

Question Paper

Exam Date & Time: 15-May-2023 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

Pharmaceutical Organic Chemistry-III (Theory) [PCH-BP401T-S3]

Marks: 75

Duration: 180 mins.

I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

- 1) What is the name of the ring, which is a four membered, contains nitrogen as a hetero atom and it is a saturated? (1)

[pyrroline](#)
[aziridine](#)
[pyrrolidine](#)
[azetidine](#)

- 2) Which of the following is less resonance stabilized? (1)

[furan](#)
[thiophene](#)
[pyrrole](#)
[benzene](#)

- 3) Which of the following heterocycles is also known as acridine? (1)

[benzo\[b\]furan](#)
[dibenzo\[b,f\]azepine](#)
[benzo\[b\]quinoline](#)
[benzo\[b\]pyrrole](#)

- 4) What is the suffix to be used in IUPAC naming for the five membered, containing nitrogen and partially saturated ring? (1)

[-ole](#)
[-oline](#)
[-ine](#)
[-perhydro](#)

- 5) azepine heterocycle containing drug is used as (1)

[anxiolytic](#)
[antibiotic](#)
[analgesic](#)
[anti-inflammatory](#)

- 6) A stereoselective reaction meaning: (1)

[only one stereoisomer will be produced](#)

[more percentage of one stereoisomer will be produced](#)

[racemic mixture will be produced](#)

[meso compound will be produced](#)

7) One of the following alkanes show optical activity: (1)

[neopentane](#)

[isopentane](#)

[3-methylpentane](#)

[3-methylhexane](#)

8) The solid wedge bond in perspective formula indicates that the group which is: (1)

[towards reader](#)

[away from reader](#)

[in plane](#)

[not known its arrangement](#)

9) Geometrical isomerism can be exhibited by compounds having: (1)

[-N=N-](#)

[-HC=CH-](#)

[-C=N-](#)

[all of the above](#)

10) One of the following signs in stereochemistry denotes of sign of configuration: (1)

[d & l](#)

[\(-\) & \(+\)](#)

[D & L](#)

[none of the above](#)

11) If a molecule is rotated by an angle $360^\circ/n$ around an axis and an arrangement similar to the original is obtained then the molecule is said to have (1)

[Plane of symmetry](#)

[Centre of symmetry](#)

[Alternating axis of symmetry](#)

[Simple axis of symmetry](#)

12) In stereochemistry R and S stands for (1)

[Rectus and Septum](#)

[Rectus and Sinister](#)

[Rectum and](#)

[Septum](#)

[Rectum and Sinister](#)

13) If the net change of a reaction is the replacement of a ligand on a chiral (1)

center in a reactant and if, in the product, the replacement ligand occupies the site opposite to that occupied by the replaced ligand in the reactant, the reaction is said to occur with

[inversion of configuration.](#)

[retention of configuration.](#)

[loss of configuration.](#)

[addition of configuration](#)

- 14) The substance chemists took it as a standard against which the configurations of other compounds could be compared was (1)

[Glycol](#)

[Glycerol](#)

[Glyceraldehyde](#)

[Glyoxal](#)

- 15) In acridine nucleophilic attack takes place in (1)

[7th position](#)

[8th position](#)

[9th position](#)

[10th](#)

[position](#)

- 16) Oxidation of quinoline with peracids yields (1)

[quinoline-N-oxide](#)

[quinoline aldehyde](#)

[isonicotinic acid](#)

[nicotinic acid](#)

- 17) The catalyst used in Chichibabin pyridine synthesis is (1)

[cadmium\(II\) fluoride](#)

[calcium fluoride](#)

[magnesium hydroxide](#)

[chromium chloride](#)

- 18) Catalytic reduction of quinoline with tin and hydrochloric acid yields (1)

[decahydroquinoline](#)

[1,2,3,4- tetrahydroquinoline](#)

[Dihydroquinoline](#)

[Quinolidine](#)

- 19) Acridine is also known as (1)

[Dibenzo\[b,e\]quinoline](#)

[Dibenzo\[b,e\]pyridine](#)

[Dibenzo\[a,e\]pyridine](#)

[1,5-Benzoquinoline](#)

- 20) Theophylline is (1)

[1,3,7-trimethyl](#)

[Xanthine](#)

[3,7-dimethyl Xanthine](#)

[1,3-dimethyl Xanthine](#)

[1,7-dimethyl Xanthine](#)

II Long Answers

Answer all the questions.

- 1) Carry out the conformational analysis of n-butane between 2nd and 3rd carbon. Derive conclusions of the analysis. (Given torsional strains: each H-H interaction is 4 kJ/mol and each H-CH₃ as 6 kJ/mol, CH₃-CH₃ eclipsed is 11 kJ/mol and CH₃-CH₃ gauche is 3.8 kJ/mol) (10)
- 2) Explain DL system of nomenclature of optical isomers. Explain optical activity with suitable example and give its application. (10)

III Short Answers

Answer all the questions.

- 1) **Draw structures for the following IUPAC names:** (5)
 - a). 2-chloro phenothiazine
 - b). pyrrolidine-2,5-dione
 - c). Indole-3-acetic acid
 - d). pyridine-3-carboxylic acid
 - e). benzo[b]quinoline
- 2)
 - a) Draw the resonance structures of thiophene. 2 marks (5)
 - b) Give Paal-Knorr synthesis of thiophene. 2 marks
 - c) Why imidazole is written as 4(5)-imidazole? 1 mark
- 3) Explain with mechanism the EAS reactions of imidazole. (5)
- 4) What is Claisen-Schmidt condensation? Explain with mechanism. (5)
- 5) Explain the reactions of Quinoline. (5)
- 6) Explain Birch reduction with reaction. Give its application. (5)
- 7) Explain Chichibabin and Hantzsch synthesis with reaction equation. Give their application. (5)

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