

Roll No _____

RE-APPEAR, EXAMINATION
DEC, 2024



Course Code __BP202T__ Course Name _____Pharmaceutical organic chemistry I____

K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION

Programme Name: _B.Pharm Sem_:2ND _____

Time:2.5Hours

Maximum Marks: 75

Instructions: The question paper consists of 32 questions divided into three-part A, B and C. Attempt all questions from section-A comprises 20 MCQs, Any two questions out of three from section-B and Any seven questions out of Nine from section-C

Section-A (20 X 1 = 20 Marks)

1	What is the process by which halogens react with alkanes to form alkyl halides? a) Substitution b) Addition c) Elimination d) Hydrolysis	CO3	L2
2	Which of the following statements about the stability of alkenes is true? a) Alkenes with more alkyl substituents are less stable. b) Alkenes with fewer alkyl substituents are less stable. c) Alkenes with more alkyl substituents are more stable. d) Alkenes with fewer alkyl substituents are more stable.	CO3	L2
3	The E1 reaction is favored when: a) Strong nucleophile is present b) Strong base is present c) The leaving group is weak d) The solvent is polar protic	CO3	L1
4	In the reaction of 2-bromobutane with alcoholic KOH, which product would be favored according to Saytzeff's rule? a) 1-Butene b) 2-Butene c) 1-Butyne d) 2-Butyne	CO1	L3
5	In ozonolysis, the double bond is cleaved to form: a) Two alcohols b) Two alkyl halides c) Two carbonyl compounds d) Two amines	CO2	L4

6	Which of the following reagents is commonly used in the electrophilic addition of water to an alkene to form alcohols? a) HCl b) HBr c) H₂SO₄ d) KMnO₄	CO2	L1
7	Which of the following is a characteristic feature of electrophilic addition reactions of alkenes? a) The addition of a nucleophile to the double bond b) The addition of a hydrogen halide to the double bond c) The elimination of a leaving group from the double bond d) The oxidation of the double bond to form a carbonyl group	CO3	L2
8	Markovnikov's rule predicts that in the addition of a protic acid (HX) to an alkene, the hydrogen atom adds to the carbon atom of the double bond that has: a) Fewer hydrogen atoms b) Fewer substituents c) More hydrogen atoms d) More substituents	CO3	L2
9	The stability of conjugated dienes can be explained by the concept of: a) Steric hindrance b) Hyperconjugation c) Aromaticity d) Polarizability	CO3	L4
10	The Diels-Alder reaction involves the cycloaddition of a conjugated diene and a _____. a) Electrophile b) Nucleophile c) Radical d) Solvent	CO2	L2
11	Allylic rearrangement involves the migration of a _____ group to an adjacent carbon atom. a) Alkyl b) Aryl c) Hydroxyl d) Halogen	CO1	L5

12	Which of the following factors influences the rate of an SN2 reaction? a) Concentration of substrate only b) Concentration of substrate and nucleophile c) Concentration of substrate and solvent d) Concentration of solvent only	CO3	L1
13	In SN1 reactions, the stereochemistry of the product is: a) Retained. b) Inverted. c) Racemic. d) Unchanged.	CO3	L2
14	What is the composition of Lucas reagent? a) Concentrated hydrochloric acid (HCl) and zinc chloride (ZnCl₂) b) Sodium hydroxide (NaOH) and potassium iodide (KI) c) Sodium hypochlorite (NaClO) and sulfuric acid (H₂SO₄) d) Potassium permanganate (KMnO₄) and sulfuric acid (H₂SO₄)	CO4	L5
15	Cetostearyl alcohol is commonly used in the formulation of: a) Cosmetics b) Pesticides c) Pharmaceuticals d) Fertilizers	CO4	L6
16	What is the primary difference between regular Aldol condensation and Crossed Aldol condensation? a) Crossed Aldol condensation involves two different carbonyl compounds as reactants. b) Crossed Aldol condensation occurs only with aromatic aldehydes. c) Crossed Aldol condensation does not involve a base catalyst. d) Crossed Aldol condensation yields only one product.	CO2	L1
17	Which of the following aldehydes is most likely to undergo Cannizzaro reaction? a) Formaldehyde b) Benzaldehyde c) Acetaldehyde d) Both A and B	CO3	L2
18	Which observation indicates a positive result for the sodium bicarbonate test for carboxylic acids? a) Formation of a white precipitate b) Formation of a blue coloration c) Effervescence or bubbling d) Formation of a silver mirror	CO4	L5
19	What is the chemical formula of succinic acid? a) C₄H₆O₅ b) C₃H₆O₃ c) CH₃COOH d) C₄H₆O₄	CO1	L1

20	Which of the following aliphatic amines is expected to be the most basic? a) Diethylamine b) Dipropylamine c) Dimethylamine d) Dibutylamine	CO3	L6

Section B (2 X 10 = 20 Marks)

1	Explain the factors that influence the acidity of carboxylic acids. Give the structure and uses of Lactic acid, Tartaric acid, Citric acid, Succinic acid and Oxalic acid'	CO3	L2
2	Discuss and contrast aldol condensation and crossed aldol condensation reactions. Explain the mechanisms involved in each reaction and examples to illustrate each reaction type.	CO2	L4
3	Describe the step-by-step mechanism of an SN1 and SN2 reaction and explain the influence of the nature of carbocation on the reaction mechanism.	CO2	L1

Section B (7 X 5 = 35 Marks)

1	Discuss Cannizzaro reaction and explain the mechanisms involved in the reaction and examples to illustrate reaction.	CO2	L3
2	Describe qualitative tests that can be used to identify the presence of carboxylic acids in a given organic compound.	CO4	L5
3	Explore structure and various uses of ethyl alcohol, Methyl alcohol, Benzyl alcohol, Glycerol and Propylene glycol.	CO2	L1
4	Discuss the factors that influence the basicity of aliphatic amines and how different substituents attached to the nitrogen atom affect their basicity.	CO3	L4
5	Discuss Fehling's and Benedict's tests for aldehydes and reducing sugars. Discuss the chemical reactions involved in each test and how they are used to detect the presence of aldehydes in a sample.	CO4	L5
6	Discuss the step-by-step mechanisms involved in Perkin condensation reaction, including the formation of intermediates and the role of catalysts or reagents.	CO3	L3
7	Discuss Markovnikov's rule in the context of addition reactions to alkenes. Provide examples to explain how Markovnikov's rule applies to each reaction.	CO3	L2
8	Explain ozonolysis and Diel-Alder reactions of alkenes including role of intermediates of the two reactions.	CO2	L2
9	Discuss the rules for naming organic compounds with substituents or functional groups. Provide examples of naming compounds with common substituents and functional groups.	CO1	L1