Name: **Enrolment No:**	

UPES

End Semester Examination, May 2024

Course: Pharmaceutical Organic Chemistry I — **Semester : II**

Program: B.Pharm — **Duration : 03 Hours**

Course Code: BP202T — **Max. Marks: 75**

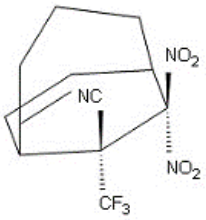
SECTION A

(20Qx1M=20 Marks)

S. No.	Answer all following MCQ questions	Marks (1 X 20) = 20	COs
Q 1	**The mechanism of dehydration of an alcohol to alkene involve the formation of** (a) Carbocations (b) Carbonium ion (c) Free radical (d) None of these	1	CO2
Q 2	**Which of the following metals is used as a catalyst in the catalytic hydrogenation of both alkenes and alkynes?** (a) Iron (b) Zinc (c) Pd/C (d) Copper	1	CO3
Q 3	**When propene reacts with HBr in the presence of peroxide, it gives rise to _____.** (a) allyl bromide (b) isopropyl bromide (c) n-propyl bromide (d) 3-bromopropane	1	CO4
Q 4	**Which alkyl halide out of the following may follow both S_N1 and S_N2 mechanism?** (a) CH_3-X (b) $(CH_3)_2CH$-X (c) $(CH_3)_3C$-X (d) $(CH_3)_3C$-CH_2-X	1	CO2
Q 5	**Which among these is not a structural isomer of the compound C_4H_8?** (a) But-1-ene (b) But-2-ene (c) But-3-ene (d) 2-methylpropene	1	CO1
Q 6	**When two moles of ethyl chloride react with two moles of sodium in the presence of ether what will be formed?** (a) 2 moles of ethane (b) 1 moles of ethane (c) 2 moles of butane (d) 1 moles of butane	1	CO2
Q 7	**Select the incorrect statement regarding alkenes.** (a) In alkenes, the carbons are connected by pi bonds (b) Alkenes have almost same physical properties as that of the alkanes (c) Alkenes are less reactive than alkanes	1	CO3

	(d) Alkenes undergo polymerization reaction		
Q 8	**Aldehydes and ketones undergo _____ reactions.** (a) electrophilic addition (b) electrophilic substitution (c) nucleophilic addition (d) nucleophilic substitution	**1**	**CO3**
Q 9	**Which among the following defines meso forms of isomers?** (a) Meso form is optically inactive due to external compensation (b) The molecules of the meso isomers are chiral (c) It can be separated into optically active enantiomeric pairs (d) It is a single compound	**1**	**CO1**
Q 10	**Why are alkyl halides considered to be very reactive compounds towards nucleophile?** (a) they have an electrophilic carbon & a poor leaving group (b) they have a nucleophilic carbon & a good leaving group (c) they have an electrophilic carbon (d) they have an electrophilic carbon & a good leaving group	**1**	**CO2**
Q 11	**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**	**CO2**
Q 12	**What is the correct order of reactivity of the following towards nucleophilic addition?** (a) Methanal > Ethanal > Acetone (b) Acetone > Ethanal > Methanal c) Methanal > Acetone > Ethanal (d) Ethanal > Methanal > Acetone	**1**	**CO3**
Q 13	**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**	**CO1**
Q 14	**Compound 'A' undergoes formation of cyanohydrins which on hydrolysis gives lactic acid ($CH_3CHOHCOOH$). Therefore, compound 'A' is _____ .** (a) Formaldehyde (b) Acetaldehyde (c) Acetone (d) Benzaldehyde	**1**	**CO2**
Q 15	**Which of the following alcohols would be most soluble in water?** (a) Propanol (b) Hexanol (c) Pentanol (d) Butanol	**1**	**CO1**
Q 16	**What is the common name of the molecule with a CHO group connected to a benzene ring's sp2 hybridized carbon?** (a) Benzaldehyde (b) Acetaldehyde (c) Phthalaldehyde (d) None of these	**1**	**CO1**
Q 17	**Amines are generally _____ in nature.** (a) electrophilic (b) acidic	**1**	**CO3**

	(c) basic (d) neutral		
Q 18	**Choose the correct statement.** (a) Alkanes have poor conductivity (b) They form hydrogen bonds (c) They have good solubility in non-polar solvents than polar solvents (d) Alkanes have less density than that of water	**1**	**CO2**
Q 19	**The dehydration of alcohols is an example of _____** (a) Bimolecular elimination/E2 reaction (b) SN2 reaction (c) SN1 reaction (d) Unimolecular elimination/E1 reaction	**1**	**CO2**
Q 20	**Identify the N-substituted derivative of carbonyl compounds that are colored compounds and are useful in the identification of aldehydes and ketones.** (a) Hydrazone (b) Phenylhydrazone (c) 2,4-Dinitrophenylhydrazone (d) Semicarbazone	**1**	**CO1**
SECTION B (20 Marks) **(2Qx10M=20 Marks)** **Attempt 2 Question out of 3**			
Q 1	**a)** Why aldehydes are more reactive than carbonyl groups? **b)** Describe different processes of nucleophilic addition reaction for carbonyl groups. **c)** Why haloform test is normally used to identify methyl alcohol group selectively from a mixture of different alcohols?	**(4+3+3)**	**CO3**
Q 2	**Draw all chemical structures and write down the pharmaceutical uses of following compounds:** **a)** Tetrachloroethylene **b)** Cetosteryl alcohol **c)** Chloral hydrate **d)** Ethanolamine **e)** Acetyl Salicylic Acid	**(5X2)**	**CO1**
Q 3	**Write a short note on two different following reaction mechanisms.** **a)** Perkin condensation **b)** Benzoin condensation	**(2X5)**	**CO4**
SECTION-C (35 Marks) **(7Qx5M=35 Marks)** **Attempt 7 Question out of 9**			
Q 1	**a)** Why double E2 elimination process should be used to form internal alkynes from di-alkyl substituted alkenes? **b)** How oxalic acid can be synthesized from alkynes by using single step reaction?	**(3+2)**	**CO3**
Q 2	**a)** What is the difference between aldol condensation and crossed aldol condensation? **b)** How acid catalyzed aldol condensation can be used to form conjugated enone?	**(1+4)**	**CO2**
Q 3	Discuss different qualitative tests used for the identification carboxylic acid and amide?	**(2.5+2.5)**	**CO4**
Q 4	**Draw all chemical structures of the following compounds.** **a)** Propargyl bromide **b)** 4-chloro-6-diiodo-7-methyl-2-nonyne	**(1 X 5)**	**CO1**

	c) 1-vinylcyclohexene **d)** 4-methyl-1,5-octadiyne **e)** (Z)-5-Chloro-3-ethly-4-hexen-2-ol		
Q 5	 **a)** Which reaction method can be used to form this compound? **b)** What are the staring materials used? **c)** Draw the mechanism of this reaction.	**(1+2+2)**	**CO3**
Q 6	Write down the chemical classification and physical property of different alcohols. Give examples.	**(2.5+2.5)**	**CO2**
Q 7	**a)** What is structural isomerism? **b)** Explain position isomerism and tautomerism with examples.	**1+(2+2)**	**CO2**
Q 8	**a)** Why do aldehydes and ketones undergo nucleophilic addition while alkenes undergo electrophilic addition? **b)** Why good leaving groups are required with carbonyl compounds for nucleophilic substitution reaction?	**(2.5+2.5)**	**CO3**
Q 9	**a)** Discuss the difference between S_N1 and S_N2 reactions. **b)** What are the factors affecting S_N1 and S_N2 reactions?	**(2.5+2.5)**	**CO2**

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