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Brainware University
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BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – B.Pharm-2020/B.Pharm-2022/B.Pharm-2023/B.Pharm-2024/B.Pharm-2025

Course Name – Pharmaceutical Organic Chemistry I/Pharmaceutical Organic Chemistry I - Theory
Course Code - BP202T
(Semester II)

Full Marks : 75

Time : 3:0 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 20=20

1. Choose the correct alternative from the following :

- (i) Identify one among the following gives 1st position in the priority table.
- | | |
|-------------|--------------------|
| a) Aldehyde | b) Ketone |
| c) Nitro | d) Carboxylic acid |
- (ii) Find the correct alternatives: if the position of functional group is different in its isomer, then this is called ____.
- | | |
|-------------------------------|---|
| a) Functional group Isomerism | b) Chain Isomerism |
| c) Position Isomerism | d) Functional, chain and position isomerism |
- (iii) Select the compound which is a tertiary amine.
- | | |
|---------------------|-------------------|
| a) Methylamine | b) Dimethylamine |
| c) Ethylmethylamine | d) Trimethylamine |
- (iv) Identify the secondary (2°) alcohol.
- | | |
|-----------------|-----------------------|
| a) 1-Propanol | b) 2-Propanol |
| c) Cyclohexanol | d) 2-methyl-2-butanol |
- (v) Identify the full form of the IUPAC?
- | | |
|--|---|
| a) Internal Union of Pure and Applied Chemistry | b) International University of Pure and Applied Chemistry |
| c) International Union of Pure and Applied Chemistry | d) International Union of Pure and Chemistry |
- (vi) Select the compound having the functional group –OH?
- | | |
|-----------------|-------------------|
| a) 2-butanone | b) 1, 2-ethandiol |
| c) Nitrobenzene | d) Ethanal |
- (vii) Identify the compound showing geometrical isomerism from the following.
- | | |
|-------------|----------------------|
| a) 2-Butene | b) 2-Methyl-2-Butane |
|-------------|----------------------|

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- c) 2-Pentane
d) 1,2-Dichloropropane
- (viii) Select the correct option: the shape of a p orbital is _____.
a) oval
b) spherical
c) dumb-bell
d) rectangular
- (ix) Select the correct option: in $C=C$, there is _____.
a) sp^3 hybridization
b) sp hybridization
c) sp^2 hybridization
d) no hybridization
- (x) Show which of the following halide can give best S_N2 reaction?
a) Primary alkyl halide
b) Tertiary alkyl halide
c) Secondary alkyl halide
d) All can give S_N2 reaction at same rate
- (xi) Select the correct option: the Oxo process is also known as _____.
a) hydraformation
b) hydroformation
c) lepoformation
d) dehydroformation
- (xii) Select the correct option: as per IUPAC nomenclature, ketone named as _____.
a) alkanones
b) alkenones
c) alkynones
d) All
- (xiii) Select the correct option: the Clemmensen reduction of a ketone is carried out in the presence of which of the following?
a) H_2 and Pt as catalyst
b) Glycol with KOH
c) Zn-Hg with HCl
d) $LiAlH_4$
- (xiv) Select the correct option: the compound which forms acetaldehyde when heated with dilute NaOH is _____.
a) 1 chloro ethane
b) 1, 1 dichloro ethane
c) 1, 2 dichloro ethane
d) 1, 1, 1 trichloro ethane
- (xv) Select the correct option: shape of carbocation is _____.
a) Tetrahedral
b) Trigonal planar
c) Octahedral
d) Square planar
- (xvi) Select the correct option: Lindlar's catalyst is _____.
a) $LiAlH$
b) $Pd/BaSO_4$ in quinoline
c) NH_2-NH_2
d) $HCl/ZnCl_2$
- (xvii) Select the correct option: Diel's Alder comes under _____.
a) Cycloaddition
b) Electrocyclic
c) Sigmatropic
d) All
- (xviii) Select the correct option: acetic acid is manufactured by the fermentation of which of the following reactions?
a) Ethanol
b) Methanol
c) Ethanal
d) Methanal
- (xix) Select the correct option: which of the given reaction produces formic acid?
a) Calcium acetate is heated with conc. H_2SO_4
b) Calcium formate is heated with calcium acetate
c) Glycerol is heated with oxalic acid at $110^\circ C$
d) Acetaldehyde is oxidised with $K_2Cr_2O_7$ and H_2SO_4
- (xx) Select among of the followings gives benzoic acid on oxidation?
a) Chlorophenol
b) Chlorotoluene
c) Chlorobenzene
d) Benzyl chloride

Group-B

(Short Answer Type Questions)

5 x 7=35

2. Describe about Markovnikov rule.

(5)

3. Describe diels-Alder reaction and ozonolysis. (5)
4. Define carbonyl compounds and describe any three general reactions of ketones. (5)
5. Discuss in brief about the qualitative tests and uses of ethyl alcohol. (5)
6. Explain the mechanism of SN1 reaction in alkyl halide. (5)
7. Explain name reaction with mechanism- Wolf-Kishner reduction. (5)

OR

8. Explain name reaction with mechanism- Clemmensen reduction. (5)

OR

- Explain name reaction with mechanism- Beckmann rearrangement. (5)

Group-C

(Long Answer Type Questions)

9. Explain kinetics, mechanism, stereochemistry and reactivity of SN2 reaction. 10 x 2=20 (10)
10. Differentiate between E1 and E2 reaction along with their mechanisms with suitable examples. (10)

OR

- Differentiate between aliphatic and aromatic compound by showing some reactions. (10)
