Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Theory Examination, July 2020

Course: Pharmaceutical Organic Chemistry-I **Semester: II**
Program: B.Pharma **Time 03 hrs.**
Course Code: BP202T **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**
1	CO2	The stability order of primary, secondary and tertiary carbocations is: a) Primary > secondary > Tertiary b) Secondary > tertiary> primary c) Tertiary > primary > secondary d) Tertiary > secondary> primary	1
	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
	CO1	The IUPAC name of acetone is ……..	1
	CO2	In hybridization and shape of an ethyne molecule is a) Sp2, trigonal planar b) Sp2, trigonal pyramidal c) Sp, trigonal planar d) Sp, linear	1
	CO5	Select true statement about tartaric acid 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
	CO1	Select false 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
	CO4	The shape and hybridisation of carbon free radical will be: a) Trigonal pyramidal, sp2 b) Trigonal planar, sp2	1

		c) Trigonal pyramidal, sp3 d) Bent, sp3	
	CO3	Iodoform is a) CHI_3 b) Antiseptic c) Volatile d) All of the above	1
	CO5	Select the true statement a) Citric acid is an acid with no carboxylic group b) Citric acid has three carboxylic groups and three hydroxyl groups c) Citric acid has three hydroxyl groups and one carboxylic group d) Citric acid has three carboxylic groups and one hydroxyl groups	1
	CO1	The following are structural isomers 3-methyl-2-butanol except a) 2,2-dimethylpropan-1-ol b) 3,3-dimethylpentan-1-ol c) 2-methylbutan-2-ol d) pentan-3-ol	1
	CO4	Cinnamaldehyde is a) an alphatic aldehyde with one hydroxyl group b) an aromatic aldehyde with one double bond in the chain c) an aromatic aldehyde with one hydroxyl group on the ring. d) Not an aldehyde	1
	CO4	Tollen's reagent is used to distinguish aldehyde and ……	1
	CO3	Lucas reagent is a) Ni/H2 b) Zn/HCl c) Zn/NH2-NH2/Glycol d) Sn/HCl	1
	CO3	Alcohols can undergo a) Elimination reaction b) Addition reaction c) Both of the above d) None of the above	1
	CO3	Select false statement ,Dichloromethane is a) An organic solvent b) Used to decaffeinate coffee and tea c) Solid compound d) None of the above	1
1	CO4	Which type of reactions are common in carbonyl compounds. Choose the correct reaction with appropriate reason also a) Electrophilic substitution reaction due to presence of double bonded carbon oxygen bond	1

		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.	
	CO1	IUPAC stands for ……..	1
	CO2	Diels alder reaction is shown by a diene with ……..double bonds.	1
	CO5	The following are derivatives of carboxylic acid except a) Ether b) Amide c) Acid chloride d) Anhydride	1
	CO5	The carboxylic acids are acidic as they can easily give a ……..	1
			20
SECTION B			
10 marks each			
Q2			**20**
Quest 1 (10 marks)	CO5	i) Match the following A) Acetyl salicylic acid — I) oil of wintergreen B) Dimethyl phthalate — II) Treatment of human scabies C) Benzyl benzoate — III) Acidity regulator D) Succinic acid — IV) Analgesic E) Methyl salicylate — V) mosquito repellant	5
	CO5	ii) True or **False** In **Gabriel synthesis**, potassium phthalimide is reacted with an alkene to produce an N-alkyl phthalimide. This N-alkyl phthalimide can be hydrolyzed by aqueous acids or bases into the secondary amine.	2
	CO5	iii) Amines can act as both bases and nucleophiles due to presence of ……..	1
	CO5	iv) In Hinsberg test is used to distinguish primary, secondary and tertiary …… If the product is formed it not ……	2
Ques 2	CO4	i) An organic compound C_3H_6O (A) can be reduced to C_3H_8O (B) which further reacts with PCl_5 to give C_3H_7Cl (C). The Grignard reagent obtained from C reacts with A to produce $C_6H_{14}O$ (D), which gives on oxidation a ketone $C_6H_{12}O$ (E). A does not give iodoform reaction. Identify the compounds A to E. a) A: propanone, B: propanal, C: 1-chloropropane, D: hexan-3-ol, E: hexan-3-one **b) A: propanal, B: propanol, C: 1-chloropropane, D: hexan-3-ol, E: hexan-3-one** c) A: propanone, B: propanol, C: 2-chloropropane, D: hexan-4-ol, E: hexan-4-one	5

		d) A: propanal, B: propanol, C: 2-chloropropane, D: hexan-2-ol, E: hexan-2-one	
		ii) True or **False** Aldehydes are more reactive for nucleophilic addition reactions as compared to ketones as aldehydes are sterically more hindered and the presence of +I groups in aldehydes make the carbonyl carbon more electrophilic.	2
		iii) Aldehydes react with alcohols in acidic medium to form…….	1
		iv) Tollen's reagent is used to distinguish aldehydes and ……It is also known as ……test.	2
SECTION C			
Five marks each (7X5=35)			
Q3		**All COs should be covered each question carry five marks**	**35**
	CO3	Ques 1 i) The correct order of reactivity for SN1 reaction of the given alkyl halides will be: 2-chloro-2-methylpentane, 3-chloro-2-methylpentane, 1-chloro-4-methylpentane a) 2-chloro-2-methylpentane> 3-chloro-2-methylpentane> 1-chloro-4-methylpentane b) 3-chloro-2-methylpentane> 2-chloro-2-methylpentane >1-chloro-4-methylpentane c) 2-chloro-2-methylpentane >1-chloro-4-methylpentane> 3-chloro-2-methylpentane d) 3-chloro-2-methylpentane = 2-chloro-2-methylpentane >1-chloro-4-methylpentane ii) Select the incorrect statements for above question a) 2-chloro-2-methylpentane is most reactive as it is a tertiary alkyl halide. b) Secondary alkyl halides are generate more stable carbocation as compared to primary alkyl halides. c) 1-chloro-4-methylpentane is least reactive as it is a primary alkyl halide. d) None of the above	3+2
	CO4	Ques 2 An organic compound C_3H_6O (A) gives on oxidation $C_3H_6O_2$ (B). A reacts with Ethyl magnesium iodide to give $C_5H_{12}O$ (C), which on dehydration gives C_5H_{10} (D). On reductive ozonolysis D gives A and C_2H_4O (E). E gives the iodoform test. Identify the compound A to E. Choose the correct names of the compound A to E.	5

		a) A:Propanol, B:Propanoicacid, C:pentan-2-ol, D: pent-2-ene, E: ethanol b) A:Propanal, B:Propanoicacid, C:pentan-2-ol, D: pent-2-ene, E: ethanol c) A:Propan-2-one, B:Propanoicacid, C:pentan-3-ol, D: pent-1-ene, E: ethanal d) A:Propanal, B:Propanoicacid, C:pentan-3-ol, D: pent-2-ene, E: ethanol	
	CO1	Ques 3 Match the following structural isomers A) pentan-2-ol — I) None B) 3-methylbut-1-ene — II) methyl propanoate C) butanoic acid — III) 3-methylbutan-2-one D) hexan-3-one — IV) 2,2-dimethylpropan-1-ol E) methyl acetate — V) cyclopentane	**5**
	CO5	Ques 4 i) The correct increasing order of acidic strength of the following compounds will be 2,2-dinitroaceticacid, methanoic acid, ethanoic acid, 2-chloroaceticacid a) 2,2-dinitroaceticacid, methanoic acid, ethanoic acid, 2-chloroaceticacid b) methanoic acid, ethanoic acid, 2-chloroaceticacid, 2,2-dinitroaceticacid c) ethanoic acid, methanoic acid, 2-chloroaceticacid, 2,2-dinitroaceticacid d) ethanoic acid, 2-chloroaceticacid, methanoic acid, , 2,2-dinitroaceticacid ii) True or false For the above order of acidic strength, the acidic character increased due to increase in +M effect of the group.	**3+2**
	CO3	Ques 5 i) Choose all the correct statements a) SN1 and SN2 both the reactions are shown by alkyl halides b) SN1 is shown by tertiary alkyl halides c) SN2 is a two step mechanism d) SN1 is a single step mechanism ii) True or false? SN1 reaction is favoured by polar solvents and it involves rearrangement of carbocations while SN2 is favoured by non polar solvents and involves rearrangement of carbanions. iii) Fill in the blank Chloroform is used as an / a ……..agent	**2+2+1**
	CO1	Ques 6 i) Identify the incorrect statement regarding alkadiene a) These are of three types b) These are unsaturated hydrocarbons c) These compounds have only one C=C bonds d) These compounds have the general formula CnH2n-2 ii) Identify the one which is the perfect example of a compound with Isolated double bond: a) 1,4 pentadiene b) 1,2 pentadiene	**2+2+1**

		c) 1,3 pentadiene d) 1,5 butadiene iii) Identify the incorrect statement regarding alkadienes a) Dienes show cis-trans isomerism b) Conjugated dienes have better stability compared to other dienes c) Dienophile supports alkadienes d) Alkadienes also undergo hydrobromination	
	CO2	Ques 7 i) A more substituted alkene will be more stable is known as …….rule. ii) Alkenes undergo addition reaction with HBr according to ……..rule. iii) The electrocyclic reaction between a diene and an alkene is known as ……reaction	**2+1+2**
			35
		Total	**75**