

SATISH SCIENCE ACADEMY

DHANORI PUNE-411015

CARBON AND ITS COMPOUNDS

Class 10 - Science

Time Allowed: 3 hours

Maximum Marks: 175

	Section A				
1.	The soap molecule has a		[1]		
	a) hydrophobic head and a hydrophilic tail	b) hydrophilic head and a hydrophobic tail			
	c) hydrophilic head and a hydrophilic tail	d) hydrophobic head and a hydrophobic tail			
2.	A hydrocarbon which can add two molecules of Br ₂	₂ is	[1]		
	a) $H_2C = CH - CH = CH_2$	b) H ₃ C - CH = CH - CH ₃			
	c) $\text{HC} \equiv \text{CH}$	d) Both $H_2C = CH - CH = CH_2$ and			
		$HC \equiv CH$			
3.	Mineral acids are stronger acids than carboxylic aci	ds because	[1]		
	i. mineral acids are completely ionised				
	ii. carboxylic acids are completely ionised				
	iii. mineral acids are partially ionised				
	iv. carboxylic acids are partially ionised				
	a) (iii) and (iv)	b) (i) and (iv)			
	c) (ii) and (iii)	d) (i) and (ii)			
4.	Carbon exists in the atmosphere in the form of		[1]		
	a) coal	b) carbon dioxide only			
	c) carbon monoxide in traces and carbon	d) carbon monoxide only			
	dioxide				
5.	Which one of the following hydrocarbons is different from the others?		[1]		
	a) C ₂ H ₆	b) C ₄ H ₁₀			
	c) C ₇ H ₁₄	d) C ₅ H ₁₂			
6.	In which of the following test tubes effervescence will be observed?		[1]		
	NaCl Solution P				
	Acetic				

acid

Na₂SO₄ solution

š

NaOHsolution

R

	a) Q	b) P	
	c) R	d) S	
7.	Consider the following statements about homologous	series of carbon compounds:	[1]
	a. All succeeding members differ by $-CH_2$ unit.		
	b. Melting point and boiling point increases with incr	reasing molecular mass.	
	c. The difference in molecular masses between two s	uccessive members is 16 u.	
	d. C_2H_2 and C_3H_4 are NOT the successive members	of alkyne series.	
	The correct statements are -		
	a) (b) and (c)	b) (a) and (c)	
	c) (c) and (d)	d) (a) and (b)	
8.	The hardness of water is caused by:		[1]
	a) All of these	b) Mg(HCO ₃) ₂	
	c) CaCl ₂	d) CaSO ₄	
9.	Activated charcoal is used in sugar industry as a:		[1]
	a) Decolorizing agent	b) Reducing agent	
	c) Dehydrating agent	d) Oxidizing agent	
10.	An organic compound X has the molecular formula C	$_{2}H_{6}O$. Upon reaction with alkaline KMnO ₄ it gets oxidised	[1]
	to compound Y. Which of the following reagents can	be used to distinguish between compounds X and Y?	
	a) All of these	b) Sodium hydroxide	
	c) Sodium metal	d) Sodium carbonate	
11.	By how much atomic mass unit successive members of	f a homologous series vary?	[1]
	a) Fourteen	b) Twelve	
	c) Sixteen	d) One	
12.	When ethanol reacts with sodium two products are for	med. These products are:	[1]
	a) Sodium ethanoate and oxygen	b) Sodium ethoxide and oxygen	
	c) Sodium ethoxide and hydrogen	d) Sodium ethanoate and hydrogen	
13.	Carbon forms four covalent bonds by sharing its four	valence electrons with four univalent atoms, e.g. hydrogen.	[1]
	After the formation of four bonds, carbon attains the e	lectronic configuration of	
	a) helium	b) neon	
	c) argon	d) krypton	
14.	$C_{60} \text{ and } C_{70}$ are important members of which type of	allotrope of carbon?	[1]
	a) Fullerenes	b) Graphite	
	c) Coal	d) Diamond	
15.	Which of the following properties is not true regarding	g organic compounds?	[1]
	a) They are generally covalent compounds.	b) Compounds have high melting and boiling	

		points.	
	c) Generally insoluble in water.	d) Show isomerism	
16.	Chlorine reacts with saturated hydrocarbons at room temperature in the		[1]
	a) presence of water	b) absence of sunlight	
	c) presence of hydrochloric acid	d) presence of sunlight	
17.	Functional group -COOH is present in which of the	following?	[1]
	a) Carboxylic acid	b) Alcohol	
	c) Ketone	d) Aldehyde	
18.	The formulae of two organic acids X and Y are C_{10}	$H_{21}COOH$ and $C_{19}H_{39}COOH$. Which of them exists in the	[1]
	liquid state at room temperature?		
	a) Neither X and Y	b) Both X and Y	
	c) Y	d) X	
19.	Butanone is a four-carbon compound with the function	ional group	[1]
	a) aldehyde	b) carboxylic acid	
	c) ketone	d) alcohol	
20.	The first member of alkyne homologous series is		[1]
	a) ethene	b) ethyne	
	c) propyne	d) methane	
21.	Assertion (A): Hydrogenation is the process of con-	verting oil into fat, called vegetable ghee.	[1]
	Reason (R): Hydrogenation is carried out in the pre	sence of a catalyst usually finely divided nickel.	
	a) Both A and R are true and R is the correct	b) Both A and R are true but R is not the	
	explanation of A.	correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
22.	Assertion (A): Graphite is soft and slippery to touch	h.	[1]
	Reason (R): Graphite has sheet like layered structur	e.	
	a) Both A and R are true and R is the correct	b) Both A and R are true but R is not the	
	explanation of A.	correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
23.	Assertion (A): Ethane is the homologous of methan	e.	[1]
	Reason (R): It is because it differs by CH ₂ group.		
	a) Both A and R are true and R is the correct	b) Both A and R are true but R is not the	
	explanation of A.	correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
24.	Assertion (A): Carbon compounds can form a chair	n, branched, and ring structures.	[1]
	Reason (R): Carbon exhibits the property of catenat	ion.	
	a) Both A and R are true and R is the correct	b) Both A and R are true but R is not the	

	explanation of A.	correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
25.	Assertion (A): Third member of alkane is propane (C	₃ H ₈)	[1]
	Reason (R): It is obtained from general formula C_nH_2	2n + 2	
	a) Both A and R are true and R is the correct explanation of A.	b) Both A and R are true but R is not the correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
26.	Assertion (A): Propene reacts with HBr to give isopro	opyl bromide.	[1]
	Reason (R): Addition of Br_2 to alkene takes place at a	a faster rate in the presence of ionizing substance.	
	a) Both A and R are true and R is the correct explanation of A.	b) Both A and R are true but R is not the correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
27.	Assertion (A): Diamond and graphite are allotropes of	of carbon.	[1]
	Reason (R): Some elements can have different struct	ural forms while in the same physical state. These different	
	forms are called allotropes.		
	a) Both A and R are true and R is the correct	b) Both A and R are true but R is not the	
	explanation of A.	correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
28.	Assertion (A): The functional group present in alcohols is -OH.		[1]
	Reason (R): It is the same group as present in water, hence water and alcohol have similar properties.		
	a) Both A and R are true and R is the correct	b) Both A and R are true but R is not the	
	explanation of A.	correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
29.	Assertion (A): Diamond is the hardest natural known	substance.	[1]
	Reason (R): Diamond is used for cutting marble, gran	nite and glass.	
	a) Both A and R are true and R is the correct	b) Both A and R are true but R is not the	
	explanation of A.	correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
30.	Assertion (A): Soap has good cleansing action.		[1]
	Reason (R): Soap has a short chain of hydrocarbon. V	Which acts as hydrophobic and long ionic part which acts	
	as hydrophilic.		
	a) Both A and R are true and R is the correct explanation of A.	b) Both A and R are true but R is not the correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
31.	Assertion (A): Two members of a homologous series	have similar chemical properties.	[1]
	Reason (R): Propane and butane are members of sam	e homologous series.	
	a) Both A and R are true and R is the correct	b) Both A and R are true but R is not the	

	explanation of A.	correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
32.	Assertion (A): Cyclopropane is heterocyclic compound	nd.	[1]
	Reason (R): Cyclopropane comes into the category of those compounds in which a complete ring is formed by carbon atoms only.		
	a) Both A and R are true and R is the correct explanation of A	b) Both A and R are true but R is not the correct explanation of A	
	c) A is true but R is false	d) A is false but R is true	
33	Assertion (A): Alcohols have similar chemical proper	ties	[1]
	Reason (R): All alcohols contains similar hydroxy (-0	DH) functional group.	[-]
	a) Both A and R are true and R is the correct explanation of A.	b) Both A and R are true but R is not the correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
34.	Assertion (A): Carbon and its compounds are used as	fuels.	[1]
	Reason (R): They give lot of heat and light when burn	nt in air.	
	a) Both A and R are true and R is the correct	b) Both A and R are true but R is not the	
	explanation of A.	correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
35.	Assertion (A): Carbon has a strong tendency to either	lose or gain electrons to attain noble gas configuration.	[1]
	Reason (R): Carbon has four electrons in its outermost or other elements.	st shell and has the tendency to share electrons with carbon	
	a) Both A and R are true and R is the correct	b) Both A and R are true but R is not the	
	explanation of A.	correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
	Sec	tion B	
36.	Write the physical properties of ethanol.		[2]
37.	i. A liquid compound X is made up of carbon, oxyge	en and hydrogen elements. It has 8 covalent bonds. It	[2]
	releases hydrogen gas upon reaction with alkali me	etal. What is the chemical compound?	
20	ii. Write formula of two homologs of the compound	X.	[0]
38.	Justify the nature of physical and chemical properties of compounds of homologous series. [2] What are the properties of early an which load to have a work on a fact the properties of early and the prop		[2]
39. 40	What are the properties of carbon which lead to huge number of carbon compounds we see around us? [2] What name is given to the reaction which take place when ethanoic acid reacts with ethanol in the presence of [2]		[2]
-10.	conc. sulphuric acid? Name the products obtained in t	his reaction.	[-]
41.	An organic compound P is a constituent of wine. P on	reacting with acidified $K_2Cr_2O_7$ forms another compound	[2]
	${f Q}.$ When a piece of sodium is added to ${f Q}$ a gas ${f R}$ evo	lves which burns with pop sound. Identify P, Q, R and	
	write the balanced chemical equation of the reactions	involved.	
42.	Explain giving chemical equation, how are esters prep	ared? Specify any one property and one use of esters.	[2]
43.	i. The formula of an ester is $CH_3COOC_2H_5$. Write the formula of an ester is $CH_3COOC_2H_5$.	ne structural formulae of the corresponding alcohol and the	[2]
	acid.		

 44. Two carbon atoms cannot be linked to each other by more than three covalent bonds. Why? 45. Why is the conversion of ethanol to ethanoic acid an oxidation reaction? 		
44. Two carbon atoms cannot be mixed to each other by more than three covarent bolids. Why: [2] 45. Why is the conversion of ethanol to ethanoic acid an oxidation reaction? [2]		
Section C		
46. i. The formulae of two organic acids X and Y are $C_{10}H_{21}COOH$ and $C_{19}H_{39}COOH$. Which of them exists in [3]		
the liquid state at room temperature?		
ii. What will be the formula and electron dot structure of cyclopentane?		
47. i. How many isomers are possible for the compound with the molecular formula C_4H_8 ? Draw the electron dot [3]		
structure of branched chain isomer.		
ii. How will you prove that C_4H_8 and C_5H_{10} are homologues?		
48. a. Draw the electron dot structure for ethyne. [3]		
b. List two differences between the properties exhibited by covalent compounds and ionic compounds.		
49. An organic compound X of molecular formulae C_2H_6O , on oxidation with potassium dichromate and [3]		
concentrated sulphuric acid, produces acetic acid (CH ₃ COOH). What is the compound X. Write the equation for		
the reaction.		
50. An organic compound 'A' has the molecular formula CH ₂ O ₂ . It turns blue litmus red and gives brisk [3]		
effervescence with NaHCO ₃ . Identify 'A' and give chemical reaction.		
51. i. An organic compound A on heating with concentrated H ₂ SO ₄ forms a compound B which on addition of one [3]		
mole of hydrogen in presence of Ni forms a compound C. One mole of compound C on combustion forms		
two moles of CO_2 and 3 moles of H_2O . Identify the compounds A, B and C and write the chemical equations		
of the reactions involved.		
ii. An organic compound A of molecular formula C_2H_6O on oxidation gives an acid B with the same number of		
carbon atoms in the molecule as A. Compound A is often used for sterilization of skin by doctors. Name the		
compounds A and B. Write the chemical equations involved in the formation of B from A.		
52.i. How many shared pairs and lone pairs are present in a molecule of H2O?[3]		
ii. Write the electron dot structure of a molecule of N ₂ .		
53. i. Define covalent bond. Explain with the help of examples. [3]		
ii. What would be the electron dot structure of a molecule of sulphur which is made up of eight atoms of		
sulphur?		
54. Write the molecular formula of the following compound and draw their electron dot structure. [3]		
i. Ethane		
ii. Ethene		
III. Etnyne		
55. 1. Give various types of chemical bonds that can be formed between two atoms. Give at least two examples of [3]		
ii. Give three characteristic properties of covalent compounds.		
Section D		

56. **Read the following text carefully and answer the questions that follow:**

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A hydrocarbon (P) has the molecular formula $C_{10}H_{22}$. A hydrocarbon (Q) has two carbon atoms less than (P) and belong to the same homologous series. A hydrocarbon (R) has two carbon atoms more than (P) and belong

to the same homologous series.

- i. What is the molecular formula of (Q)? Also write its IUPAC name. (1)
- ii. To which homologous series do the compound (P), (Q) and (R) belong? (1)
- iii. State two characteristics of homologous series? (2)

OR

What can you say about properties of compounds (P), (Q) and (R) (2)

57. Read the following:

$$\mathbf{H} - \mathbf{C} \equiv \mathbf{C} - \overset{\mathbf{H}}{\overset{\mathbf{C}}{\overset{\mathcal{C}}$$

i. Which of the compounds P, Q, R, S, T, U belong to same homologous series? (1)

ii. Write the name of compound R. Also write the functional group present in it. (1)

iii. What is the IUPAC name of compound T and U (2)

OR

What are unsaturated hydrocarbons? Which of the compounds P, Q, R, S, T, U are example of unsaturated hydrocarbons? (2)

58. **Read the following text carefully and answer the questions that follow:**

The compounds which have the same molecular formula but differ from each other in physical or chemical properties are called isomers and the phenomenon is called isomerism. When the isomerism is due to difference in the arrangement of atoms within the molecule, without any reference to space, the phenomenon is called structural isomerism. In other words, structural isomers are compounds that have the same molecular formula but different structural formulas, i.e., they are different in the order in which different atoms are linked. In these compounds, carbon atoms can be linked together in the form of straight chains, branched chains or even rings.

- i. Write two compounds having same molecular formula with there structure? (1)
- ii. Butane and 2-methylpropane have same molecular formula but different structural formula. Explain. (1)
- iii. Which have longest chain iso-pentane or 2-methylpentane? (2)

OR

Draw all possible isomers of pentane. (2)

59. **Read the following text carefully and answer the questions that follow:**

The melting points and boiling points of some ionic compounds are given below:

Compound	Melting Point (K)	Boiling Point (K)
NaCl	1074	1686
LiCl	887	1600
CaCl ₂	1045	1900
CaO	2850	3120
MgCl ₂	981	1685

[4]

[4]

[4]

These compounds are termed ionic because they are formed by the transfer of electrons from a metal to a nonmetal. The electron transfer in such compounds is controlled by the electronic configuration of the elements involved. Every element tends to attain a completely filled valence shell of its nearest noble gas or a stable octet.

i. Show the electron transfer in the formation of magnesium chloride. (1)

- ii. What happens at the cathode when electricity is passed through an aqueous solution of sodium chloride? (1)
- iii. While forming an ionic compound say sodium chloride how does sodium atom attain its stable configuration? (2)

OR

Why do ionic compounds in the solid state not conduct electricity? (2)

60. **Read the following text carefully and answer the questions that follow:**

A series of organic compounds having the same functional group, with similar or almost identical chemical characteristics in which all the members can be represented by the same general formula and the two consecutive members of the series differ by —CH₂, group or 14 mass unit in their molecular formulae is called a homologous series. For example, all the members of the alcohol family can be represented by the general formula, $C_nH_{2n+1}OH$ where, n may have the values 1, 2, 3, ... etc. The various members of a particular homologous series are called homologues. The physical properties such as density, melting point, boiling point, solubility, etc. of the members of a homologous series show almost regular variation in ascending or descending the series.

- i. Write two characteristics of homologous series. (1)
- ii. What are the fourth and fifth members of the alcohol homologous series? Write their name with the formula.(1)
- iii. Draw structure of Butanol. (2)

OR

What is heteroatom? (2)

61. Read the following text carefully and answer the questions that follow:

Two allotropic forms of carbon which are crystalline in nature, are diamond and graphite. They differ physically but chemically they are similar. Diamond is the hardest crystalline form of carbon. In diamond, each carbon atom is linked to four other carbon atoms by covalent bonds. In graphite, each carbon atom is linked to three other carbon atoms by covalent bond. Graphite is relatively soft and greasy. It is also a good conductor of electricity. The C-C bond length in graphite is 141.5 pm while in diamond it is 154 pm.

- i. Which is a good conductor of heat and electricity- graphite or diamond? Explain. (1)
- ii. Which binding force is present in the structure of diamond? (1)
- iii. Why Diamond is not a good conductor of electricity and heat? (2)

OR

Draw the structure of diamond showing bond between carbons. (2)

62. Read the following text carefully and answer the questions that follow:

Carbon is a versatile element that forms the basis of all living organisms and many of the things we use. A large variety of compounds is formed because of its tetravalency. Compounds of carbon are formed with oxygen, hydrogen, nitrogen, sulphur, chlorine and many other elements.

Answer the following questions:

a. What are hydrocarbons? (1)

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[4]

[4]

[4]

- b. List two properties by virtue of which carbon can form a large number of compounds. (1)
- c. Write the formula of the functional group present in (1) aldehydes, and (2) ketones. Write chemical equation for the reaction that occurs between ethanoic acid and ethanol in the presence of a catalyst. (2)OR

What are structural isomers? Write the structures of two isomers of butane (C_4H_{10}). (2)

63. Read the following text carefully and answer the question that follow:

As neutral atom carbon has electronic configuration $\underset{2, \ 4}{K}$. To gain inert gas configuration carbon can either donate 4 valence electrons (helium gas configuration) or gain 4 electrons (neon gas configuration), but it cannot do so. To acquire inert gas configuration carbon can only share its 4 valence electrons with other atoms forming covalent bonds. A covalent bond can be defined as a chemical bond formed between two atoms by mutual sharing of valence electrons so that each atom acquires the stable electronic configuration of the nearest noble gas. The concept of covalent bonds was given by Langmuir and Lewis to explain bonding in non-ionic compounds. The covalent bond and is represented by a single line (-) and if each atom contributes two electrons, the covalent bond formed is called a double bond and is represented by a double line (=) and if each atom contributes three electrons, the covalent bond formed is called a triple bond and is represented by a triple line (\equiv).

- i. Define Catenation. (1)
- ii. What are name given for carbon atoms linked with single, double, triple bond? (1)
- iii. Define Valency and write two examples of molecules containing double bond. (2)

OR

Draw the electron dot structure for Cl_2 molecule. (2)

64. Read the following text carefully and answer the questions that follow:

Carbon compounds can be easily oxidised on combustion. In addition to this complete oxidation, we have reactions in which alcohols are converted to carboxylic acids. We see that some substances are capable of adding oxygen to others. These substances are known as oxidising agents. Also some compounds are capable of adding hydrogen. These substances are known as reducing agents.

- i. Give any two examples of good oxidising agent. (1)
- ii. Complete the reaction: (1)

 $CH_3CH_2CH_2OH + Alk. KMnO_4 \rightarrow$

iii. Give some uses of Alcohol. (2)

OR

Why Acidified potassium dichromate is called an oxidising agent? (2)

65. Read the following text carefully and answer the questions that follow:

More than three million carbon compounds have been discovered in the field of chemistry. The diversity of these compounds is due to the capacity of carbon atoms for bonding with one another as well as with other atoms. Most of the carbon compounds are poor conductors of electricity and have low melting and boiling points.

a. Write the molecular formula of first two members of homologous series having functional group -Br. (1)

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[4]

[4]

[4]

b. Given below are the formulae of some functional groups: (1)

$$-C \underset{(i)}{\swarrow H}$$
 $-C \underset{i}{C}$

Write the name of these functional groups.

c. What would be observed on adding a 5% alkaline potassium permanganate drop by drop to some warm ethanol taken in a test tube? State the role of KMnO₄ in the reaction and write the chemical equation for the reaction involved. **(2)**

OR

Write the name of the compound formed when ethanol is heated at 443 K temperature with excess of conc. H_2SO_4 . What is the role of conc. H_2SO_4 in the reaction? Write the chemical equation for the reaction involved. (2)

Section E

- 66. Describe the addition reaction of carbon compounds with its application. State the function of catalyst in this reaction. How this reaction is different from a substitution reaction? Explain with an example.
- 67. i. Name the compound formed when ethanol is heated at 443 K in the presence of conc. H₂SO₄ and draw its [5] electron dot structure. State the role of conc. H₂SO₄ in this reaction.
 - ii. What is hydrogenation? Explain it with the help of a chemical equation. State the role of this reaction in industry.
- 68. Explain the structure of Diamond with diagram.
- 69. a. Write the names and structures of (i) an alcohol, and (ii) an aldehyde with four carbon atoms in their [5] molecules.
 - b. List two differences between saturated and unsaturated hydrocarbons
- 70. i. Write the names of the functional groups in
 - 1. C=0 R
 - ii. Describe a chemical test to distinguish between ethanol and ethanoic acid.
 - iii. Write a chemical equation to represent what happens when hydrogen gas is passed through an unsaturated hydrocarbons in the presence of nickel as a catalyst?
- 71. A saturated organic compound A belongs to the homologous series of alcohols. [5]
 On heating A with concentrated sulphuric acid at 443 K, it forms an unsaturated compound B with molecular mass 28 u.

The compound **B** on addition of one mole of hydrogen in the presence of Nickel, changes to a saturated hydrocarbon **C**.

- i. Identify A, B and C.
- ii. Write the chemical equations showing the conversion of A into B.
- iii. What happens when compound C undergoes combustion?
- iv. State one industrial application of hydrogenation reaction.
- v. Name the products formed when compound A reacts with sodium.

[5]

[5]

- 72. a. State any two reasons for carbon forming a large number of compounds. Why does carbon form compounds [5]
 - i. mainly by covalent bonding?
 - ii. having low melting and boiling points?
 - b. With the help of balanced chemical equations, explain what happens when
 - i. a piece of sodium is added to ethanol?
 - ii. ethanol burns in the presence of oxygen?
- An organic compound A is widely used as a preservative in pickles and has a molecular formula C₂H₄O₂. This [5] compound reacts with ethanol to form a sweet smelling compound B.
 - compound reacts with culanor to form a sweet smerning
 - i. Identify the compound A.
 - ii. Write the chemical equation for its reaction with ethanol to form compound B.
 - iii. How can we get compound A form B?
 - iv. Name the process and write corresponding chemical equation.
 - v. Which gas is produced when compound A reacts with washing soda? Write the chemical equation.
- 74. A neutral organic compound **X** (Molecular formula C_2H_6O) on reacting with acidified $K_2Cr_2O_7$ gives an [5]

organic compound Y which is acidic in nature. X reacts with Y on warming in the presence of conc. H₂SO₄ to

give a sweet smelling compound **Z**.

- i. Identify **X**, **Y** and **Z**.
- ii. Write the chemical equations for the reactions in the conversion of (1) **X** to **Y** and (2) **X** to **Z**.
- iii. State the role of (1) acidified K₂Cr₂O₇ in the conversion of **X** to **Y** and (2) conc. H₂SO₄ in the reaction of **X** and **Y**.
- iv. Name the reaction which occurs when ${\bf Z}$ reacts with an alkali.
- 75. i. Define a homologous series of carbon compounds.
 - ii. Why is the melting and boiling points of C_4H_8 higher than that of C_3H_6 or C_2H_4 ?
 - iii. Why do we **NOT** see any gradation in chemical properties of a homologous series compounds?
 - iv. Write the name and structures of (i) aldehyde and (ii) ketone with molecular form $C_3 H_6 O$.