Model Question Paper

Carbon and its Compounds (C) - Part II

10th Standard

Science

Reg.No. : | | | | | | |

I.Answer all the questions.
II.Use blue pen only.
III.Question number 15 is compulsory

Time : 01:00:00 Hrs

Total Marks : 60

Part-A

5 x 1 = 5

1) Assertion: Chemical bonds in organic compounds are covalent in nature. Reason: Covalent bond is formed by the sharing of electrons in the bonding atoms. Does the reason satisfy the given assertion?
2) Assertion: Diamond is the hardest crystalline form of carbon. Reason: Carbon atoms in diamond are tetrahedral in nature (Verify the suitability of reason to the given Assertion mentioned above)
3) Assertion: Due to catenation a large number of carbon compounds are formed. Reason: Carbon compounds show the property of allotropy. Does the reason hold good for the given Assertion?
4) Out of ketonic and aldehydic group, which is the terminal functional group?
5) Acetic acid is heated with Na_2CO_3 in a test tube. A colourless and odourless gas (X) is evolved. The gas turns lime water milky. Identify X.

Part-B

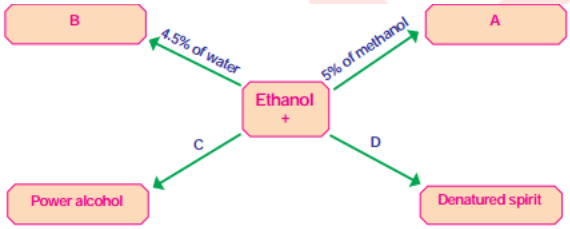
4 x 2 = 8

6) Rewrite the following choosing the correct word from each pair given in brackets: The hydrocarbons containing at least one carbon to carbon _____ (double/ triple) bond are called _____ (alkenes / alkynes). They have the general formula C_nH_{2n}.These were previously called _____(olefins/paraffins). When this compound is treated with _____(bromine/lime) water, decolourisation occurs because it is _____(saturated/unsaturated).
7) Identify the compounds using the clues given below: i) This is a dark coloured syrupy liquid containing 30% of sucrose. ii) During manufacture of ethanol this is added as food for yeast. iii)This enzyme converts sucrose into glucose and fructose. iv) This compound contains 95.5% ethanol and 4.5% water. v) This compound contains 100% pure alcohol.
8) Read each description given below and say whether it fits for ethanol or ethanoic acid. i) It is a clear liquid with a burning taste. ii) It is used to preserve biological specimens in laboratories. iii) It is used to preserve food and fruit juices. iv) On cooling, it is frozen to form ice flakes which look like a glacier.
9) Match these words /sentences with appropriate statements given below: (methanol, fermentation, catenation, homologous series, hydrogen gas) i) The ability of carbon to form large number of compounds through self linking property. ii) Alcohols react with sodium to give this element. iii) This series helps in giving knowledge and enables systematic study of members. iv) Formation of simple molecules from complex organic compounds using enzymes. v) Unlike ethanol, the intake of this compound in very small quantities can cause death.

Part-C

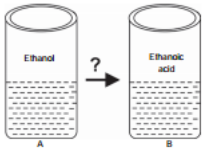
7 x 5 = 35

10) i) Identify A & B.

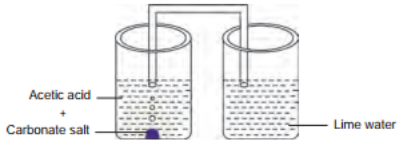


ii) Convert ethanol into power alcohol. Mention one of its uses. iii) What should be added to obtain denatured spirit? iv) Give one use of denatured spirit.

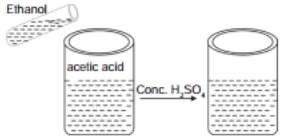
11) Write a balanced equation using the correct symbols for these chemical reactions: i) Action of hydrogen on ethene in the presence of nickel catalyst. ii) Combustion of methane evolving carbondioxide and water. iii) Dehydrogenation of ethanol. iv) Decarboxylation of Sodium salt of ethanoic acid.
12) Look at the picture and identify what happens. Support your answer with equations .i) How is B formed from A ?



ii) What happens when acetic acid is treated with carbonate salt. Name the gas produced. What happens when this gas is treated with lime water?



iii) What happens when acetic acid is treated with ethanol in the presence of concentrated H_2SO_4 ? Give the equation.



13) Organic compounds ‘A’ and ‘B’ are the isomers with the molecular formula C_2H_6O. Compound ‘A’ produces hydrogen gas with sodium metal, whereas compound ‘B’ do not. Compound ‘A’ reacts with acetic acid in the presence of concentrated H_2SO_4 to form compound ‘C’ with a fruity flavour. What are the isomers ‘A’, ‘B’ and the compound ‘C’?

14) Organic compound ‘A’ of molecular formula C_2H_6O liberates hydrogen gas with sodium metal. ‘A’ gives ‘B’ of formula $C_4H_{10}O$, when it reacts with concentrated H_2SO_4 at 410K. At 440K with concentrated H_2SO_4 ‘A’ gives compound ‘C’ of formula C_2H_4 . This compound ‘C’ decolourises bromine water. What are ‘A’, ‘B’ and ‘C’?

15) a) Organic compound ‘A’ of molecular formula $C_2H_4O_2$ gives brisk effervescence with sodium bicarbonate solution. Sodium salt of A on treatment with soda lime gives a hydrocarbon ‘B’ of molecular mass 16. It belongs to the first member of the alkane family. What are ‘A’ and ‘B’and how will you prepare ‘A’ from ethanol?

(OR)

b) (i)Ethanoic acid reacts with ethanol in the presence of concentrated H_2SO_4 (a) Name the organic product formed. (b)Give the name of the reaction. (c)what is the role of H_2SO_4 in the above reaction? (ii) The molecular formula of an organic compound is CH_3COOH (a)Write the IUPAC name of this compound (b)Give one use of this compound.

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