

Directorate of Education

Govt. of NCT of Delhi

Additional Support Material on Value Based Questions for the Session 2012-2013

Subject: Chemistry

Class : XII

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Addl. DE (School/Exam)

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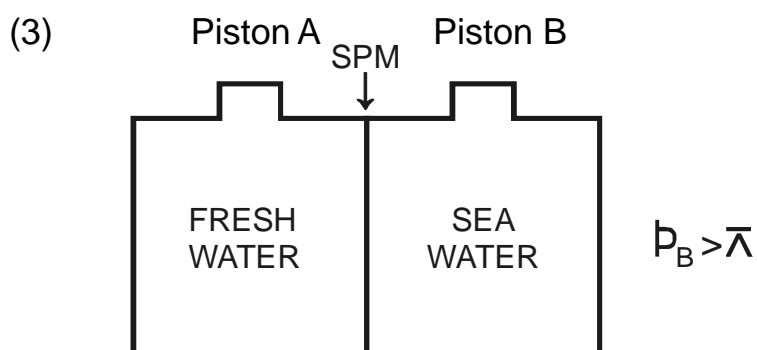
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VALUE BASED QUESTIONS IN CHEMISTRY FOR CLASS - XII

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.
- (2) Ram takes a open pan to cook vegetables at a hill station while shyam cook the same vegetables in a pressure cooker at the same place.
- (a) Explain with reason 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 food in the pressure cooker.



- a) Name the process observed when pressure on solution side is more than osmotic pressure.
 - (b) Write main use of this process.
 - (c) Mention the values associated with the above process.
- (4) Reena planted neem tree in school premisses and Meena planted Neem tree in marshy land near railway line.

- (a) Which student planted Neem tree correctly and why?
- (b) Name the chemical substances used to stop decay of such plants.
- (c) Mention the values by the plantation.
- (5) 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.
1. Write electrode reaction in H_2-O_2 fuel cell.
 2. How is green house effect reduced by the use of fuel cells?
 3. Write the values associated with preference of using fuel cells to fossil fuel.
- (6) 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?
- (7) 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.
- (a) In your opinion, why Ira insisted for Nickel-Cadmium battery? Give reasons
- (b) Write the values associated with above decision?
- (8) 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.
- (i) Mention the values associated with this decision.
 - (ii) Name the battery used for running the car.
 - (iii) Write the reactions taking place at the anode and cathode of battery.
- (9) Ajay, a student of chemistry, was performing chemical reaction between sodium thiosulfate and HCl. He found that time required to appear turbidity increases when concentration of HCl or sodium thiosulfates or both decreases.
- (a) Mention the reason for appearance of turbidity.

- (b) Write the chemical reaction involved.
 - (c) Mention the values associated with above experiment.
- (10) Smoke is colloidal solution of solid particles such as Carbon, arsenic compounds dust, etc. in air. Precipitation of smoke particles coming from the chimney of factories is carried out by Cottrell Precipitator and Carbon free air passes out through the chimney.
- (a) Name the principle used in the Cottrell Precipitator.
 - (b) How smoke precepitator causes precipitation and settling of smoke particles.
 - (c) Name the value learnt by the use of this Cottrell Precipitator.
- (11) While coming back from school, a student witnesses an accident on road. A person on bike had suffered injures due to skidding of bike. The student rushed to the aid of biker with the help of some people, the biker was taken to a nearby hospital. The student discovered that the bike skidded due to oil spilled on road. The student arranged for an old cloth and wiped the oil from the road.
- i) Mention the values shown by the student in the above case.
 - ii) The oil spill can also be washed with soap and water. Explain the cleaning action of soap.
- (12) Chlorofluorocarbons (CFC) and gas emitted from the exhaust system of supersonics aeroplanes might be slowly depleting the concentration of the ozone layer in the upper atmosphere.
- (a) Name the gas emitted by the exhaust of supersonic jet aeroplanes.
 - (b) write the chemical reactions involved in the ozone layer depletion.
 - (c) Mention the values that are learnt by the students in this depletion of ozone layer.
- (13) A student accidentally spills concentrated H_2SO_4 on his hand. Before the teacher gets to know, his friend washed his hands with water and also with soap but the burning sensation on hand was still going on. The friend then rubs solid sodium bicarbonate on his hand and then washed with water, finally the burning sensation is releived.
- (i) Mention the values shown 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.
- (14) Ramu, a caretaker of swimming pool was using chlorine for disinfecting swimming pool water. His friend Jagat an 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.
- (15) A trainee pilot was flying his plane in stratosphere. His senior advised him not to fly the aeroplane in the stratosphere.
- (a) In your opinion, why the senior pilot advised his trainee pilot not to fly his plane in the strostosphere.
- (b) Write the possible chemical reaction.
- (c) Mention the values associated with your reply.
- (16) During world war II, mustard gas was used to kill innocent people by Adolf Hitler, though science should always be used for betterment of human race.
- (i) Write the formula of mustard gas.
- (ii) Name the value obtained from the above mentioned paragraph.
- (17) Police usually disperse the indisciplined mob by using tear gas shells. One of the person in the mob advised the people either to use water wetted cloth on eyes or to avoid the smoke
- (i) Write the chemical formula of compound used in tear gas and reaction involved.
- (ii) Write the value involved as advised by one person present in the mob.
- (18) Recently a blanket ban is imposed on use of any kind of ploythene bags in Delhi. Polythene is supposed to be non-biodegradable and creates an environmental garbage but some poythene manufacturing units opposed this decision.
- (i) Which value is missing in the polythene manufacturing traders?
- (ii) Name one important catalyst used in the manufacturing of polythene.
- (iii) Write the chemical formula of polythene, polypropylene and PVC.

- (19) Recently Delhi Police launched a special drive to curb the crimes and accidents related to “Drunken-Driving” An instrument known as “Alcometer” is used to test whether a driver has consumed alcohol or not.
- (i) Write the name and chemical formula of the compound used in alcometer.
 - (ii) By preventing alcohol drinking during driving. Name the value, which Delhi Police tries to inculcate in drivers and general public.
 - (iii) Write the chemistry involved in the above test.
- (20) A group of students was smoking cigarettes in college premises. A social activist, noticed and advised them not to smoke as smoking is injurious to health.
- (i) By forbidding them not to smoke, which value social activist want to be inculcated among the youth.
 - (ii) As a chemistry student, write the name of “Alloy” used in lighter’s flint.
 - (iii) Mention diseases caused by smoking.
- (21) In a terrorist activity in the Mumbai nearly ten persons were killed and 50 injured due to continuous showering of bullets on them by terrorists. A group of persons rushed to the spot immediately and helped the injured to reach the nearby hospital.
- (i) Which kind of value is reflected by these persons by doing this?
 - (ii) Which alloy is used in the preparation of bullet?
- (22) It is a general belief that we should not come out of the house to see “Solar Eclipse” because it can have evil impact on life but nowadays educated people allow their children to see solar eclipse, treating it as a natural science phenomenon, but children are advised to see them by U.V. protected sun glasses (crooke’s lenses) to avoid harmful impact of UV light on eyes.
- (i) Write the name of transition metal oxide used in making U.V protected lens.
 - (ii) By allowing the children to see solar eclipse using U.V. protected lens which value the educated people trying to inculcate in the children.
 - (iii) Which rays are present in the light which can damage the eye while viewing solar eclipse with naked eye.
- (23) Hard water does not form leathers 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.
- (24) A lot 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.
- Name the ligand (compound) used for treatment of Lead poisoning.
 - During this rescue operation which values are shown by NGO's activists?
 - Write the reaction involved for removal of lead from living organism.
- (25) Cancer is not a communicable disease. It occurs due to unlimited growth of body cells leading to tumours. We should shake hand, eat together with people suffering from cancer. These activities boost up the confidence in them for living.
- Write the name of coordination compound used as a chemotherapeutic agent to curb the growth of tumours.
 - By showing such attitude to cancer patients, mention the values reflected by us.
- (26) Ravi Prasad, a farmer has 25 acres of land. He noticed some infection on the leaves of his crops. He called his friend Raghav, who advised him to use DDT. However, Ravi Prasad preferred to use dry powder of neem leaves as an insecticide.
- Mention reason why Ravi Prasad prefer using neem powder?
 - In your opinion, who took right decision?
 - Write values associated with above decision?
- (27) A manufacturer dealing in A.C plant was using Freon-12 in his AC plant. His friend Raju, who also deals in similar business, was using liquid ammonia in place of Freon-12.
- In your opinion, Who is using right compound in refrigeration plants.
 - Mention values associated with above opinion.
- (28) In a locality a large number of people fell ill after drinking liquor sold by a local vender. Many people started vomiting, some shouted that they are not able to see properly and some others went unconscious. Ram's father also

suffered from severe stomach ache after consuming liquor. Everyone in Ram's family peaked. Neighbours family was also weeping loudly. Ram calmed down his mother and helped her to call ambulance for his father and also for other people. They also informed the police about the incident.

- (i) Mention the values shown by Ram.
 - (ii) Write the probable cause of poisoning by liquor.
 - (iii) Write the reaction showing the conversion of ,mollases to Ethyl alcohol using yeast.
- (29) Some students enter the chemistry lab for doing practical. Some students are not serious about learning and want to create trouble. They remove the lables from two bottles containing methanol and dimethyl ether. Mohan approaches the teacher and informs about the incident.
- (i) Mention the values shown try Mohan.
 - (ii) If the teacher asks the some students to perform chemical test to identify methanol and demethyl ether, write the reaction involved for the test.
- (30) An owner of a paint company who was using ethanol as solvent noted that his stock of ethand was misused by his employee.
- To prevent this misuse, he decided to add small amount of a bule colour compound (A) and another nitrogen containing heterocyclic base (B) which gives a foul smell to alcohol.
- (a) Do you think that he took right decision?
 - (b) Write the names of compound A& B ? Name process of adding compound A & B to ethanol ?
 - (c) Mention the values associated with above decision.
- (31) Arpita wanted to buy vanilla ice cream from a local ice cream vendor. Her friend Amita told her that these vendor use synthetic chemical compound vanillin whose flavor is similar to that of vanilla. They decided not to buy such ice creams.
- (i) Write the Chemical formula and IUPAC name of vanillin.
 - (ii) Write values that are associated with above decision.
- (32) Kabir is fond of eating too much of chowmein loaded with cabbage leaves. At the age of fifteen his teeth got rotten and he started complaining of severe headache. His mother took him to a doctor who after examining found that Kabir is suffering from neurocysticercosis, a mental disease caused

by larvae of tape worm.

After reading the above paragraph, answer the questions.

- (a) Name the chemical substance responsible for damaging Kabir's teeth.
 - (B) Is there any link between eating of too much of chowmein and his headache.
 - (c) Mention the values conveyed by above paragraph.
- (33) Sushil's friend want to play Holi with synthetic colours, eggs, muddy water etc. Sunil persuades his friends to play Holi with natural colours. He reminds them that last time one of their friends had developed skin allergy after playing Holi with synthetic colours. It took him a long time to recover. Sushil's friends agreed and prepared natural colours using leaves and flowers.
- (i) Mention the values shown by Sushil.
 - (ii) Write the names and reaction of preparation of two azo dyes (synthetic)
 - (iii) Write the name of two pigments present in natural colours.
- (34) Nita's mother fell ill and the doctor diagnosed her with pernicious anemia. She felt lethargic and did not have the energy to do work. Nita helped her mother in household work till she recovered.
- (i) Name the vitamin whose deficiency caused pernicious anemia.
 - (ii) Name the sources which will provides this vitamin.
 - (iii) Mention the values shown by Nita.
- (35) Two shopkeepers are using LDP (Low Density Polythene) and HDP (High density Polythene) polymers for packing of materials.
- (i) Name the ploythene preferred for packaging.
 - (ii) Name the catalyst used in the synthesis of HDP.
 - (iii) Mention the values associated with the use of a specific polymer.
- (36) PHBV (Poly-B-Hydroxybutyrate-Co- β -hydroxy valerate) is a biodegradable polymer. It is a copolymer of 3-hydroxy valerate acid and 3-hydroxy pentanic acid.
- (a) How PHBV has found utility in medicines as Capsule?
 - (b) Write the name of polymer used in artificial limb popularly known as Jaipur foot.

- (c) Mention the values associated with the use of such polymers.
- (37) In a school, lot of emphasis is given to the 3R principle of Reduce, refuse and Recycle. The students observe their teachers following it and they are made to follow it in school. Rita also follows at home and always tries to save paper. She also keeps waste paper and waste items separately so that they be sent for recycling. She does not use plastic bags and takes a jute bag with her while going to the market.
- Mention the values shown by Rita.
 - If the jute bag is made of cellulose polymer, and name the monomer.
 - Name the chemical substance used in cotton, Jute and Rayon fibre.
- (38) In order to wash clothes with water containing dissolved calcium hydrogen carbonate, which cleansing agent will you prefer and why, soap or detergent? Give one advantage of soap and synthetic detergent.
- Mention the values associated with the use of soap.
 - Name the chemical used in shaving soaps.
- (39) Rama's younger brother is suffering from cold, caught and fever. Rama's father did not take him to the doctor and wanted to give medication on his own. Rama tells her father that he should not give medicines to her brother on his own but should take him to a doctor.
- (/8) Mention the values shown by Rama?
- Why should not medicines be taken without consulting doctors?
 - While antacids and antiallergic drugs interfere with the action of histamines, why do these not interfere with the function of each other?
- (40) Ravi observed that his classmate Manish was showing a change in behaviour over some time, Manish stayed aloof, did not mix with friends and had become easily irritable. He avoided going to any type of get-together also. Ravi shares his concerns with his class teacher who has also observed these things about Manish. The teacher calls Manish's parents and advise them to consult a doctor. Doctor prescribes antidepressant drugs for him.
- Name the antidepressant drugs? How are they classified. Give examples of each class.
 - Mention the values shown by Ravi.

(41) Harish was feeling headache. His friend Vikram observed that Harish had fever. He advises him to take two tablets of flaxin-200 mg

- (a) In your opinion, is it right to take medicine as per your friend's advice?
- (b) Give reasons for your reply.
- (c) Write values associated with his friend's decision.

(42) Rajni asked her maid to prepare halwa for her diabetic mother-in-law. Her maid added sugar-free tablet containing two amino acids in the boiling contents. Rajni scolded her maid for this action.

Q. In your opinion, why did Rajni do so?

Q. Mention values associated with your opinion.

(43) A laundry engaged in washing clothes has been pouring waste water directly into the river. Over a period of time, it was found that a large number of fish were dying in the river.

Q. Mention the reasons for the above problem. Can it be avoided?

Q. Mention values associated with the above situation.

VARIOUS VALUES ASSOCIATED

- 1 Critical thinking and self awareness.
- 2 Energy conservation
- 3 Water conservation
- 4 Environmental conservation
- 5 Environmental conservation
- 6 Environmental conservation
- 7 Environmental conservation
- 8 Environmental conservation
- 9 Critical thinking & problem analysis
- 10 Environmental conservation
- 11 Social responsibility
- 12 Environmental conservation
- 13 Inclusion and dignity of individual
- 14 Self awareness and decision making
- 15 Critical thinking and decision making
- 16 Dignity of individual

- 17 Social responsibility and social justice
- 18 Environmental conservation
- 19 Appreciation of cultural values and dignity of individual
- 20 Interplay of different cultures.
- 21 Principle of equality and social justice
- 22 Scientific attitude
- 23 Water and Environmental conservation
- 24 Dignity of individual
- 25 Self awareness
- 26 Environmental conservation
- 27 Environmental conservation
- 28 Social justice, awareness, respect for diversity
- 29 Inclusion
- 30 Critical thinking and decision making.
- 31 Self awareness, critical thinking.
- 32 Self awareness, dignity of individual.
- 33 Environmental conservation, respect of multireligious and multicultural country.
- 34 Self awareness.
- 35 Environmental conservation
- 36 Dignity of individual
- 37 Environmental conservation
- 38 Environmental conservation
- 39 Self awareness and dignity of individual
- 40 Principle of equality and social justice
- 41 Critical thinking
- 42 Self awareness
- 43 Environmental conservation