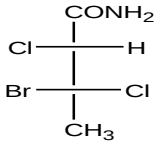
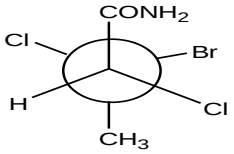
UNIVERSITY END SEMESTER EXAMINATION

S. Y. B. PHARM. SEM-IV-POC-III-MCQ-FH2022

1. Identify the relationship between the molecule X and Y.



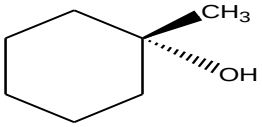
(X)



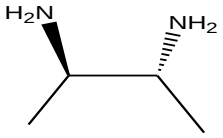
(Y)

A. Diastereomers
B. Enantiomers
C. Identical
D. Structural isomers

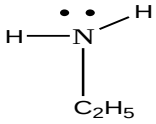
2. Which of the following molecules is chiral?



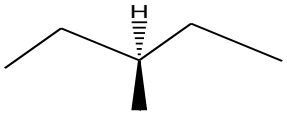
(I)



(II)



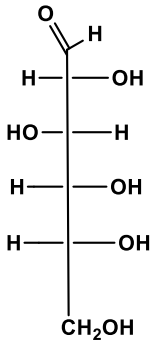
(III)



(IV)

A. I
B. II
C. III
D. IV

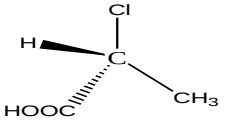
3. Nomenclate the given molecule:



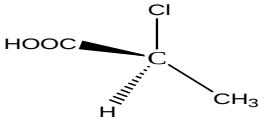
A. L-Glucose
B. 2R,3S,4R,5R-Glucose
C. 2R, 3R, 4S, 5R- Glucose
D. D-Glucose

4. A mixture of equal quantities of two enantiomers is called as……
A. Diastereomeric mixture
B. Mesomer
C. Racemic mixture
D. Optical isomers

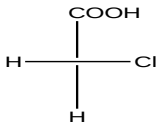
5. Which of the following compound has R-Configuration?



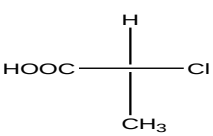
Compound-I



Compound-II



Compound-III

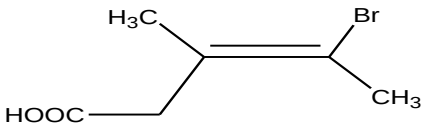


Compound-IV

A. Compound-I
B. Compound-II
C. Compound-III

D. Compound-IV

6. Identify the correct name with configuration of the following compound



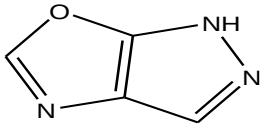
A. (Z)-4-Bromo-3-methyl-pent-3-enoic acid
B. (Z)-2-Bromo-3-methyl-pent-2-enoic acid
C. (E)- 4-Bromo-3-methyl-pent-3-enoic acid
D. (E)-2-Bromo-3-methyl-pent-2-enoic acid

7. Which of the following decrease in order of stability of cyclohexane conformation is correct?
A. Chair > twist boat > boat > half chair
B. Chair > boat > twist boat > half chair
C. Half chair > twist boat > boat > chair
D. Chair > boat > half chair > twist boat

8. ……are stereoisomers resulting from hindered rotation about single bonds where the steric strain barrier to rotation is high enough to allow for the isolation of the conformers.
A. Enantiomers
B. Diastereomers
C. Mesomers
D. Atropisomers

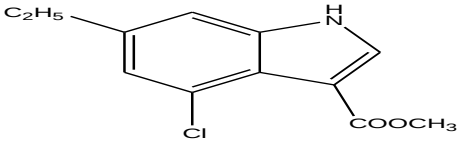
9. Identify the wrong statement about geometrical isomers
A. It must contain a carbon-carbon double bond in the molecule
B. Two different atoms or groups must be linked to each doubly bonded carbon atoms.
C. Cis and trans are geometric isomers
D. It occurs due to the rotation of carbon-carbon single bond

10. Nomenclate the following structure

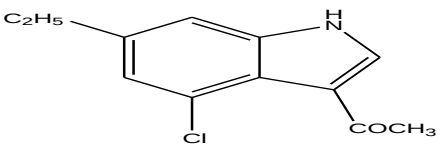


A. 1H-Pyrazolo[3,4-d]isoxazole
B. 1H-Pyrazolo[4,3-d]oxazole
C. 1H-Pyrazolo[2,3-c]oxazole
D. Oxazolo[4,3-d]1H-pyrazole

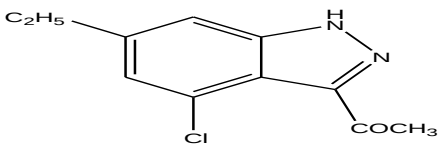
11. Identify the structure of 3-Acetyl-4-chloro-6-ethyl-1H-indole.



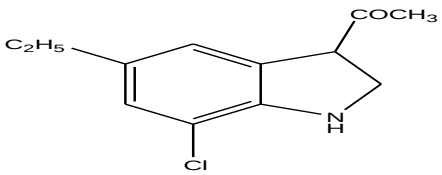
(Compound-I)



(Compound-II)



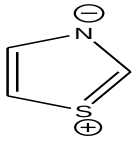
(Compound-III)



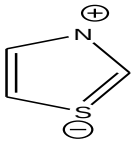
(Compound-IV)

A. Compound-I
B. Compound-II
C. Compound-III
D. Compound-IV

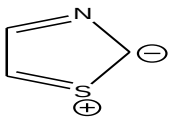
12. Which of the following resonating structures of Thiazole is incorrect?



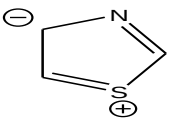
(Structure-I)



(Structure-II)



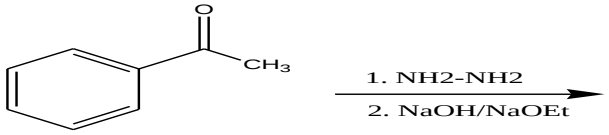
(Structure-III)



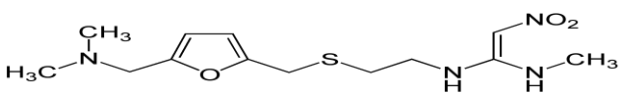
(Structure-IV)

A. Structure-I
B. Structure-III
C. Structure-IV
D. Structure-II

13. Which of the following five membered heterocyclic rings is most basic?
    A. Imidazole
    B. Pyrazole
    C. Thiazole
    D. Oxazole
14. Which heterocycle is synthesized from malonic ester and urea?
    A. Pyridine
    B. Imidazole
    C. Pyrimidine
    D. Indole
15. Paal-Knorr synthesis of furan is…..
    A. Cyclization of 1,4-diketone under acidic condition
    B. Cyclization of 1,2-diketone under acidic condition
    C. Cyclization of 1,3-diketone under acidic condition
    D. Cyclization of 1,4-diketone under basic condition
16. What is Chichibabin reaction?
    A. Conversion of pyridine to 3-bromopyridine
    B. Conversion of quinoline to 2-hydroxyquinoline
    C. Conversion of pyridine to 2-aminopyridine
    D. Conversion of quinoline to 8-bromoquinoline
17. Bromination of thiophene gives….
    A. 2,3-dibromothiophene
    B. 3-bromothiophene
    C. 3,4-dibromothiophene
    D. 2-bromothiophene
18. Identify the product of the following reaction



    A. Toluene
    B. Ethylbenzene
    C. Phenol
    D. 1-phenylethanol
19. Which of the following drug is used as anti-lipidemic?
    A. Ranitidine
    B. Celecoxib
    C. Atorvastatin
    D. Zidovudine
20. Identify the heterocycle in the given molecule



    A. Oxazole
    B. Pyrrole
    C. Isoxazole
    D. Furan

Q.I Attempt ANY ONE of the following (12M)

Q.1i) Draw all possible resonating structures of pyrazole. Compare the reactivity of pyrrole, furan and thiophene. Which position of the imidazole ring is susceptible to electrophilic aromatic substitution? Justify your answer. (6M)

ii) Define the terms 'stereospecific' and 'stereoselective'. Discuss, in details, the mechanism of halogenation of cis-2-butene and trans-2-butene. Comment on whether halogenation is stereoselective &/or stereospecific. (6M)

Q.2i) What is resolution of racemic modification? Describe in detail, the methods of resolution of racemic modification by giving examples. (6M)

ii) Give mechanism with reagents and reaction conditions for the following synthesis: (6M)

a) Van-Leusen oxazole synthesis
b) Hantzsch Pyridine synthesis

Q.II Attempt ANY FOUR of the following (48M)

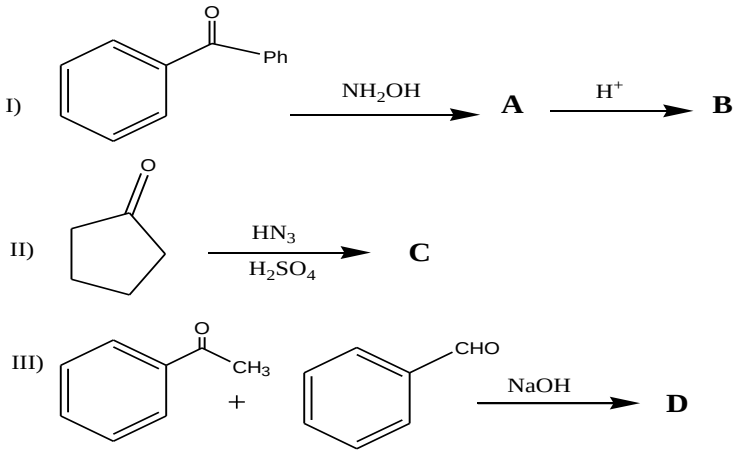
Q.1i) Draw conformations of n-butane with energy profile diagram. Comment on the stability of every conformer. (4M)

ii) Draw all possible projections of 2-Chloro-2-methyl-3-nitro-3-phenylpropan-1-ol.(4M)

iii)What will be the product of Birch reduction of benzoic acid? Write its mechanism. (4M)

Q.2 i) What is asymmetric synthesis? Enlist methods of asymmetric synthesis; explain any one in detail by giving examples. (4M)

ii) Identify the products A, B, C and D of the following reactions.(4M)

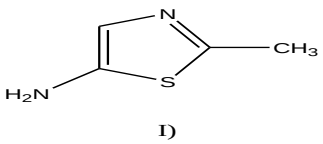


iii) Explain the two necessary conditions for biphenyl compounds to exhibit optical activity with suitable examples. (4M)

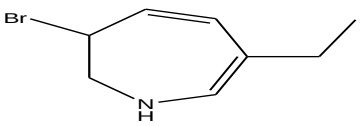
Q.3 i) Give mechanism for the following (6M)

a) Radziszewski Imidazole synthesis
b) Friedlander synthesis of quinoline

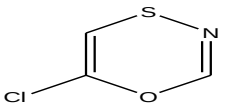
ii) Nomenclate the following structures (5M)



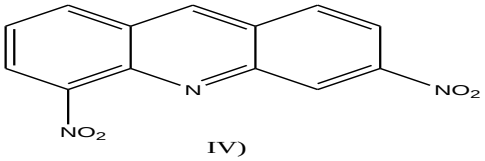
I)



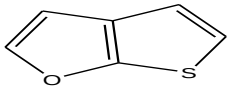
II)



III)

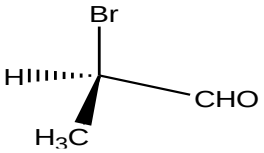


IV)



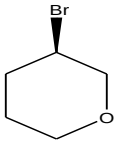
V)

iii) Assign R/S configuration to the given molecule (1M)

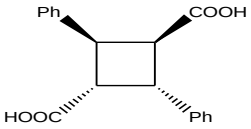


Q.4 i) Write medicinal uses of Clonidine, Tacrine, Zidovudine and Pyrantel pamoate. (4M)

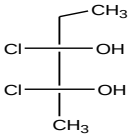
ii) Identify whether the following molecules are chiral/achiral. Justify the same. (4M)



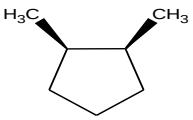
I)



II)



III)



IV)

iii) Draw structures of the following (4M)

a) (Z) 2-Bromo-2-butenoic acid
b) (E) 3-Hydroxy-2-butenal
c) Cis and trans isomers of 1,2-dimethylcyclohexane

Q.5 Give the products of following reactions (write structures). (7M)

I) Indole $\xrightarrow[NH(CH_3)_2]{HCHO}$

II) Pyridine $\xrightarrow[130^0C]{Br_2, \text{Oleum}}$

III) Thiophene $\xrightarrow{HNO_3/Ac_2O}$

IV) Pyrimidine $\xrightarrow{\text{mCPBA}}$

V) O-Hydroxy benzaldehyde $\xrightarrow[NaOH]{H_2O_2}$

VI) Imidazole $\xrightarrow{\text{Oleum, 100 deg}}$

VII) Furan $\xrightarrow{\text{Raney Ni/H}_2}$

ii) Using various oxidising and reducing agents, discuss oxidation and reduction of isoquinoline. (5M)