

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Theory Examination, May 2022

Course: Pharmaceutical Organic Chemistry-I

Program: B.Pharm

Course Code: BP202T

Semester: II

Time 03 hrs.

Max. Marks: 75

Instructions: Read the Question Paper Carefully. All Sections are Compulsory

SECTION A

S. No.	CO	Multiple Choice Questions/Fill in the Blanks/ True or False (one marks each)	Marks
Q1		All COs should be covered	20
i)	CO2	The stability order of primary, secondary and tertiary carbanion is: a) Primary > secondary > Tertiary b) Secondary > tertiary > primary c) Tertiary > primary > secondary d) Tertiary > secondary > primary	1
ii)	CO4	Vanillin contains following functional groups a) Hydroxyl, carbonyl, ester b) Ether, carbonyl and halogen c) Ester, carbonyl and hydroxyl d) Carbonyl, hydroxyl and ether	1
iii)	CO1	The IUPAC name of acetaldehyde is	1
iv)	CO2	In hybridization and shape of an ethene molecule is a) Sp ² , trigonal planar b) Sp ² , trigonal pyramidal c) Sp, trigonal planar d) Sp, linear	1
v)	CO5	The true statement about tartaric acid is a) Each molecule has two hydroxyl groups and one carboxylic group b) Each molecule is a dimer c) Each molecule has one hydroxyl group and two carboxylic groups d) Each molecule has two hydroxyl groups and two carboxylic groups	1
vi)	CO1	Select incorrect statement about ethylene glycol a) It is a triol and part of semipermeable membrane b) It is a diol and used in manufacturing of polyesters c) It contains two carbons and three hydroxyl groups d) It contains three carbons and two hydroxyl groups.	1
vii)	CO4	The geometry and hybridization of carbocation is..... and.....	1
viii)	CO3	Iodoform is a) CHI ₃ b) Antiseptic	1

		<ul style="list-style-type: none"> c) Volatile d) All of the above 	
ix)	CO5	Citric acid hashydroxyl groups andcarboxylic groups.	1
x)	CO1	<p>The following are structural isomers 2,2-dimethylpropan-1-ol except</p> <ul style="list-style-type: none"> a) 3-methyl-2-butanol b) 3,3-dimethylpentan-1-ol c) 2-methylbutan-2-ol d) pentan-3-ol 	1
xi)	CO4	<p>Cinnamic acid is</p> <ul style="list-style-type: none"> a) An aliphatic carboxylic acid with one hydroxyl group b) An aromatic carboxylic acid with one double bond in the side chain c) An aromatic carboxylic acid with one hydroxyl group on the ring. d) Not a carboxylic acid 	1
xii)	CO4	Fehling's reagent is used to distinguish aldehyde and	1
xiii)	CO3	<p>Lucas reagent is</p> <ul style="list-style-type: none"> a) Ni/H₂ b) Zn/HCl c) Zn/NH₂-NH₂/Glycol d) Sn/HCl 	1
xiv)	CO3	<p>Alkyl halides may undergo</p> <ul style="list-style-type: none"> a) Elimination reaction b) Addition reaction c) Both of the above d) None of the above 	1
xv)	CO3	<p>Dichloromethane is</p> <ul style="list-style-type: none"> a) An organic solvent b) Used to decaffeinate coffee and tea c) Solid compound d) None of the above 	1
xvi)	CO4	<p>Which type of reactions are common in carbonyl compounds. Choose the correct reaction with appropriate reason also</p> <ul style="list-style-type: none"> a) Electrophilic substitution reaction due to presence of double bonded carbon oxygen bond b) Nucleophilic substitution reaction due to availability of positive charge on carbonyl carbon c) Electrophilic addition reaction, due to negative charge on oxygen atom. d) Nucleophilic addition reaction, due to positive charge on carbon. 	1
xvii)	CO1	IUPAC stands for	1
xviii)	CO2	Diels alder reaction is shown by a diene withdouble bonds.	1
xix)	CO5	<p>The following are derivatives of carboxylic acid except</p> <ul style="list-style-type: none"> a) Ether b) Amide 	1

		c) Acid chloride d) Anhydride	
xx)	CO5	The carboxylic acids are acidic as they can easily give a	1
			20

SECTION B

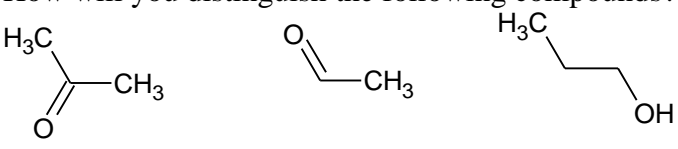
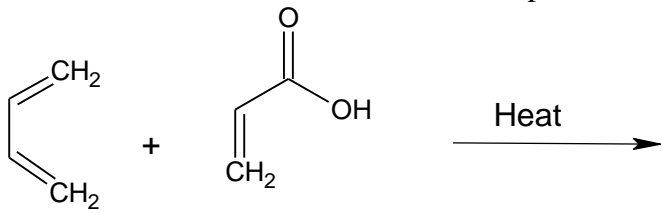
Attempt Any two out of three , 10 marks each

Q2			20
Quest 1	CO5	Write one application of each of the following. A) Acetyl salicylic acid B) Dimethyl phthalate C) Benzyl benzoate D) Succinic acid E) Methyl salicylate	5
	CO5	Explain why amines can act as both base and nucleophile. Write the factors affecting the basic strength of amines.	2
Ques 2	CO4	An organic compound C ₃ H ₆ O (A) can be reduced to C ₃ H ₈ O (B) which further reacts with PCl ₅ to give C ₃ H ₇ Cl (C). The Grignard reagent obtained from C reacts with A to produce C ₆ H ₁₄ O (D), which gives on oxidation a ketone C ₆ H ₁₂ O (E). A does not give iodoform reaction. Identify the compounds A to E.	10
Ques 3	CO2	Assign increasing order of stability to the following alkenes. Explain your answer. Conjugated diene, isolated diene, and cumulated dienes.	5
		i) $\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{C}-\text{C} \\ \diagdown \\ \text{CH}_3 \end{array} + \text{NH}_2\text{-NH}_2 \xrightarrow{\text{H}^+}$ Complete the above reaction and propose a suitable mechanism.	5
			20

SECTION C

Attempt any 7 out of 9 (7X5=35)

Q3		All COs should be covered each question carry five marks	35
1	CO3	Complete the following reaction $\begin{array}{c} \text{H}_3\text{C} \\ \\ \text{C}-\text{OH} \\ \\ \text{H}_3\text{C} \end{array} + \text{PCl}_5 \longrightarrow \text{A} \xrightarrow{\text{Alc. KOH}} \text{B} \xrightarrow{\text{HBr/ H}_2\text{O}_2} \text{C}$	5
2	CO4	An organic compound C ₃ H ₆ O (A) gives on oxidation C ₃ H ₆ O ₂ (B). A reacts with Ethyl magnesium iodide to give C ₅ H ₁₂ O (C), which on dehydration gives C ₅ H ₁₀ (D). On reductive ozonolysis D gives A and C ₂ H ₄ O (E). E gives the iodoform test. Identify the compound A to E.	5

3	CO1	Write at least one structural isomers of the following A) pentan-2-ol B) 3-methylbut-1-ene C) butanoic acid D) hexan-3-one E) methyl acetate	5
4	CO5	Explain the effect of Electron withdrawing and electron donating groups on acidic strength of carboxylic acids.	5
5	CO3	SN ² always leads to inversion of geometry. Explain with suitable reactions.	5
6	CO1	Write five selection rules for assigning R/S or E/Z nomenclature to organic compounds.	5
7	CO2	Distinguish reaction of propene with HBr in presence and absence of peroxide.	5
8	CO4	How will you distinguish the following compounds? Write complete reactions. 	5
9	CO2	Name and complete the following reaction with suitable electron movements. What will the effect on rate of reaction, if we replace COOH group with CH ₃ group? 	5
			35
		Total	75