



BRAINWARE UNIVERSITY

Term End Examination 2023-2024

Programme – B.Pharm-2020/B.Pharm-2021/B.Pharm-2022

Course Name – Pharmaceutical Organic Chemistry III

Course Code - BP401T

(Semester IV)

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) Which among the following options define meso form of isomers?

- | | |
|-----------------------------------------------------------------|-------------------------------------------------|
| a) Meso form is optically inactive due to external compensation | b) The molecules of the meso isomers are chiral |
| c) It can be separated into optically active enantiomeric pairs | d) It is a single compound |

(ii) Select the correct option: E/Z nomenclature for geometrical isomerism follows _____.

- | | |
|------------------------------|-------------------------|
| a) Chan ingold prelog Scheme | b) Newmann's projection |
| c) Flagpole rule | d) None of above |

(iii) Identify the isomer which can be interconverted through rotation around a single bond are:

- | | |
|----------------|-----------------------|
| a) Conformers | b) Diastereomers |
| c) Enantiomers | d) Positional isomers |

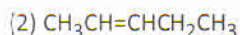
(iv) Select the correct option. Two isomeric forms of a saturated hydrocarbon _____.

- | | |
|------------------------------------|---------------------------------------------------------|
| a) Have the same structure | b) Have different compositions of elements |
| c) Have the same molecular formula | d) Have a different content of the isotopes of hydrogen |

(v) Identify the possible number of aromatic isomers produced by dibromobenzene.

- | | |
|------|------|
| a) 2 | b) 3 |
| c) 4 | d) 6 |

(vi) For which among the listed compounds below produces cis-trans isomers?



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- a) only 2
c) both 2 and 3
- b) both 1 and 2
d) all three
- (vii) Identify which among the following compounds does not exhibit geometric isomerism.
- a) 1-hexene
c) 3-hexene
- b) 2-pentene
d) 2-hexene
- (viii) Identify which of the following reagent will react with furan to form 2-furansulfonic acid
- a) SO_3 in Pyridine at 100°C
c) Dilute H_2SO_4 at 100°C
- b) SO_2 at 10°C
d) Dilute H_2SO_4 at 200°C
- (ix) Identify what is the correct order of reactivity (most reactive first) of pyrrole, furan and thiophene towards electrophiles
- a) thiophene>pyrrole> furan
c) pyrrole> furan >thiophene
- b) furan >pyrrole>thiophene
d) furan >thiophene>pyrrole
- (x) Recognise the compounds will be optically active
- a) Propanoic acid
c) 2- chloropropanoic acid
- b) 3- chloropropanoic acid
d) 3-chloropropene
- (xi) Indicate the lone pair electron of Nitrogen participating in the resonance in pyridine is present in which orbital?
- a) p-orbital
c) sp^3 -orbital
- b) sp^2 -orbital
d) sp -orbital
- (xii) Select the correct option: Nitration of oxazole leads to produce _____.
- a) 2-Nitrooxazole
c) 3-Nitrooxazole
- b) 4-Nitrooxazole
d) 5-Nitrooxazole
- (xiii) Pyridine act with hydrogen iodide to produce _____.
- a) 1,4-diiodopyridine
c) 2,6-diiodopyridine
- b) 1,3-diiodopyridine
d) n-Pentane
- (xiv) Identify the correct option: Quinine is widely used as _____
- a) Antipyretic Drug
c) Antihypertensive Drug
- b) Antimalarial drug
d) Antitubercular Drug
- (xv) Clemmensen reduction is always done for base sensitive _____.
- a) Ketone Compound
c) Carbonyl Compound
- b) Methylene Compound
d) Acetylene Compound
- (xvi) Salicylaldehyde act with zinc and HCl to produce _____.
- a) Adipic Acid
c) O-Cresol
- b) Benzaldehyde
d) Cycloalkane
- (xvii) The conversion of ketoximes to N-substituted amides by heating with some acidic reagents is Reaction name as _____
- a) Dakin reaction
c) Beckmann Rearrangement
- b) Clemmensen reduction
d) Brich Reduction
- (xviii) Dakin oxidation can happen gently acts in _____
- a) Alcoholic condition
c) Basic Condition
- b) Acidic Condition
d) Aldehyde
- (xix) Select the correct option: Oxazole is a _____
- a) Very strong acid
c) Very weak base
- b) Very strong base
d) Very weak acid
- (xx) Identify the correct option: Pyridine react with 20% Oleium at 220°C to produce
- a) Pyridine-3-sulphonic acid
c) Pyridine-6-sulphonic acid
- b) Pyridine-2-sulphonic acid
d) Pyridine-4-sulphonic acid

Group-B

(Short Answer Type Questions)

5 x 7=35

2. Describe about Clemmensen reduction reactions and its mechanism with suitable examples. (5)
3. Describe the chemical properties of Quinoline. (5)
4. Define racemic mixture and explain in brief about resolution of racemic mixture. (5)
5. Explain in detail about racemization. (5)
6. Discuss about enantiomers and diastereomers by giving suitable examples. (5)
7. Explain Dakin reaction and its applications. (5)

OR

Explain "Metal Hydrides" and reactions associated with "Sodium Borohydrate and Lithium Aluminium Hydrate". (5)

8. Discuss any three methods of synthesis of thiophene. (5)

OR

Explain the reactivity of furan, pyrrole, and thiophene. (5)

Group-C

(Long Answer Type Questions)

10 x 2=20

9. Describe Beckmanns rearrangement in an elaborate manner with mechanism and proper examples. (10)
10. Illustrate the synthesis, aromaticity and various electrophilic substitution reactions of thiophene. (10)

OR

Illustrate what will happen when pyrrole is treated with the followings; A) Nitric acid in acetic anhydride at 10°C, B) Sulfur trioxide in pyridine, C) Benzenediazonium chloride, D) Bromine in alcohol. (10)

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