

10.	CO4	In which among the following alkane, a carbon atom is displaced to form a compact structure with the resemblance of a butterfly wing? a) Cyclopropane b) Cyclobutane c) Cyclopentane d) Cyclohexane	1
11.	CO3	Which of the following statements is FALSE regarding the reaction between Cl₂ and C₂H₆? a) It is a substitution reaction. b) The reaction will give a single product of C ₂ H ₅ Cl. c) The reaction mechanism involves free radicals. d) None of these.	1
12.	CO1	The transformation into carboxylic acids of the alkynes takes place with the help of which among the following reagents? a) Potassium chlorate b) Potassium permanganate c) Potassium dichromate d) Potassium chloride	1
13.	CO3	Why is an amine salt more soluble in water than the corresponding free amine? a) It is ionic, therefore more soluble than covalent compounds with the same structure. b) It has a higher molecular weight than the corresponding amine. c) The negative charge on the nitrogen atom increases water solubility d) All amines are insoluble in water	1
14.	CO2	Aspirin is synthesized from a) Formic acid b) Benzoic acid c) Salicylic acid d) All of these	1
15.	CO1	The substituent in the chain is named by replacing the “ane” in the alkanes by _____. a) ene b) ic c) one d) yl	1
16.	CO1	Cis-trans isomerism in alkenes is due to (a) chiral carbon (b) free rotation about single bond (c) free rotation about double bond (d) restricted rotation about double bond	1
17.	CO3	Which of the following metals is used as a catalyst in the catalytic hydrogenation of both alkenes and alkynes? a) Palladium b) Iron c) Magnesium d) Copper	1
18.	CO2	Why is sodium borohydride an important reagent in reducing a ketone? a) It is good for hydrolysis type reactions. b) It is a good source of hydride ion. c) It can act as a base. d) It can act as a free radical initiator.	1

19.	CO3	Compound 'A' undergoes formation of cyanohydrins which on hydrolysis gives lactic acid ($\text{CH}_3\text{CHOHCOOH}$). Therefore, compound 'A' is _____. a) Formaldehyde b) Acetaldehyde c) Acetone d) Benzaldehyde	1
20.	CO1	An organic compound X is oxidized by using acidified $\text{K}_2\text{Cr}_2\text{O}_7$. The product obtained reacts with phenyl hydrazine but does not answer silver mirror test. The possible structure of X is _____. a) $(\text{CH}_3)_2\text{CHOH}$ b) CH_3CHO c) $\text{CH}_3\text{CH}_2\text{OH}$ d) $\text{CH}_3(\text{CO})\text{CH}_3$	1

SECTION B

Answer any two questions of the following.

20

1.	CO4	a) "The treatment of alkyl chlorides with aqueous KOH leads to the formation of alcohols but in the presence of alcoholic KOH, alkenes are major products"- Explain. b) Primary alkyl halide $\text{C}_4\text{H}_9\text{Br}$ (A) reacted with alcoholic KOH to give compound (B). Compound (B) reacts with HBr to give (C) which is an isomer of (A). When (A) is reacted with sodium metal it gives compound (D), C_8H_{18} which is different from the compound formed when n-butyl bromide is reacted with sodium. Give the structural formula of (A) and write the equations for all the reactions. c) Why is the solubility of haloalkanes in water very low?	(3+5+2) = 10
2.	CO3	a) "In the reaction of alkanes with halogens, bromine is less reactive but more selective". - Why? and how? b) How is it possible to determine the position of double bonds in alkenes? c) What do you mean by Markovnikov Rule and anti-Markovnikov rule? Give examples.	(5+2+3) = 10
3.	CO1, CO2	a) "Carboxylic acid is more acidic than phenol" – Justify it. b) Why does carboxylic acid have a higher boiling point than alcohol? c) Write down the use of different carboxylic acid derivatives.	(4+3+3) = 10

SECTION C

Answer any seven questions of the following.

35

1.	CO1	Write down the chemical structure for the following. a) trans-2-bromocyclohexan-1-ol b) 2-hydroxycyclohexanone c) Propargyl bromide d) 3-fluoro-4-isopropyl-2-methylheptane e) 2-formyl-4-oxocyclohexanecarboxylic acid	(1X5) = 5
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2.	CO2	a) How carboxylic acid can be synthesized from malonic ester? b) How benzyl alcohol can be prepared from benzoic acid through a single step reaction?	(3+2) = 5
3.	CO3	“Electrophilic addition of HX to alkynes is slower than electrophilic addition of HX to alkenes” – Justify it with example.	(1+4) = 5
4.	CO2	a) Write down the different process of nucleophilic addition reaction for carbonyl groups. b) Why aldehydes are more reactive than carbonyl groups?	(3+2) = 5
5.	CO1	a) What do you mean by Trivial Nomenclature System? b) Write down the drawbacks of the Trivial Nomenclature System. c) Explain the role of “prefix” and “suffix” in IUPAC nomenclature system.	(1+2+2) = 5
6.	CO4	a) Explain the Wurtz reaction with an example. b) What are the factors affecting SN1 and SN2 reactions?	(3+2) = 5
7.	CO4	a) Why haloform test is normally used to identify methyl alcohol group selectively from a mixture of different alcohols? b) Why boiling point of alcohols are higher than alkanes?	(2.5+2.5) = 5
8.	CO3	a) How nitriles can be reduced to form aldehydes? b) “In general, aromatic aldehydes and ketones are less reactive than the corresponding aliphatic aldehydes and ketones.” – Why?	(2.5+2.5) = 5
9.	CO2	How do alkylide anions play a crucial role in the synthesis of numerous natural products? Give an example. Discuss the pharmaceutical use of alkynes.	(3+2)
		Total	75