

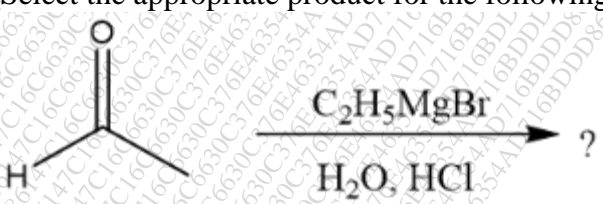
SET II

Subject: Pharmaceutical Organic Chemistry I **Year and Sem: First Year SEM-II**
Duration: 3 Hours **Total marks: 80**
Syllabus: CBCS R-2019

N.B. : 1. All questions are compulsory
2. Figures to right indicate full marks

Q. 1	Choose appropriate option for following multiple choice-based questions.	20
1	Which compound is a positional isomer of 1-chloropentane?	
a	CH ₃ CH ₂ CHCH ₂ CH ₂ Cl	
b	CH ₃ CHCH ₃ CH ₂ CH ₂ Cl	
c	CH ₂ Cl C(CH ₃) ₃ Cl	
d	CH(CH ₃) ₂ CHClCH ₃	
2	Choose the incorrect option regarding isomerism	
a	They differ in both physical and chemical properties	
b	They have different molecular formula	
c	There are two types of isomerism- structural and stereoisomerism	
d	Geometric and optical isomerism are two types of stereoisomerism.	
3	What is the IUPAC Name for the following compound? <div style="text-align: center;"> </div>	
a	1-Methyl-2-oxobutanal	
b	2-Methyl-3-oxopentanal	
c	3-Methyl-2-oxobutanal	
d	2-Methyl-3-oxobutanal	
4	The reactivity order of alkyl halides in SN ₂ mechanisms is	
a	1° > 2° > 3°	
b	2° > 1° > 3°	
c	3° > 1° > 2°	
d	3° > 2° > 1°	
5	Low concentration of nucleophile favours	
a	SN ₂ reaction	
b	SN ₁ reaction	
c	Both SN ₁ and SN ₂ reaction	
d	SNE reactions	

6	SN2 mechanism proceeds through the intervention of	
a	Free radicals	
b	Carbonium ion	
C	Transition state	
d	Carbanion	
7	The most reactive alkyl halide is	
a	C2H5F	
b	C2H5Br	
C	C2H5I	
d	C2H5Cl	
8	An ideal solvent for SN1 reaction -	
a	Polar protic solvent	
b	Polar aprotic solvent	
C	Non polar solvent	
d	Levelling solvent	
9	Chlorination of methane to give CCl4 is an example of	
a	electrophilic addition	
b	free radical substitution	
C	nucleophilic addition	
d	electrophilic substitution	
10	Paraffin waxes are graded by its	
a	melting point	
b	specific gravity	
C	ductility	
d	viscosity	
11	In the addition of HX to a double bond the hydrogen goes to the carbon that already has more hydrogen is a statement of	
a	Hund's rule	
b	Markovnikoff's rule	
C	Saytzeffs rule	
d	Anti Markovniknov's rule	
12	Which of the following reacts with HBr in presence of a peroxide to give anti Markovnikoff's product	
a	1-butene	
b	2,3 dimethyl 2 butene	
C	2- butene	
d	3 hexene	
13	Why tertiary carbonium ion is more stable than primary and secondary carbonium ion	
a	due to presence of +I effect	

b	due to presence of-I effect	
C	due to steric hindrance	
d	Both a) and c)	
14	Which of the following alkenes will give a mixture of acetone and acetaldehyde on ozonolysis?	
a	1 butene	
b	2 methyl 2 butene	
C	2 butene	
d	2 methyl propene	
15	Which of the following compound is more stable?	
a	1,3 butadiene	
b	1,4 pentadiene	
C	1,5 hexadiene	
d	1,2 propadiene	
16	1,3 butadiene reacts with bromine to mainly give	
a	3,4 dibromo 1 butene	
b	4 bromo 1 butene	
C	1,4 dibromo 2 butene	
d	1 bromo 2 butene	
17	Which of the following statements is in accordance with Saytzeff's rule?	
a	2-Butene is less stable than 1-Butene	
b	2,3-Dimethyl-2-butene is more stable than 1-Butene	
C	2-Butene is more stable than 2,3-Dimethyl-2-butene	
d	2-Methyl-1-butene is more stable than 2,3-Dimethyl-2-butene	
18	Select the appropriate product for the following reaction.	
		
a	butan-2-ol	
b	Isobutyric acid	
C	Propionic acid	
d	butan-3-ol	
19	Identify the product when benzaldehyde reacted with concentrated potassium hydroxide.	
a	Benzyl alcohol	
b	Benzyl alcohol and potassium salt of benzoic acid	
C	Potassium salt of benzoic acid	
d	Benzoic acid	
20	What is the name of final addition product when alcohols are added to ketones?	

a	Hemiacetal	
b	Acetal	
C	Hemiketals	
d	Ketals	
Q. 2	Answer any one question.	12
A		
a	<p>I) Explain in details Electrophilic addition of HBr to 1-propene. Write complete reaction, Give the detailed mechanism for addition as per Markovnikoff's rule and the addition in presence of peroxide. Comment on the stabilities of intermediates and products.</p> <p>II) Give the products obtained on reaction of 2-chlorobutane and alcoholic KOH. Describe the mechanism for formation of both the products. Comment on major and minor product formation. Justify your answer.</p>	6 6
b	<p>I) Give Reasons:</p> <ol style="list-style-type: none"> 1) Why hydrolysis of ethyl chloride is SN2 while hydrolysis of tert-butyl chloride is SN1 reaction? 2) Why alkyl chlorides react easily with -OH ions while vinyl halide does with difficulty? <p>II) Arrange the following in the order of their increasing reactivity towards nucleophilic substitution reaction. CH3F, CH3Cl, CH3I, CH3Br. Justify your answer. Give detailed mechanism for SN1 Reaction.</p>	6 6
Q. 2	Answer any four questions	48
B		
a	<p>i) Write the IUPAC names for the following</p> <p>ii) Give structures for the following IUPAC names</p> <ol style="list-style-type: none"> 1) 2,3-Dichloro-1,5-dipentanamide 2) 3-Bromo-1-propene 3) 1-Butene 4) 3-Butenoic acid 	6 4

	<p>III) Draw the tautomeric forms of acetone and identify the tautomeric system.</p>	2
b	<p>I) Compound (A) having molecular formula C_3H_7NO, on acid hydrolysis gives an acid(B) and ammonia. When (A) treated with bromine and alkali, a compound (C) is obtained which on treatment with nitrous acid yield an alcohol (D) and nitrogen. Compound (C) on reaction with chloroform and alkali produce evil smell due to formation of compound (E). Write structures for all the compounds mentioned by giving appropriate reactions</p> <p>II) Depict the detailed mechanism for any two:</p> <ol style="list-style-type: none"> 1) Benzoin condensation 2) Formation of acetal from acetaldehyde 3) Perkin condensation 	6 6
c	<p>I) Arrange the following bases in increasing order of basicity, in both solution phase and gaseous phase. Justify the order: N-Methylethanamine, Ethanamine and Trimethylamine.</p> <p>II) With the help of reactions Give Qualitative tests for carboxylic acids. Write the structure and use of tartaric acid and acetyl salicylic acid</p>	6 6
d	<p>I) How will you distinguish primary, secondary and tertiary alcohols by Lucas test? State chemical reactions. Write the mechanism of acidic dehydration of alcohols.</p> <p>II) Discuss in detail halogenation of alkanes with example. Give use of paraffin.</p>	6 6
e	<p>I) Discuss in detail the general reaction mechanism of nucleophilic addition reaction for acetal formation. Give the products for the following:</p> <ol style="list-style-type: none"> 1) Acetone +Phenylhydrazine 2) Acetaldehyde + semicarbazide 3) Benzaldehyde + 2,4 dinitrophenyl hydrazine <p>II) Elaborate on structural Isomerism in organic compounds with examples each</p> <p>III) Attempt the following conversions.</p> <ol style="list-style-type: none"> 1) 2-Bromo-2-methyl propane to 2,2-dimethylpropanamide 2) Propionitrile to Methyl propionate 3) Acetone to Isopropylmethylamine 	6 3 3