

ASSIGNMENT FOR THE SESSION 2013-2014

Class: X

Subject : Science & Tech.

Assignment No. 3

Section – A : Physics

- 1) The radius of curvature of a convex mirror used on a moving automobile is 2 m. A truck is coming behind it at a distance of 3.5 m. Calculate the position, the size of the image relative to the size of the truck. What will be the nature of the image?
- 2) An object of 5cm in size is placed at a distance of 20cm from a concave mirror of focal length 15cm at what distance from the mirror, should a screen be placed to get the sharp image, also calculate size of the image
- 3) a) Plane mirror has a magnification +1. What does it mean ?
b) Under which condition the concave mirror has magnification -1.
- 4) a) Without touching how can you differentiate concave mirror, convex mirror. If yes what is the difference them?
b) Is virtual image formed by a plane mirror, convex mirror and concave mirror? If yes what is the difference between them?
- 6) Draw the ray diagram of the image formation by concave and convex mirror and lens (all position).
- 7) What is myopia and hypermetropia. What is reason and cause? How it is being corrected?
- 8) Physics teacher was explaining to his student in class that our eyes can live even after our death .He told them by donating our eye after we die, One pair of our eyes can give vision to two corneal blind people. Eye donor may belong to any sex or age group. People suffering from diabetes, hypertension, asthma or any other non-communicable diseases can donate eyes. Eye banks have been established for this purpose, where you can pledge to donate your eyes after your death.
 - a) Can people who have been using spectacles or those who have been operated for cataract donate their eyes?
 - b) Why is the pledge necessary?
 - c) Do you intend to make such a pledge, why?

Section – B : Chemistry

1. How would you distinguish experimentally between an alcohol and a carboxylic acid?
2. What happens when:
 - a) ethanoic acid reacts with sodium carbonate
 - b) ethanoic acid reacts with ethanol
3. Explain the mechanism of the cleansing action of soap.
4. Nitrogen and phosphorus belongs to group 15 of the periodic table .Write the electronic configuration of these two elements .Which of these will be more electronegative and why ?
5. How can we account for the gradation in the properties of the following
 - a) metallic character across the period
 - b) valency in a group
 - c) atomic size across the period
6. An element placed in 2nd group and 3rd period of the periodic table burns in the presence of oxygen to form a basic oxide.
 - a) Identify the element.

- b) Draw the electron dot structure for the formation of this oxide
- c) Write the balanced equation when it burns in the presence of air and when this oxide is dissolved in water

7. Value Based Question :

A Chemical bond is an attractive force that holds the atoms together in a molecule or a compound .The element carbon is known to have the unique ability to form bonds with other elements or with similar atoms .This property of carbon has resulted in having very large no. of compounds. The carbon carbon bond is known to be strong and stable .Answer the following question –

- a) Which two values are reflected in the nature of carbon resulting in its ability to form maximum no. of compounds?
- b) How can these values be helpful in strengthening the relationship in a family or in an organization?

Section – C : Biology

1. Explain the process of fertilization in angiosperms. Write in brief about the post fertilization changes taking place in a flower.
2. Explain the determination of sex in human beings with the help of a scheme.
3. Describe the method by which traits are expressed.
4. What is meant by chemical basis of heredity?
5. Depict and interpret your result of a dihybrid cross in the light of Mendelian laws of inheritance with respect to any two characters found in pea plants.
6. What is the difference between the food habits of organisms belonging to the first and third trophic level ? Give one example of each of the organisms belonging to these trophic levels.
7. Explain why the flow of energy in a biosphere is said to be unidirectional .
8. State causes and effects of depletion of ozone layer in the atmosphere.
9. What is acid rain? Mention two harmful effects of acid rain.
10. Explain how does the flow of energy occur between various components of environment.
11. Value Based Question :

You are walking by a store along with your friend. Both of you see a poster on the wall saying 'Say No to Plastics'. Your friend disagrees with the content of the poster and recounts the uses and advantages of plastic. You contradict him saying that plastics are harmful to environment.

- a) Which values are being disrespected by your friend by not agreeing with you?
- b) How will you convince him that plastics are harmful to the environment?
- c) Government has banned the use of plastics and has asked to use paper bags or jute bags instead. How will you get the decision implemented effectively?

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