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CBSE 10th Science 2017 Solved Paper Delhi Board

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CBSE 10th Science 2017 Solved Paper Delhi Board

TIME - 3HR. | QUESTIONS - 36

THE MARKS ARE MENTIONED ON EACH QUESTION

SECTION - A

Q.1. Write the molecular formula of first two members of homologous series having functional group -Cl. 1 mark

Ans. The general formula for the homologous series of functional group -Cl is $C_nH_{2n+1}Cl$.

The two consecutive members of this series are:

- a. CH_3Cl (Chloromethane)
- b. CH_3CH_2Cl (Chloroethane)

where n is 1 and 2 respectively

The molecular formula for both of them are CH_3Cl and C_2H_5Cl .

Q.2. Name the method by which Spirogyra reproduces under favourable conditions. Is this method sexual or asexual? 1 mark

Ans. Under favourable conditions, Spirogyra reproduces by a process known as fragmentation. This is an asexual method of reproduction.

Q.3. What is an ecosystem? 1 mark

Ans. An ecosystem is a self sustaining system where biotic and abiotic organisms of various communities interact with each other. Ponds, forests, grasslands, etc are a few examples of ecosystem.

Q.4. An object is placed at a distance of 30 cm in front of a convex mirror of focal length 15 cm. Write four characteristics of the image formed by the mirror. 2 marks

Ans. Four properties of the image formed by the given convex mirror are:

- (i) Image is always erect
- (ii) Small in size
- (iii) Virtual
- (iv) Always forms behind the mirror between focus and pole.

Q.5. What is sustainable management? Why is reuse considered better in comparison to recycle? 2 marks

Ans. Sustainable management is a resource management technique which aims to conserve the resources, use them efficiently and avoid their misuse for individual purposes such that they are conserved for the future.

Reuse is better than recycle because of the following reasons:

1. Recycling needs some processes to use the same material again.
2. Reuse saves energy by using material again without any changes.
3. Reuse prevents environmental pollution by not creating any waste.
4. Reuse saves cost as same material is used again without any process.

Q.6. Management of forest and wild life resources is a very challenging task. Why? Give any two reasons. 2 marks

Ans. Management of the forest and wildlife resources is considered as a challenging task because:

1. There are many stakeholders of forest. They are those people who are directly or indirectly involved in forest. Management of forest and wildlife has to take into account the interests of all these stakeholders which become a challenging task.
2. Industries would consider the forest as merely a source of raw material for its factories and huge interest-groups lobby the government for access to these raw materials at artificially low rates which further poses a challenge to manage the forest and wildlife resources.

Q.7. Two carbon compounds X and Y have the molecular formula C_4H_8 and C_5H_{12} respectively. Which one of these is most likely to show addition reaction? Justify your answer. Also give the chemical equation to explain the process of addition in this case. 3 marks

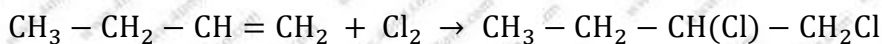
Ans. Compound X has the molecular formula = C_4H_8 (C_nH_{2n} , alkene)

Compound Y has the molecular formula = C_5H_{12} (C_nH_{2n+2} , alkane)

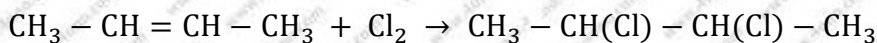
C_4H_8 is unsaturated hydrocarbon, i.e. alkene (butene) and C_5H_{12} is a saturated hydrocarbon, i.e. alkane (pentane).

Saturated compounds undergo substitution reaction.

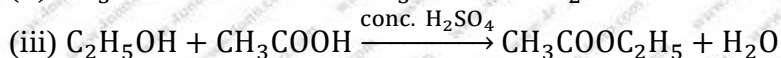
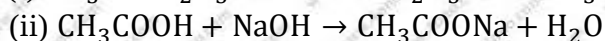
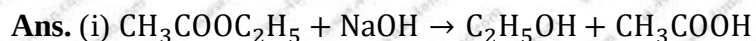
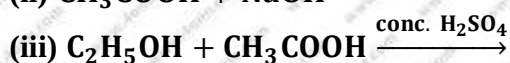
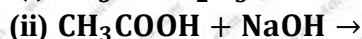
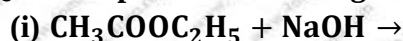
Unsaturated compounds undergo addition reaction at the multiple bonds. For example, 1-butene and 2-butene will add a chlorine molecule (Cl_2) to form 1,2-dichlorobutane and 2,3-dichlorobutane, respectively. The reaction will be:



Or



Q.8. Complete the following chemical equations: 3 marks



Q.9. Write the names given to the vertical columns and horizontal rows in the Modern Periodic Table. How does the metallic character of elements vary on moving down a vertical column? How does the size of atomic radius vary on moving left to right in a horizontal row? Give reason in support of your answer in the above two cases. 3 marks

Ans. In the Modern Periodic Table, there are 18 vertical columns known as Groups and 7 horizontal rows known as Periods.

As we move down the group, the electrostatic attraction between the nucleus and the outer-most electron decreases due to increase in the distance between them. This happens because, on moving down the group, a new shell is added. So the valence electron can be easily lost by the element. As we know, metallic character is characterised by the ease of loss of an electron, thereby, metallic character increases on moving down a group in the Modern Periodic Table.

When we move across a period, the number of electrons in the same shell increases. This leads to greater electrostatic attraction between the nucleus and the outer-most electron. This increased attraction pulls the outer-most electron closer to the nucleus, thereby decreasing the atomic size.



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