



CHEMISTRY

BOOKS - SUPER COMPANION MADE EASY

CARBON AND ITS COMPOUNDS

Text Book Questions

1. What would be the electron dot structure of carbon dioxide which has the formula CO_2 ?



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2. What would be the electron dot structure of a molecule of sulphur which is made up of eight atoms of sulphur ? (Hint-the eight atoms of sulphur are joined together in the form of a ring.)



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3. How many structural isomers can you draw for pentane?



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4. What are the two properties of carbon which lead to the huge number of carbon compounds we see around us?



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5. What will be the formula and electron dot structure of cyclopentane?



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6. Draw the structures for the following compounds.

Ethanoic acid



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7. Draw the structures for the following compounds.

Bromopentane



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8. Draw the structures for the following compounds.

Butanone



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9. Draw the structures for the following compounds.

(i) Ethanoic acid

(ii) Bromo pentane

(iii) Butanone

(iv) Hexanal

Are structural isomers possible for bromopentane?



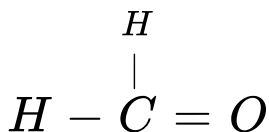
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10. How would you name the following compounds?



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11. How would you name the following compounds?



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14. A mixture of oxygen and ethyne is burnt for welding. Can you tell why a mixture of ethyne and air is not used?



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15. How would you distinguish experimentally between an alcohol and a carboxylic acid?



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16. What are oxidising agents ?



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17. Would you be able to check if water is hard by using a detergent?



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18. People use a variety of methods to wash clothes, Usually after adding the soap, they

'beat' the clothes on a stone or beat it with a paddle scrub with a brush or the mixture is agitated in a washing machine. Why is agitation necessary to be clean clothes?



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Text Book Exercise Questions

1. Ethane with the molecular formula C_2H_6 has

A. 6 covalent bonds

B. 7 covalent bonds

C. 8 covalent bonds

D. 9 covalent bonds

Answer:



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2. Butanone is a four-carbon compound with the functional group

A. Carboxylic acid

B. Aldehyde

C. Ketone

D. Alcohol

Answer:



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3. While cooking, if the bottom of the vessel is getting blackened on the outside, it means that

A. the food is not cooked completely

B. The fuel is not burning completely

C. The fuel is wet

D. The fuel is burning completely

Answer:



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4. Explain the nature of the covalent bond using the bond formation in CH_2Cl



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5. Draw the electron dot structures for

Ethanoic acid



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6. Draw the electron dot structures for

H_2S



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7. Draw the electron dot structures for

Propanone



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8. Draw the electron dot structures for

F_2



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9. What is a homologous series? Explain with an example.



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10. How can ethanol and ethanoic acid be differentiated on the basis of their physical and chemical properties?



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11. Why does micelle formation take place when soap is added to water? Will a micelle be formed in other solvents such as ethanol also?



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12. Why are carbon and its compounds used as fuels for most applications?



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13. Explain the formation of scum when hard water is treated with soap



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14. What change will you observe if you test soap with litmus paper (red and blue)?



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15. What is hydrogenation? What is its industrial application?



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16. Which of the following hydrocarbons undergo addition reactions:

– $2H_6$, C_3H_8 , C_3H_6 , C_2H_2 and CH_4



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17. Give a test that can be used to differentiate chemically between butter and cooking oil.



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18. Explain the mechanism of the cleaning action of soaps.



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Additional Questions

1. Which of the following is an odd compound?

A. Ethene

B. Ethane

C. Propene

D. acetylene

Answer:



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2. Which one of the following is an unsaturated hydrocarbon?

A. Acetylene

B. butane

C. Propane

D. decane

Answer:



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3. Major constituent of LPG is

A. Ethane

B. propane

C. pentane

D. butane

Answer:



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4. Who prepared urea the first time by heating ammonium cyanate ?

A. Wohler

B. Lavoisier

C. Fuller

D. Haber

Answer:



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5. Butanone is a four-carbon compound with the functional group

A. Carboxylic acid

B. Aldehyde

C. Ketone

D. Alcohol

Answer:



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6. Pentane has the molecular formula C_5H_{12} .

It has

- A. 5 covalent bonds
- B. 12 covalent bonds
- C. 16 covalent bonds
- D. 17 covalent bonds

Answer:



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7. Vinegar is solution of

A. 50%- 60% acetic acid in alcohol

B. 5%- 8% acetic acid in alcohol

C. 5% - 8% acetic acid in water

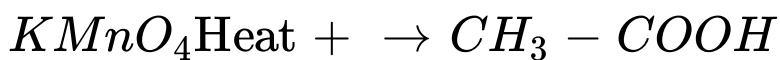
D. 50% - 60% acetic acid in water

Answer:



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8. $CH_3 - CH_2 - OH$ + Alkaline



In the above given reaction, alkaline $KMnO_4$ acts as

- A. Reducing agent
- B. oxidising agent
- C. catalyst
- D. dehydrating agent

Answer:



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9. How many electrons are there in the outermost orbit of carbon?

A. Two

B. Three

C. One

D. Four

Answer:



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10. Hydrocarbons are mainly composed of which of these?

A. Hydrogen and carbon

B. Hydrogen

C. Hydrogen oxygen and carbon

D. Hydrogen, carbon and nitrogen

Answer:



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11. How many covalent bonds are there in methane?

A. Four

B. Three

C. Two

D. One

Answer:



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12. Ethanol is also known as which of these?

A. Ethyl alcohol

B. Ethane

C. Acetaldehyde

D. Formic acid

Answer:



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13. Ethanoic acid is also known as which of these?

A. Acetic acid

B. Formic acid

C. Citric acid

D. Nitric acid

Answer:



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14. Which of these is not an organic acid?

A. Nitric acid

B. Formic acid

C. Acetic acid

D. Tartaric acid

Answer:



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15. Soaps are esters of which type of acids?

A. Inorganic acid

B. Acetic acid

C. Formic acid

D. Fatty acid

Answer:



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Short Questions

1. What is hydrolysis?



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2. What is Dehydrogenation ?



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3. What is Decarboxylation ?



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4. What is the difference between Cracking and Pyrolysis ?



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5. How can you check which one is saturated butter or vegetable oil?



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6. What is meant by the term 'functional group' ?



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7. A compound X has molecular formula C_3H_4
One mole of X reacts with 2 moles of hydrogen to yield a compound Y. Deduce the structure of X and Y



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Long Questions

1. A piece of black electrode used in dry cells on strong heating in air gave a colourless gas which turned lime water milky. What was the material of the electrode?



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2. Graphite and diamonds are the allotropes of carbon. Graphite conducts electricity but not diamond. Why so ?



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3. Mention the uses of ethanol.



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4. How are the molecules of aldehyde and ketone structurally different?



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5. A hydrocarbon molecule contains 4 hydrogen atoms. Give the molecular formulas if it is an

Alkane



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6. A hydrocarbon molecule contains 4 hydrogen atoms. Give the molecular formulas if it is an

alkene





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7. A hydrocarbon molecule contains 4 hydrogen atoms. Give the molecular formulas if it is an alkyne



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8. Organic compound of molecular formula $C_2H_4O_2$ gives brisk effervescence with sodium

bicarbonate. Give the name and molecular formula with a balanced equation



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9. What is a homologous series? Explain with an example.



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10. Explain the mechanism of the cleaning action of soaps.



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11. What is hydrogenation? What is its industrial application?



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Higher Order Thinking Questions

1. Why are carbon and its compounds used as fuels for most applications?



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2. Common salt is added in soap making.

Reason?



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3. Why does micelle formation take place when soap is added to water? Will a micelle be formed in other solvents such as ethanol also?



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4. Why is Ethanoic acid called a glacial acetic acid?



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5. Common salt is added in soap making. Reason?



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6. Alkanes cannot dissolve in water but are soluble in organic solvent. Reason?



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7. How can ethanol and ethanoic acid be differentiated on the basis of their physical and chemical properties?



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8. A compound works well with hard water. It is used for making shampoos and products for cleaning clothes. 'A' is not 100% biodegradable and causes water pollution, 'B' does not work well with hard water. It is 100% biodegradable and does not create water pollution Identify A and B



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9. A compound 'X' with molecular formula C_2H_4 burns with a sooty flame. It decolourises bromine water.

Identify 'X'



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10. A compound 'X' with molecular formula C_2H_4 burns with a sooty flame. It decolourises bromine water.

Will it dissolve in water or not ? Will it conduct electricity in an aqueous solution ?



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11. A compound 'X' with molecular formula C_2H_4 burns with a sooty flame. It decolourises bromine water.

Will it have high melting point or low melting point?



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Value Based Question

1. A catalyst is a substance that enhances the rate of a reaction. There are two types of catalysis i.e., homogeneous and heterogeneous. The heterogeneous catalysis is an important application in automobile catalytic converters,

As a student of chemistry, what chemical process do you think occurs in the heterogeneous catalysis converters?



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4. A message is always displayed at the traffic signals, which reads "Stop the vehicle engine at the red lights to save the fuel"

Why it is recommended to stop the vehicle engine at the red light signals?



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