. a Environmental conservation, Energy Conservation

b. Lead Storage Battery



(Q.5) Reema the student of class XII Science suggested her father to place a pouch of silica gel in the opening of iron pipes when he was preparing a shed for parking his car?

- a. How does Reema apply the knowledge of chemistry?
- b. What value was associated with this decision?
- c. How she shows the concern to society?

Ans. a. Silica gel is a good adsorbent therefore prevent from rusting.

b. Knowledge is useful when it is put in practice.

c. She shows her concern to the environment.

ELECTROCHEMISTRY

VALUE BASED QUESTION

1. Kailash goes to the market to purchase battery for his car. Two types of batteries are shown to him, one with cadmium plates which is relatively more costlier while the other one with lead plates which is cheaper. The shopkeeper advises him to go for cadmium plate battery instead of lead plate battery.

Answer the following questions:

- (i) As a chemistry student, do you agree with shopkeeper's advice?
- (ii) Give two reasons to support his advice.
- (iii) What are the values associated with his advice?

2. Manu and his father went to shop to purchase a battery for their inverter. Shopkeeper showed them two types of batteries one with lead plates and the other with cadmium plate. The battery with cadmium plate was more expensive than the lead battery. Manu father wanted to buy lead battery as it was cheaper.

i) As a student of chemistry why would you suggest Manu father wanted to buy cadmium battery? Give 2 reasons.

ii) What are the values associated with the above decision?

ans. Harmful effect of lead on human being and on the environment. Lead is a cumulative poison. Lead keeps on accumulating in the tissue of the human body and in the leaf tissue of the plants. Lead is very poisonous metal.

a) It damages organs like liver, kidney and intestine.

b) It includes abnormalities in fertility and pregnancy.

c) It causes coagulation of proteins.

d) It interferes with the development and maturation of RBC.

ii) It is wise to choose sustained long term benefit than short time gain.

VALUE BASED QUESTION(CHEMICAL KINETICS)

1. One day in the class, Rohit learnt that conversion of diamond to graphite is energetically favoured. He felt very concerned about it. If it was likely to happen, then it will cause a lot of financial loss to those people who have diamonds because their diamonds will be ultimately converted to graphite which will be of no value. He discussed it with the teacher. His teacher told him that it was unlikely to happen, though it was thermodynamically favourable.

a. In your opinion why it is not possible for a diamond to get converted into graphite through process is energetically favourable?

b. How do you relate these observations to values of daily life?

Answer.

a. Although the conversion of diamond into graphite is energetically favourable yet it is unlikely to occur due to occurrence of very large activation energy barrier for this process to occur.

b. In day to day life, we find that sometimes it seems that is chaos, gloominess, dishonesty and crookedness everywhere but there are incidents which provide us moral courage to overcome to these negative forces and help us for positive thinking, happiness and wellbeing. We strive with greater efforts to create an atmosphere of honesty, responsibility, support, commitment, perseverance and achieve new heights of success.

2. A catalyst is a substance which increases the rate of a reaction without undergoing any change in itself. A small amount of the catalyst is sufficient to bring large change in the rate of a reaction. It takes part in the reaction but is regenerated at the end of the reaction.

a. How does a catalyst increases the rate of a reaction?

b. In society how do catalytic elements play their role in strengthening or weakening the social value?

Answer.

a. A catalyst increases the rate of a reaction by lowering the potential energy barrier and providing a alternate path which requires less activation energy.

b. In our society we find certain people to act as catalysts in certain incidents. Sometimes we find that person who has negative thinking and does not like peaceful atmosphere, add fuel to the fire whenever there is a clash between two groups of people. He provokes indirectly one group of people against the other. At the same time there are people who like peace and harmony in the society. Even if there is a little problem in the people in society, they try to sub side the issues by their understanding and goodwill.

3. Coal does not burn by itself in air but once initiated by flame, it continues to burn. In our surroundings we can observe many processes in day to day life of such type. It is blissful

to existence of life on earth otherwise there would have been a great harm to civilisation as fuels would have burnt by themselves and explosives could not be stored safely.

a. What reason do you assign for non-occurrence of such processes at room temperature?

b. How do you find values linked with such processes?

Answer.

a. The reason for non-occurrence of such processes is the existence of activation energy barrier. The occurrence of such process requires a very high activation energy which is not available at room temperature.

b. Our society is facing a lot of problems which are major hurdles in our progress. People have innovative ideas to solve such problems. Lack of proper atmosphere, infrastructure and orientation hinders their ideas. When they get proper channel and platform they exploit their ideas to get rid of evils facing our society. Once the process starts, other people come forward with innovative ideas and this is how progress begins which achieves greater heights resulting in upliftment of society.

Value Based Questions
Chemical Kinetics

1 A number of chemical reactions or physical processes are taking place around us some of which are quit slow whereas some others are quite fast. In a number of cases, we wish to speed up the slow reactions whereas in some others cases, we wish to slow down the fast reactions.

Now, answer the following questions:

(1) Hydrogen peroxide is very commonly used to bleach hair and also as antiseptic under the name 'perhydrol'. How should it be preserved and why?

(2) Why is it suggested that onions should be refrigerated before cutting them?

(3) In winter, curding of milk become difficult. What is the simplest way to follow so that curding can occur and why?

(4) Why does powdered sugar dissolved faster than big crystals of sugar?

(5) Do you think that diamond is forever? Why or why not?

ANSWERS

(1) Hydrogen peroxide is an unstable liquid and decomposes easily in presence of light or heat or long standing in water and oxygen. To slow down its decomposition, it should be stored in coloured bottles and kept well stoppered. Further, few drops of glycerol can be added which act as negative catalyst to slow down the decomposition.

(2) Chemical vapours coming on cutting onions at room temperature bring tears in the eyes. If the process is carried out a lower temperature, the evolution of vapours is slow down.

(3) Curding of milk takes place faster at a temperature which is neither too high nor too low (called optimum temperature). In winter, temperature is low and reaction involved in curding of milk is so slow that sometimes it does not occur at all. The simplest way is to keep the pot containing the milk for curding half-burried in drum containing wheat flour which provides the required optimum temperature.

(4) Powdered sugar has larger surface area than crystalline sugar of the same mass. Greater the surface area, faster the process of dissolution.

(5) Diamond is not for ever because conversion of diamond to graphite is feasible or spontaneous (thermodynamically). However the process is very slow that the change is not perceptible at all.

Q.2. Food items get spoiled more quickly in summer because the reaction occurring faster at higher temperature than at lower temperature. Therefore, use of refrigerator has become very common in almost every house. Manufacturers also follow certain methods to prolong the life of food products from rancidity.

Now, answer the following questions

(1) Why should milk and other dairy products such as cream, yogurt etc. not be placed in the door of the refrigerator even if it has built-in space for these and why?

(2) For non-vegetarian people where should they store meat? Which process/ reaction is speeded up or slowed down?

(3) Preservation of oily food items by vacuum is becoming more popular by manufacturers. How does it work?

ANSWERS

(1) The door of the refrigerator has higher temperature than the shelves. Hence, reactions involving spoilage of the food take place faster in the door.

(2) Meat should be stored in the coldest part of the refrigerator. It slows down the growth of microorganisms which are responsible for the spoilage.

(3) Rancidity of oily food items is due to oxidation of oils and fat by the oxygen of the air. By vacuum, the amount of oxygen coming in contact with the food is minimized. As a result, the oxidation reaction is considerably slowed down and the life of the food item is prolonged.

Q.3. A number of harmful reactions are occurring in the troposphere (where we live) as well as in the stratosphere (also called ozonosphere). These reactions are affecting our environment adversely. The environmentalists are feeling highly concerned to slow down the reactions involved so that we can stay healthy.

Now, answer the following questions:

(1) Use of chlorofluorocarbons (CFCs) in refrigerator or aerosol spray has been banned? Which reactions are slowed down by not using them?

(2) Exhaust pipes of vehicles are fitted with catalytic converters. What type of reaction are speeded by these catalysts?

(3) In India, sometimes, smog appears in winter. What step should be taken to reduce its formation?

ANSWERS

(1) Chlorofluorocarbons undergo photochemical decomposition to produce chlorine which depletes the ozone layer which protects us from harsh ultraviolet radiation. By not using them, the amount of chlorine present in the stratosphere will be considerably reduced and hence, the reactions involving depletion of ozone layer will be slowed down.

(2) Exhaust pipes are fitted with such catalytic converters which speed up the reduction of pollutants of oxides of nitrogen produced due to combustion of petroleum products to free N_2 , i.e., they accelerate purifying reactions.

(3) Smog in winter is due to condensation of sulphuric acid particles on particulates of the atmosphere. Sulphuric acid particles are present due to oxidation of SO_2 present in the atmosphere to SO_3 which is absorbed by the water vapours of the atmosphere. To slow down its formation, amount of SO_2 present in the atmosphere should be reduced. This can be done by using low-sulphur or sulphur-free fuels.

Q.4. Chemical kinetics has an important role to play in medical field. Some drug and medicines speed up or slow down certain metabolic processes. These drugs or medicines have beneficial effect on one hand but have harmful effects on the other hand.

Now, answer the following question:

(1) In USA teenagers and young adults smoke or ingest 'marijuana' for recreation use. It is most illegal substance in USA. What does it slow down and what does it speed up causing adverse effect on health?

(2) Oxytocin injection are given to mammals? What do they speed up? What are their harmful effects?

(3) What do enzymes do in our body? What would have happened if they were not present in our body?

ANSWERS

(1) This drug slows down blood flow to brain. As a result, a person is unable to concentrate and remember things. Secondly, it speeds up heart rate to dangerous levels.

(2) Oxytocin speeds up milk production in mammals. Its harmful effects include lowering of blood pressure and change of heart beat. (oxytocin injection is also used to induce labour pains).

(3) Enzymes are biological catalysts which speed up the reaction occurring in our body. These reactions are so complex that if they were not present, reactions would have been very slow and sluggish. For example, if there were no enzymes in our digestive system, it would have taken us 50 years to digest a single meal.

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 stif 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

Value based questions

METALLURGY

Q.1 An innovative washer woman while washing a copper miner's clothes found that sand and similar dirt particle fell to the bottom, while the ore particles stuck to the soapsuds and came to the top. The washer woman discussed this matter with a client who was a chemist.

- What is the reason for this observation? (2)
- Name any one ore of copper (1)
- What value do you get from this episode? (1)

A.1 a. The miner's clothes had particles of CuS / Cu_2S on it. This adhered to the froth and came up.

- Copper Pyrite, copper glance
- Keen observation can lead to great discoveries.

Q2. Metals are very useful in our daily life. Aluminium powder is used in white paints. It is also used as a reducing agent. Alloys containing Aluminium, being light, are very useful. Utensils of Aluminium are more popular than utensils of brass. Metals like silver, gold, iron, copper, zinc are very useful in our daily life:

- Which metal foils are used as wrappers for sweets, medicines, chapaties, etc.?
- Why are Aluminium vessels preferred over copper and bronze vessels?
- What value is associated for using Aluminium?

Ans. (i) Aluminium foils are used for this purpose.

(ii) Aluminium vessels are not affected either by acids or alkalies or by other chemicals. But copper and bronze vessels react with these forming poisonous chemical compounds. That is, why vessels made up of aluminium are preferred.

(iii) Aluminium is very useful metal. It is very light and good conductor of both heat and electricity. Although it is placed high up in the series but a layer of its oxide deposited on the surface of the metal checks its corrosion. That is why aluminium foils are so useful.

Q1. Ram visited the house of his friend Sham and found that all the water taps were rusted. On enquiry, he came to know that these were iron taps. Ram advised his friend to use either chrome plated or nickel plated taps. Sham accepted his advice.

- Why did iron tap get rusted?

(ii) What is the purpose of chrome plating or nickel plating?

(iii) What is the name of the process?

(iv) What is the value associated with this?

Ans. (i) Iron is prone to rust. Articles made up of iron readily get rusted when kept in the open.

(ii) The purpose of depositing a layer of chromium or nickel on the surface of iron is to check rusting. These metals are not affected by air or moisture.

(iii) The process is known as electroplating.

(iv) Electroplating process is very useful both on small scale as well as on commercial scale. It is used for decoration as well as for preservation.

METALLURGY

Value Based Questions

Q1. Many metals occur in the earth crust as sulphides. Usually these sulphide ores are concentrated by froth floatation process. But argentite which is the sulphide ore of silver is preferably concentrated by chemical process of leaching.

Now answer the following questions:

(i) Explain why instead of froth floatation process. Argent

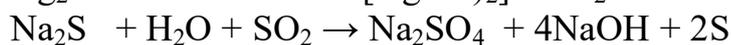
(ii) What reagent is used in the chemical leaching of argentite ore?

(iii) How is silver extracted from the argentite ore?

Ans. (i) Froth floatation process is based upon the formation of rich and stable froth. Since argentite is a low grade ore. Therefore, it does not form a froth which can be easily separated from gangue.

(ii) The process of leaching involves treating the powdered ore with a suitable reagent which selectively dissolves the ore but not the ore particles. The reagent used for leaching of argentite ore is NaCN.

(iv) The ore is treated with a dilute solution of NaCN while a current of air is continuously passed. Silver dissolves forming a soluble complex while Na₂S formed in the reaction is oxidised to Na₂SO₄



The above solution containing the soluble complex is filtered to remove the insoluble impurity and the filtrate is treated with zinc to obtain silver

Q.2. Iron is much abundant in the earth's crusts than aluminium. Both these metals are extensively used as structural. Over a period of time, Iron creates problems but aluminium does not. Now answer the following questions;

(i) Give the one principal ore of each iron and aluminium.

(ii) How is iron and aluminium obtained from their respective ores?

(iii) What is the cause of the problem with iron but not with aluminium? How can this problem be overcome?

Ans. (i) The principal ore of iron is haematite (Fe₂O₃) while that of aluminium is bauxite (Al₂O₃).

(ii) Iron is obtained by reduction of purified Fe₂O₃ with coke in a blast furnace while aluminium is obtained by electrolysis of fused purified Al₂O₃ to which cryolite (Na₂AlF₆) and fluorspar (CaF₂) have been added.

(iii) When exposed to air, Al forms an impervious coat of Al₂O₃ which protects the metal from further corrosion. In contrast, iron forms iron rust (Fe₂O₃·xH₂O) which flakes off exposing fresh surface to corrosion. To overcome this problem, stainless steel should be used instead of iron or iron structures should be protected from moisture and heat by painting.

Q.3. Carbon monoxide is used for refining of impure nickel in the Mond's process. But carbon monoxide is highly poisonous gas inhalation of which causes death.

Now answer the following questions:

(i) What is the principle of Mond's process for refining of nickel?

(ii) How does carbon monoxide poisoning cause death?

(iii) Should Mond's process for refining of nickel be banned because carbon monoxide not only pollutes the environment but its accident leakage from the plants may prove fatal for workers in the factory?

Ans. (i) When impure nickel is heated in a current of CO at 330-3350 K, it forms volatile nickel tetracarbonyl complex leaving behind the impurities. The complex thus obtained is heated to a higher temperature (450-470 K) when it undergoes decomposition giving pure nickel and releasing CO.

(ii) Carbon monoxide is highly poisonous. It combines with haemoglobin of blood to form carboxyhaemoglobin.

$\text{Haemoglobin} + \text{CO} \rightarrow \text{carboxyhaemoglobin}$.

Which is about 3000 times more stable than carboxyhaemoglobin complex which it forms with oxygen?

$\text{Haemoglobin} + 2\text{O} \rightarrow \text{Oxyhaemoglobin}$.

This prevents haemoglobin present in the red blood cells from carrying oxygen from the lungs to all parts of the body causing suffocation ultimately leading to death.

(iii) Although CO is an environmental pollutant and a threat to the life of workers in the factories, but it being very cheap it keeps the cost of pure nickel low which is extensively used in nickel plating and other articles of daily use. Therefore, Mond's process cannot be banned if we have to keep the pure nickel metal cheap to meet the requirements of industry. Instead, better safety arrangements should be made for the workers in the factory. Further, if the cost of electricity is reduced; electrolytic method for refining of impure nickel metal can be used.

HALOGEN FAMILY

Value based Questions

Q1-Rakesh and Kamal were discussing about the acidic strength of halogen acids. Rakesh said that HCl is stronger acid so it should be used for etching of glass in making of thermometers, burettes etc. But Kamal said HF should be used. Whom do you favour and why? Give the value which emerges from your answer.

Ans- HF should be used as being more reactive towards glass, it smoothens glass well.

Value- scientific aptitude and self awareness.

Q2 Ramu, a caretaker of swimming pool was using chlorine for disinfecting swimming pool water. His friend Jagata another swimming pool caretaker was using ozone in place of chlorine.

(a) In your opinion, which is better way of disinfecting water in a swimming pool.

(b) Mention reason and values associated with your reply-

Ans-(a) using ozone (b) O_3 is not as harmful as Cl_2 .

Value- Self awareness and decision making

Q3- Chlorine was prepared by the reaction of MnO_2 and HCl. It was named as chlorine on account of colour (Greek Word: Chlorous = Greenish yellow). It is used for bleaching wood pulp and textiles. It is used in extraction of gold and platinum. It is used in the manufacture of dyes and organic compounds as CCl_4 , $CHCl_3$, DDT, refrigerants (CFCs). It is also used in sterilizing drinking water. It is used in preparation of poisonous gas like phosgene, tear gas, and mustard gas in war.

(i) Why is chlorine greenish yellow in colour?

(ii) Why is bleaching action of chlorine permanent?

(iii) Which is better bleaching agent, chlorine or nascent oxygen from H_2O_2 ?

(iv) Why should people take chlorinated water? What are the values involved?

(v) Why should DDT be banned?

Ans

(i) It is because of absorbing light from visible region, electrons get excited to higher energy level, on returning to ground state, they radiate greenish yellow colour.

(ii) It is because it bleaches by oxidation.

(iii) Nascent oxygen from H_2O_2 is a better bleaching agent because chlorine weakens the strength of fibre.

(iv) Chlorine acts as a disinfectant. People will be free from waterborne diseases and will remain healthy and useful for society.

(v) DDT is non-biodegradable, so it creates water pollution.

Nitrogen Family
Value Based Questions

1. Sumit in the market, while shopping, heard two people talking about purchasing good amount of Nitric Acid from market to take to the local dense forest, and got an alert & immediately followed and observed all of the activities, very carefully till they were in the market.

- i) In your opinion why did Sumit get an alert ,
- ii) Why did he suspect and follow them?
- iii) Write any two values associate with Sumit .

2. Rakesh and Kamal were in discussing about the acidic strength of halogen acid. Rakesh said that HCl is stronger acid so it should be used for etching of glass in making of thermometers, burettes etc, HF should be used.

- i) Whom do you favour and why?
- ii) Give the value which emerges from your answer.

3. A man with a bag on his shoulder was moving on the road of a village . He offered a chance to the villagers of cleaning and polishing their jewellery at a cheap cost. A large crowd got interested to cash that opportunity. The man used a magic liquid in which when gold ornament were dipped in it becomes more shiny . A girl standing nearby suggested not to do this.

- i) What was the reason behind that?
- ii) Give the composition of the liquid and give the chemical reaction
- iii) Give values associated with the girl.

Answer—The magic liquid used by that man was AQUA REGIA which is a mixture of con. HNO_3 and con. HCl in a ratio of 1:3 act as solvent for noble metals like gold.
iii) knowledge, scientific attitude, awareness.

NOBLE GASES

VALUE BASED QUESTION

Noble gases are very little reactive but still are very useful. Amit went to hospital for regular medical checkup where doctor advised him to have MRI for clinical diagnosis. Read the paragraph and answer the following questions:-

Q1 Name the noble gas element used in MRI systems and diving apparatus.

Q2 Why noble gases are least reactive?

Q3 Write the values shown by Amit and Doctor.

Ans.

1. He
2. Stable electronic configuration.
3. By Amit:- Health awareness, faith, careness, follows advise, regularity. .(any other value)
By Dr.:- Knowledge application, Service towards humanity, Use of modern technology .(any other value)

VALUE BASED QUESTION

1) Pawan and Jasleen are very naughty. They are playing in chemistry lab. Pawan accidentally spills concentrated H_2SO_4 on his hand. Jasleen gets worried. He washed Pawan's hand with water and also with soap but the burning sensation on hands still continued. He then took Pawan to the teacher. The teacher rubbed the solid sodium bicarbonate on hand and then rinsed with water and finally the burning sensation was relieved.

(i) Mention the values to show in by student's friend.

(ii) Can you recommend any other substance available in the laboratory which can be used instead of sodium bicarbonate.

(iii) Write the chemical reaction involved in the treatment of acid burn with sodium bicarbonate.

(iv) What happens when hot concentrated sulphuric acid reacts with copper.

Ans 1) values: carrying dignity of individual

(ii) No other substance is mild enough to be applied on skin



(iv) it oxidises copper to copper sulphate.



Value Based Questions:
Inner Transition Element

1. Ruchi's uncle who was a kabadiwala was getting weak day by day. His nails were getting blue, he stated losing his hair. This happened immediately after he purchased a big container of heavy mass from Delhi University Chemistry Department. Doctors advised him hospitalization and suspected he has been exposed to radiation. His uncle didn't know much about radiations but Ruchi immediately convinced her uncle to get admitted and start treatment.

(i) What according to you are the values utilized by Rama to convince her uncle to get admitted in hospital.

(ii) Name the radioactive radiations emitted from a radioactive element.

(iii) Write the name of two radioactive elements belongs to f block.

Ans 1.

(i) Value displayed - awareness, critical thinking, decision making

(ii) X ray and Gamma rays.

(iii) Thorium, uranium or any two

2. Medha's grandfather was reading article in newspaper. He read that after so many years of atomic bombing in Hiroshima or Nagasaki, Japan National census indicated that children born even now are genetically deformed. His grandfather was not able to understand the reason behind it. He asked his Granddaughter Medha who is studying in class XII science. Medha sat with her grandfather and showed him pictures from some books and explained the harmful effects of radiations.

(i) What are the values/ skills utilized by kajal to make her grandfather understand the reason of genetically deformity?

(ii) Name the nuclear reactions that occurred in atom bomb.

(iii) Which element was used in nuclear bomb during second world war.

Ans 2. (i) Sympathy, compassion (ii) Nuclear- fission reactions (iii) uranium

3. Muthuswami a resident of Kundakulam was all set to leave everything and shift to another place in view of the decision of Govt. to start nuclear thermal power plant at Kundakulam. His granddaughter Prachi, a science student, was really upset on the ignorant decision of her grandfather. She could finally convince him not to shift, since adequate safety measures to avoid any nuclear mishap have already been taken by the Govt. before starting nuclear thermal plants.

• What is the value displayed by Prachi in convincing her grandfather

- What is the principle behind working of nuclear reactor
- What are the main components of nuclear reactor
- Why is heavy water used as moderator?

Ans 3: (i) Awareness, social responsibility

(ii) Controlled chain reaction

(iii) Nuclear Fuel, Moderator, Control rods, Coolant, Shielding

(iv) Neutrons produced during fission get slowed if they collide with a nucleus of same mass.

As ordinary water contains hydrogen atoms so it can be used as a moderator. But it absorb neutron at a fast rate. To overcome this difficulty, Heavy waters is used as a moderator which has negligible cross sections for neutron absorption

Gurmeet singh

PGT CHEMISTRY

KV ABOHAR

Transition Elements

Value based question

Q1. Mohan's friend lives in a highly industrialized area where soil and water are contaminated with heavy metals. Recently he was diagnosed with serious ailment of kidney. On the basis of above answer the following questions:-

- i) What are the possible heavy metals that could be found in the water of that area?
- ii) What are the diseases associated with them?
- iii) As a friend what would you suggest him?

Ans-(1) Arsenic, Hg, Pb

(2) Respiratory diseases, Bronchitis,

(3) use gas mask

TRANSITION ELEMENTS - Value based question

Q.1. Cadmium ion is highly toxic. Why is cadmium ion likely to be present in water from galvanized iron pipes? Hint: Cadmium occurs along with zinc in zinc sulphide ores.

Q.2 Many biologically important molecules such as haemoglobin and vitamin B12 are complexes of transition metals. Molybdenum is the only element of the second and third transition series that is essential for plant and animal life. Molybdenum is available to organisms in the form of molybdate ion, MoO_4^{2-} . Answer the following questions:

- (i) Name the transition metals present in haemoglobin and vitamin B12.
- (ii) What are the oxidation states of these metals in their complex molecules?
- (iii) What is the oxidation state of Mo in molybdate ion?

Hint: Haemoglobin contains Fe in +2 oxidation state and vitamin B12 contains Co in +3 oxidation state.

Q3. Mohan's friend lives in a highly industrialized area where soil and water are contaminated with heavy metals. Recently he was diagnosed with serious ailment of kidney. On the basis of above answer the following questions:-

- i) What are the possible heavy metals that could be found in the water of that area?
- ii) What are the diseases associated with them?
- iii) As a friend what would you suggest him?

VALUE BASED QUESTIONS ON COORDINATION COMPOUNDS

Q1) (a) What is the role of coordination in society, that you learn from the chemistry of coordination?

b) A person is suffering from anaemia then which coordination compound will you suggest for recovery of the health?

Ans 1 (a) We learn that social progress can be concrete stable by coordination between the society members. The person who has enough wealth should donate its some part to the Person who needs it for its existence. :- NH_3 molecules donate lone pair of electrons to the various transition metal or ion resulting in a stable & useful complex which is also helpful in analysis of chemical samples.

(b) Complex compound of Iron in the form of Tablet or Liquid syrup with the consultation

Q2) Hard water does not form lathers with soap. Rita uses a washing powder containing sodium metapolyphosphate and ethylenediamine tetracetate (EDTA) while Sita is using ordinary washing power.

(a) Which washing powder is more effective for washing clothes in hard water and why?

(b) Name the values associated with the above passage.

ANS 2: (a) washing powder containing sodium metapolyphosphate and ethylenediamine tetracetate (EDTA)

(b) Water and Environmental conservation, Concern towards environment.

Q3 : A lots of children, working in a lead industry were rescued by NGO's activists. The children sent to the hospital and found to be excess exposure to lead so called lead poisoning.

(i) Name the ligand (compound) used for treatment of Lead poisoning.

(ii) During this rescue operation which values are shown by NGO's activists?

(iii) Write the reaction involved for removal of lead from living organism.

Ans: (a) EDTA

(b) Dignity of individual

(c) $[\text{Pb}(\text{EDTA})]^{2-}$

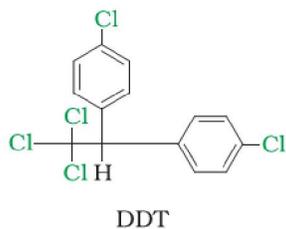
HALOARENES

VALUE- BASED QUESTION

When Ramesh visited his village during summer holidays ,he saw an insecticide being sprayed around drains and other places under the supervision of Gram-Sevak. When he inquired about it he learnt that it was the first chlorinated insecticide which became very popular post World-War II but now has been banned by many countries. He talked to Gram pradhan about the harmful effects and advised him to stop using it.

1. Identify the compound. Write its structure.
2. What values are shown by Ramesh?
3. Write one use and one harmful effect of the insecticide.

Answer:



1. It is DDT.

2. Responsible behaviour towards society, care and concern, awareness etc.

3. Effective against the mosquito that spreads malaria. DDT is not metabolised very rapidly by animals; instead, it is deposited and stored in the fatty tissues. If ingestion continues at a steady rate, DDT builds up within the animal over time.

QUESTION BANK (XII)

HALOALKANES AND HALOARENES

VALUE BASED QUESTIONS

Q.1. An organic compound X which is manufactured by heating a mixture of chloral and chlorobenzene in the presence of concentrated H_2SO_4 is used as an insecticide. The use of compound X is banned in many countries. The compound is very effective against mosquitoes which spread malaria.

Answer the following questions based on above Information:

- i) Name the compound X. Give its structural formula and IUPAC name.
- ii) Why the use of compound X is banned in many countries? Should we also advocate the ban of this compound though it is banned in many countries?
- iii) Which value is reflected in its ban? Should our country exactly the same rules and regulations in such matters as those being followed in other countries?

Ans. i) DDT . 2,2-Bis-(p-chlorophenyl)-1,1,1-trichloroethane)

Refer question no. 4

Q.2. A junior scientist in a leading dental cream manufacturing company discovers that the addition of a certain element to a dental cream can bring about a significant improvement in the quality of product in controlling tooth diseases. However, she also discovers that the same element can also result in one in a million cases of user, getting a deadly disease. The scientist reports her results in full in the Board's meeting.

Assuming that you are the CEO of the company, answer the following questions on the basis of above information:

- (i) Should the company go ahead with manufacturing the product without bothering or sharing the ill effects of the product? Give reasons for your answer.
- (ii) How will you respond to a suggestion from a colleague that the company should do more research for reducing the ill effects before manufacturing the product?
- (iii) How will you respond to a suggestion from another colleague that the company should altogether ban the idea of manufacturing this product?
- (iv) Which values are promoted through this anecdote?

Q.3. Chloroform is a colourless oily liquid with a peculiar smell. It is sparingly soluble in water. The vapour when inhaled causes unconsciousness and therefore, it is used as an anaesthetic.

Answer the following questions :

- (i) What happens when CHCl_3 is not protected from O_2 during its storage ?
- (ii) Why is the use of CHCl_3 as an anaesthetic has been reduced ?

Ans. (i) Phosgene (COCl_2), a poisonous gas is formed

- (iii) Due to its toxic effect

Q.4. DDT is one of the most powerful insecticide which is effective against the mosquitoes that spread malaria. Mukesh's mother wanted to buy DDT from the market to use at night but Mukesh stopped her.

- (i) Why did Mukesh stop her mother for using DDT at night ?
- (ii) What values are attached to Mukesh's suggestion ?

Ans. (a) Though D.D.T. is a very powerful insecticide for mosquitoes, yet the excessive use of D.D.T. has many problems. The use of D.D.T. has the following disadvantages:

- (i) Many species of insects develop resistance to D.D.T.
- (ii) It has a high toxicity towards fish.
- (iii) The chemical stability of D.D.T. and its fat solubility has problems.
- (iv) It is not biodegradable and its residues accumulate in environment and its long term effects could be dangerous.
- (v) D.D.T. is not metabolized very rapidly by animals rather it gets deposited and stored in fatty tissues. Because of its dangerous effect, its use has been banned in U.S.A. in 1973. However, in spite of its dangerous effect, D.D.T. is still being used in India because of non-availability of other cheaper insecticides.
- (b) Mukesh's suggestion is very important to protect our environment. Because of long term dangerous side effects of D.D.T., it should not be used to save our environment.

QUESTION BANK

CLASS-XII

SUBJECT-CHEMISTRY

UNIT- (11)ALCOHOLS

VALUE BASED QUESTION:

Q.1-Mohan heard a lot of noise and weeping in nearby jhuggis . he look courage and went to inquire what had happened. He found that some people has taken spurious alcohol containing methanol and were crying with pain and were complaining of loss of eyesight. He immediately hired an auto risk saw and packed it with 4 persons who has consumed spurious alcohol.

- How does methanol in drinking alcohol cause problem?
- What treatment might the doctors have undertaken to save the patients
- What message would you give to the person who consumed spurious alcohol?

Ans. (a) methyl alcohol is easily oxidized to formaldehyde and then to formic acid. Which may cause blindness and death

(b) Doctors given an intra-venous infusion of diluted ethanol. The enzyme responsible for oxidation of HCHO to acid is swamped allowing time for kidneys to excrete methanol

(c) People should be educated not to drink cheap alcohol from unauthorized sources. It is not worth saving money when the life gets endangered. It at all one has to drink; the stuff must be purchased from an authorized source.

Q.2-Mahesh was studying about alcohol in his book. His sister Mamta told him that Methanol also known as wood spirit was produced by destructive distillation of wood. It is a colourless liquid and boils at 337K.It is highly poisonous in nature.

- How is methanol manufactured these days?
- Why is methanol used in paints, varnishes etc?
- Why should we not drink even small quantity of methanol?
- What values are shown by Mahesh?

Ans (i) by catalytic hydrogenation of CO at high temperature and pressure in presence of ZnO and Cr_2O_3

(ii)It is because it can dissolve paints and varnishes

(iii)It is because it can cause blindness and in large quantities even causes death

(iv)Curious, scientific attitude

Q.3- While performing an experiment in the chemistry laboratory, Vishal found that on treating ethanol with sodium hydroxide and iodine a yellow coloured compound was obtained. He was

very excited so find it. He reported it to his teacher and asked about the nature and utility of the compound.

(a) What was that yellow coloured compound and what is its utility?

(b) How do keen observations lead us to new concepts and ideas?

Ans. (a) The yellow coloured compound is iodoform. It is used as an antiseptic for dressing wounds. Its antiseptic action is due to liberation of iodine when iodoform comes in contact with skin.

(b) During many tasks in our daily life, we usually observe something new when we come across some obstacle. We find solution to that obstacle and devise something new. This way we find innovative methods. Keen scientific observations are of great utility in daily life.

Topic :Phenol

VALUE BASED QUESTIONS

QI. Two-friends Ram and Shyam worked as caretakers of swimming pools in an area. One day they decided to have a competition to see whose swimming pool in the cleanest. Ram used chlorine for disinfecting swimming pool whereas Shyam used ozone in place of chlorine.

- 1) Name the substance which can act as both antiseptic and disinfectant.
- 2) Differentiate between an antiseptic and disinfectant.
- 3) In your opinion, which is better way of disinfecting water in a swimming pool? Mention reason.
- 4) What are the values associated with your reply?

- Ans.
- 1) 0.2% of phenol act as antiseptic while 1% of phenol act as disinfectant.
 - 2) Disinfectants are chemical substances which stop the growth of micro-organisms or kill them but are harmful to living tissues. Antiseptics are applied to living tissues whereas disinfectants are applied to non living objects.
 - 3) Usage of ozone is the correct way of disinfecting.
Reasons-
 - A) It can reduce or eliminate solid wastes.
 - B) It does not increase the salinity and toxicity of the water.
 - C) Chlorine affects the immune system of the swimmers.
 - 4) Values associated are- awareness, decision making.

Q(II) In rainy season there was outbreak of many diseases in Indra Nagar colony like dengue, malaria. Mrs Sarita a social worker visit to interact with residents of colony and guided them about maintenance and cleanliness in surrounding and also suggested to use phenol solution for cleaning the floor and cleanliness of toilets for reducing the spread of diseases.

Answer the following:

- 1) Why she suggested the use of phenol?
- 2) Which property is shown by very dilute solution of phenol?
- 3) What is the chemical name of phenol?
- 4) What are value associated by Mrs. Sarita?

Ans.1) Phenol has disinfectant property.

- 2) Dilute solution of phenol (0.2%) has antiseptic property.

3) Carboic Acid.

4) Caring, helping nature and use of knowledge of science in daily life.

Q (III) Nitin mother used to take Aspirin an analgesic quite often to relief pain from body. Nitin. asked his chemistry teacher whether aspirin have other medical uses. She discussed the therapeutic action of aspirin to Nitin. Answer the following:

1) What are values associated by teacher?

2) What are values associated by teacher?

3) What are other therapeutic action of aspirin suggested by Nitin 's teacher?

4) What the chemical name of Aspirin?

Ans: 1) Caring, helping nature, command on her subject.

2) Scientific temper, knowledge of chemistry, caring .

3) Reducing fever (antipyretic), preventing platelet coagulation.

4) Acetylsalicylic acid.

V.L SEMALTY

P.G.T(CHEM)

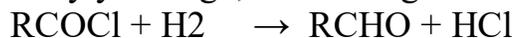
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ALDEHYDE

Value Based Questions

(4 Marks)

(1) The term —Green chemistry‖ as adopted by the IUPAC working pastly on synthetic pathways and processes in green chemistry is getting awareness even among common people. My mother who has retired twenty years ago, as working with a laboratory synthesizing aldehydes using.



Myself, working in the same lab adopted this method but my mother advised not to use this method and suggested another one

Now answer the following questions:

(i) Why did my mother advise not to use given method?

(ii) What was another method?

(iii) What values are shown by mother?

Ans. (i) Pd poisonous and affect environment.

(ii) By oxidation of alcohol(1^0) using PCC.

(iii) Scientific temprament, knowledge, awareness about environment.

(2) Formaldehyde (Methanal) is gas at room temperature. It is soluble in water because it is polar. It has pungent smell.

I. What is formalin? Give its use.

II. Which thermosetting can be made from formalin? Give their uses also.

III. Name a medicine prepared from formaldehyde? Give its use.

IV. What is the problem in using formalin?

Ans. (i) Formalin is 40% aq. Solution of formaldehyde.

(ii) Bakelite . Uses- Electrical switches.

(iii) Urotropine for urinary infections.

(3) A boy argues with his sister not to use nail polish and nail polish remover as frequently as it is poisonous. His sister rubbishes his arguments stating that all women polishing their nails to beautify.

Answer the following questions:

(i) *Is the brother of the girl justified in his arguments?*

(ii) *As a student of chemistry what do you think could be reason for such a suggestion?*

(iii) *Suggest two activities to promote these values.*

(i) The brother of the girl is justified in his arguments because Nail polish contains two most common chemicals *i.e.*, formaldehyde and toluene. Both are toxic substances and are carcinogenic compounds (cancer producing compounds).

(ii) (a) The frequent use may expose to cancer risk.

(b) Breathing in toluene irritate eyes, throat and lungs.

(iii) Spreading awareness about the risk of cancer.

Value based questions . Aldehyde and ketones

1. A boy argues with his sister not to use nail polish and nail polish remover as frequently as it is poisonous. His sister rubbishes his arguments stating that all women polishing their nails to beautify. Answer the following questions: (i) Is the brother of the girl justified in his arguments? (ii) As a student of chemistry what do you think could be reason for such a suggestion? (iii) Suggest two activities to promote these values.

Answer: (i) The brother of the girl is justified in his arguments because Nail polish contains two most common

chemicals i.e., formaldehyde and toluene. Both are toxic substances and are carcinogenic compounds (cancer producing compounds).

(ii) (a) The frequent use may expose to cancer risk. (b) Breathing in toluene irritate eyes, throat and lungs.

(iii) Spreading awareness about the risk of cancer.

2. When oils and even the oily eatables are not used over a time period these are known to change its odor and its taste i.e., unpleasant and noxious odors and flavours are given by such samples. Answer the following questions: (i) Why the oils and oily eatables develop unpleasant and noxious odors and flavors? (ii) As a student of chemistry what do you think could be reason and the term you would use to explain it? (iii) What you shall do to such eatables i.e., you will dispose it off or give it to your maid? (iv) Which values are promoted through your actions?

Answer: (i) The unpleasant odour and flavor results because of the decomposition of fatty acids. (ii) Formed due to decomposition of fats, oil on hydrolysis or oxidation then undergo further auto oxidation to generate highly reactive molecules in rancid oils and hence produce unpleasant odour and flavor. (iii) Such eatables should be disposed off because due to rancidity nutrients as well as the vitamins in the food are destroyed due to highly reactive molecules in rancid oil. (iv) Value: Nutritional significance, concern, knowledge of chemistry.

3. A stain of rust is there on your cloth. You are worried how to remove this stain. Shyam tells you to remove this stain using ripened guava. a. Why? b. What are the values you are having when doing this?

Answer: a. The rust is iron oxide. The oxalic acid in guava fruit dissolves ironoxide. b. Help your friends and neighbourswhen you know some simplehome techniques instead of chemicals.

AMINES(PREPARATION & PHYSICAL PROPERTIES)

VALUE BASED QUESTION

1. Ramesh working in chemistry lab with his friend Rajesh. He was doing diazotization reaction. After the reaction he added basic solution of 2-naphthol. He got an orange red coloured stuff. Rajesh asked what is this compound formed. Ramesh said, it must be a dye, because many dyes are prepared in this manner and these dyes are called azo dyes.

- Qs. 1. What is the name of dye prepared by Ramesh?
2. What are azo dyes?
3. Why is aniline is used for diazotization reaction?
4. Write two values expressed by Ramesh.

Ans: 1. 2-Naphthol-azo-dye

2. Those dyes which are prepared from diazonium salt.
3. Because the diazocompound of aniline are quite stable.
4. Curious and sincere.

2. Rajeev and his sister Suchi are discussing about the basic character of amines. Ramesh could not understand the basic character of amine because of the absence of OH^- . Suchi said that basic character is also due to the presence of one pair of electron. It is called Lewis basic character of compound.

- Q. 1. Why amines are basic in nature?
2. Why is dimethylamine more basic than methylamine?
3. Why is aniline is less basic than ammonia?
4. What values are shown by Suchi?

Ans: 1. Due to presence of lone pair of electron?

2. Because methyl group is electron releasing group and increase electron density on nitrogen atom.
3. Due to resonance of lone pair of electron of nitrogen with benzene ring.
4. Knowledgeable and sincere.

AMINES

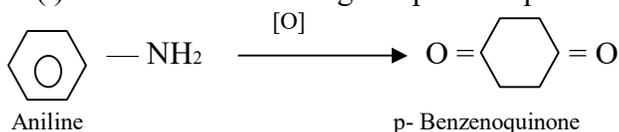
VALUE BASED QUESTIONS WITH ANSWERS

1. Due to high electron density in the benzene ring aromatic amines are susceptible to aerial oxidation. This oxidation produces coloured substance called quinines. The presence of one or more electron-donating groups such as -NH_2 , -OCH_2 , $\text{-OCH}_2\text{CH}_3$, etc. in the aromatic amine further increases their reactivity towards oxidation. To protect these amines from aerial oxidation, they are often stored in form of their salts such as hydrochlorides, sulphates, etc. This oxidation which is a disadvantage here is often useful in hair dyes which use aromatic primary amines as colouring material.

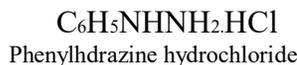
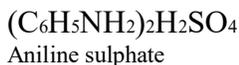
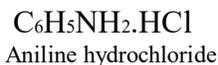
Now answer the following questions:

- (i) What is the oxidation product of aniline?
(ii) Name a few amines which are stored as their salts.
(iii) Name a few aromatic amines which are used in hair dyes.
(iv) What health problem is associated with the use of these dyes and how can it be checked?

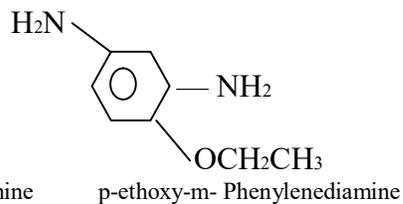
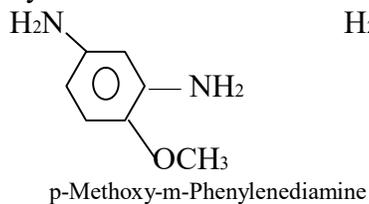
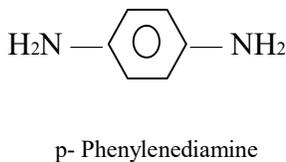
ANS: - (i) Oxidation of aniline gives p-benzoquinone which is yellow in colour



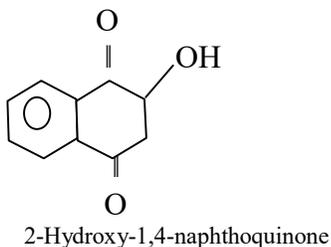
- (ii) Amines which are stored in form of their salts are



- (iii) Aromatic amines used in hair dyes are:



- (iv) These amines are susceptible to be carcinogens. Therefore, natural dye, Henna is used as a hair dye. However, the active constituent of henna is not an aromatic amine but is a quinone actually 2-hydroxy-1,4-naphthoquinone

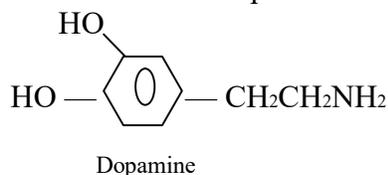


2. Both aliphatic and aromatic amines have diversified uses. The deficiency of some amines causes diseases. Some amines are used as medicine while some others are poisons. The quaternary salts of some amines are useful as surfactants/ detergents.

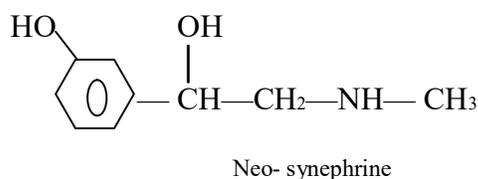
Now answer the following question:-

- (i) Name an amine whose deficiency in the body produces Parkinson's disease.
- (ii) Name a few amines which have been used as medicine.
- (iii) Name an amine which was used to kill the great philosopher, Socrates.
- (iv) Name a quaternary salt which is used as a detergent.

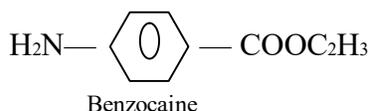
ANS: - (i) The deficiency of the amine called dopamine causes Parkinson's disease.



(ii) Neo-synephrine is used in nose sprays to reduce swelling in nasal membranes



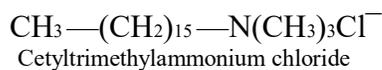
Benzocaine is used as a local anaesthetic agent.



Atropine, an alkaloid, is used as an anaesthetic which dilates the pupil of eye for examination. The alkaloid quinine is used for treatment of malaria.

(iii) The alkaloid conine, extracted from the bark of hemlock plant is extremely toxic. It was used to kill Socrates, the great philosopher of Athens

(iv) The quaternary salt, cetyltrimethylammonium chloride is a detergent



Being expensive, these detergents are quite extensively used as germicides rather than cleansing agents.

3. Aromatic amines react with nitrous acid at 273-278 K to produce diazonium salts which are widely used for preparation of a variety of aromatic compounds via substitution. They also couple with phenols/amines to form azo dyes which are used either as indicators or as dyes for fabrics.

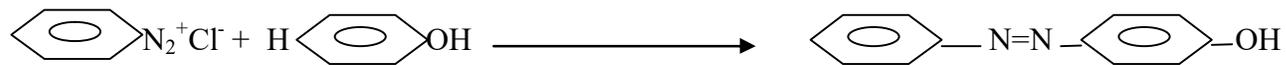
Now answer the following question:-

- (i) What are azo dyes?
- (ii) What is a coupling reaction?
- (iii) Write chemical equations for the azo dye produced when benzenediazonium chloride reacts with phenol and N, N-dimethylaniline.

ANS: - (i) Dyes containing --N=N-- bonds are called azo dyes.

(ii) The reaction of diazonium salts with phenols and amines to produce compounds of the type $\text{Ar}-\text{N}=\text{N}-\text{Ar}$ is called coupling reaction.

(iii) COUPLING REACTION: When Benzenediazonium Chloride is treated with phenol or aniline corresponding azo compounds are formed.



NUCLEIC ACIDS (VB) (4 Marks Question)

Q1 Dr Shivpal explains that Nucleic acid are biomolecules present in the nuclei of all living cells in the form of nucleoproteins. Nucleic acids play an essential role in transmission of the hereditary characteristics and in the biosynthesis of proteins. DNA and RNA are long chains of polymers in which the monomeric units are nucleotides which are made up of nitrogen-containing, heterocyclic base, a pentose sugar and a phosphoric acid. Each person's DNA is unique like fingerprints. Any cell such as skin, blood, semen, saliva etc. can supply the DNA sample for analysis.

i) What are the three types of RNA?

ii) What is DNA fingerprinting?

iii) Give uses of DNA fingerprinting?

iv) What values are shown by Dr Shivpal?

Ans i. a) m-RNA b) r-RNA c) t-RNA

ii. Every person has their own fingerprints. These occur at the tip of the fingers and have been used for identification of criminals. Likewise, a sequence of bases of DNA is also unique for the person and information regarding this is called DNA fingerprinting.

iii) Identification of criminals, Identification of parents, Forensic sciences etc.

iv) Application of knowledge, sharing of knowledge.

Q2 In 1985, a British chemist Alec Jeffreys developed a technique called DNA fingerprinting. We know that every individual has unique fingerprints. They appear as ridges on the tips of fingers and are used for identification of individuals. It is assured that every person has their own sequence of bases in DNA. It cannot match with that of any other person.

i) What is the full form of DNA?

ii) Why is the technique named as fingerprinting?

iii) Where is DNA fingerprinting used?

iv) What value is shown by Alec?

Ans: i) Deoxy ribose nucleic acid

ii) Every person has own fingerprints . These occurs at the tip of the fingers and have been used for identification of criminals . likewise a sequence of bases of DNA is also unique for the person and information regarding this is called DNA fingerprinting

iii) Forensic science ,identification of criminals etc.

iv)Scientific attitude, innovative &application of knowledge.

Q3 .In hospital a orthodox superstitious family was complaining about exchange of their baby boy with

Baby girl of another family .They were expecting a baby boy . Doctors counselled them about non discrimination of sex of infant and also denied possibility of such accident .

i)How will hospital administration convince them?

ii)How does DNA matching test help in identifying the parents?

iii)What values are shown by Doctors and hospital administration ?

iv)What should we do to prevent sexual discrimination in society?

Ans: i)By DNA testing or DNA finger printing

ii)Every individual has unique DNA

iii)Application of knowledge

iv)Awareness programmes ,rallies etc

TOPIC- PROTEIN AND VITAMINS

FOUR MARKS QUESTIONS (VALUE BASED)

Q1 Ravi visited to the ophthalmologist Dr.Rajeev as he is suffering from dryness in eyes from few days,Dr.Rajeev prescribed vitamin tablets to him and instructed Ravi to take green and colour pigmented vegetables and fruits.

On the bases of above passage answer the following questions-

- 1) Write the name of deficiency disease from which Ravi is suffering.
- 2) Which vitamin is to be prescribed by the Dr.Rajeev to Ravi?
- 3) Name any other deficiency disease caused by the deficiency of that vitamin?
- 4) Write one value associated with Dr.Rajeev?

Ans- 1) Ravi is suffering from-Xerophthalmia

- 2) Vitamin –A
- 3) Night blindness.
- 4) Caring.

Q2 Amit visited his friend kishan after travelling a distance of 100km by bus and got tired and hungry too, kishan boiled eggs for his friend,answer the following question after reading above lines-

- 1) Why after boiling inside of egg become solid.
- 2) Which nutrients are supplied by the egg to the human body?
- 3) Write two values shown by Kishan.

Ans- 1) Due to denaturation of protein.

- 2) Protein and Vitamins.
- 3) Helpful and caring.

Q3 Shanti a domestic helper of Mrs. Anita, fainted while cleaning the floor, Mrs.Anita immediately took her to the hospital where she is diagnosed to be severely anemic,doctor prescribed an iron rich diet and multivitamins supplement to her .

Reading above passage answer the following questions?

- 1) Name the vitamin which causes pernicious anaemia.
- 2) Give example of water soluble vitamin.
- 3) What values displayed by Mrs.Anita

Ans-1) Vitamin B₁₂

- 2) Vitamin C and B
- 3) Helpful and caring

Topic- Addition Polymers]

Value Based Questions

Q1- After watching a programme on TV, about the problem of disposal of carry home bags and packaging material, Ankit- a class XII student, suggested that instead of synthetic polymers carry home bags and packaging material used should be made up paper/cardboard.

After reading the above passage, answer the following questions:

- (i) Name the polymer used to make carry home bags and packaging material.
- (ii) What values are expressed by Ankit?
- (iii) Give the name, structure and one use of a biodegradable aliphatic polyester.

Answer -(i) Carry home bags and packaging material is made up of low density polythene.

(ii) Carry home bags are usually made up of low density polythene which is a non-biodegradable polymer and thus creates disposal problem. On the other hand, paper/cardboard is a natural biodegradable polymer which disintegrates by itself over a period of time either by enzymatic hydrolysis or by bacterial degradation or oxidation in the environment thereby saving the environment from getting polluted. Further, used paper or cardboard can be easily recycled.

(iii) The name of a biodegradable aliphatic polyester is : poly- β -hydroxybutyrate-co- β -hydroxyvalerate (PHBV). It is used in speciality packaging, orthopaedic devices and in controlled drug release

Q2- Sunita is of marriageable age. She wears spectacles. She is afraid that she may not find a suitable match. She discussed the problem with her friend Manisha who is a class XII student. Her friend suggested her to wear contact lenses.

After reading the above passage, answer the following questions:

- (i) What values are expressed by Manisha?
- (ii) Name the polymer used in making contact lenses.
- (iii) Besides contact lenses what are the uses of this polymer?

Answer -(i) Manisha expressed the values about looking attractive by wearing contact lenses.

(ii) Polymer used in making contact lenses is polymethyl methacrylate (PMMA).

(iii) It is prepared by free radical polymerization of methyl methacrylate.

(iv) Besides contact lenses, PMMA is used for manufacturing transparent domes, light shades, sign boards, transparent domes and sky domes, aircraft windows, dentures and plastic jewellery.

Q3- The medicines/drugs taken for treatment of different ailments are taken orally in form of suspensions, tablets or capsules. To have maximum effect of the medicine at the desired site in the body, capsules are used. Earlier these capsules were made up of starch which used to get hydrolysed partly in the mouth and largely almost immediately in the stomach. But these days, the capsules are made up of some biodegradable polymer which slowly gets hydrolysed to have the effect of the drug for a longer period.

Now answer the following questions:

(i) Write the name of biodegradable polymer used for making capsules.

(ii) What are the monomer units of this polymer?

(iii) Why does it produce desired therapeutic effect slowly?

(iv) What are the degradation products of this polymer?

Answer- i) The name of the biodegradable polymer is : poly- β -hydroxybutyrate-co- β -hydroxyvalerate (PHBV).

(ii) The monomer units are: 3-hydroxybutanoic acid and 3-hydroxypentanoic acid.

(iii) The polymer contains ester bonds which are hydrolysed slowly by the acid present in the stomach.

(iv) The hydrolysis products are the monomers which are oxidised in the blood to form CO_2 and H_2O .

VALUE BASED QUESTIONS

POLYMERS

Q.1. After the ban of plastic bags, students of one school decided to make the people of the harmful effects of plastic bags on environment and Yamuna river. To make the awareness more impactful, they organized a rally by joining hands with other school and distributed to vegetable vendor, shopkeeper and departmental store. All student pledge not to use polythene bags in future to save Yamuna river.

After reading the above passage, answer the following question

- a. What values are shown by the students?
- b. What are biodegradable polymers? Give one example.
- c. Is polythene a condensation or addition polymer?

Ans. a. Values of responsibility toward the environment and society.

b. Biodegradable polymers degrade by themselves within a definite time period by micro-organisms producing harmless hydrolysis and oxidation products.

Eg- nylon-2-nylon-6

c. Polythene is an addition polymer.

Q.2. During an accident, Ashay got a deep injury which requires stitching of wounds. Dr. Mahto attended him and the wound was stitched by self-dissolving stitches. He also counselled him to take care of the wound and his diet during his recovery.

Now answer the following question.

- a. Nylon thread should not be used for stitching of wounds. Why is it so?
- b. Suggest a suitable biodegradable polymer for this application.
- c. What values are displayed by Dr. Mahto?
- d. What happens to his biodegradable polymer in the body?

Ans. a. Nylon is non-biodegradable. After healing of wound, nylon thread must be pulled out. This process will cause pain to the patients.

b. A Copolymer Nylon-2-nylon-6 is the suitable biodegradable polymer for stitching of wounds.

c. The values displayed by Mr. Mahto is caring and sympathetic attitude .

d. Nylon-2-Nylon-6 undergoes degradation in the body to first generates monomers which then further oxidized to CO_2 and H_2O . Glycine maybe used in the synthesis of protein in the body.

Q.3. After being appointed as production incharge in a metal cookware manufacturing unit, Ms. Shephali recommended to coat the inner surface of the vessels by nonstick substance. She was awarded for her innovation by her CEO Mr. Khanna.

a. Which material was recommended by her as non stick substance?

b. Name the category to which this polymer belongs?

c. What values are displayed by Ms. Shephali and Mr. Khanna?

Ans

a. Teflon

b. Addition polymer

c. Values displayed by Ms. Shephali are application of knowledge and sincerity .

d. Values displayed by Mr. Khanna are recognition , appreciation and open mindedness.

CHAPTER 16 Chemistry in everyday life

4 MARKS QUESTIONS (value based questions)

1. On the occasion of world health day Dr. Suresh organized a 'health camp' for the poor farmers living in a nearby village. After checkup he was shocked to see that most of the farmers suffered from cancer due to regular exposure to pesticides and many were diabetic. They distributed free medicines to them. Dr. Satpal immediately reported the matter to the National Human Rights Commission (NHRC). On the suggestions of NHRC the government decided to provide medical care, financial assistance, setting up of super specialty, hospitals for treatment and prevention of the deadly disease in the affected village all over India.

(a) Write the values shown by [a] Dr. Suresh [b] NHRC.

Ans – kindness, helpful, social

(b) What type of analgesics is chiefly used for the relief of pains of thermal cancer?

Ans = Morphine

(c) Give an example of artificial sweetener that could have been recommended to diabetic patients?

Ans = Sachcharine

2. Seeing the growing cases of diabetes and depression among young children

Mr. Lugai, the principal of one reputed school organized a seminar in which he invited parents and principals. They all resolved this issue by strictly banning junk food in schools and introducing healthy snacks and drinks like soup, lassi, milk etc. in school canteens.

They all decided to make compulsory half an hour of physical activities for the students in the morning assembly. After 6 months Mr. Lugai conducted the health survey in most of the schools and discovered a tremendous improvement in the health of the students.

After reading the above passage, answer the following questions:-

(a) What are the values displayed by Mr. Lugai [at least two].

(b) As a student how can you spread awareness about this issue.

(c) What are anti-depressant drugs? Give an example.

(d) Name the sweetening agent used in the preparation of sweets for a diabetic patients.

Ans a. kindness , Helpful

b. by social media and by quiz competition

c. use in tension and in stress ex. Luminal

d. Sachcharine

3. Due to hectic and busy schedule Mr. Awasthi made his life full of anxiety and

tensions. He started taking sleeping pills to overcome the depression without consulting the doctor. Mr. Rai, a close friend of Mr. Awasthi advised him to stop taking sleeping pills and suggested to change his lifestyle by doing yoga, meditation and some physical exercise. Mr. Awasthi followed his friend's advice and after a few days he started feeling better.

After reading the above passage, answer the following questions:-

- (a) What are the values displayed by Mr. Rai [at least two]?
- (b) Why is it not advisable to take sleeping pills without consulting doctors?
- (c) What are tranquilizers? Give examples.

Ans a. social, helpful

b. sleeping pills may dangerous for health and may cause side effect in body

c. medicines use in relief stress and tension ex. = luminal