

Question Paper

Exam Date & Time: 27-Nov-2023 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

Pharmaceutical Organic Chemistry II [PCH-BP301T]

Marks: 75

Duration: 180 mins.

I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

1) One of the following compounds is not an aromatic (1)

- [cyclopropenyl cation](#)
- [cyclopentadienyl cation](#)
- [cyclopentadienyl anion](#)
- [cycloheptatrienyl cation](#)

2) The substituent is a deactivator and yet it is an -ortho & -para directing in EAS reactions: (1)

- [-NO₂](#)
- [-CHO](#)
- [-Br](#)
- [-COOH](#)

3) Which of the following compounds is highly reactive towards EAS reactions: (1)

- [nitrobenzene](#)
- [benzoic acid](#)
- [bromobenzene](#)
- [methoxy benzene](#)

4) One of the following compounds can be used in the manufacture of phenol: (1)

- [benzene sulfonic acid](#)
- [toluene](#)
- [chlorobenzene](#)
- [acetophenone](#)

5) chlorination of benzaldehyde gives following is the **MAJOR** product: (1)

- [o-chloro benzaldehyde](#)
- [p-chloro benzaldehyde](#)
- [m-chloro benzaldehyde](#)
- [the mixture of all the above](#)

6) One of the following is an example for trans-fat: (1)

[elaidic acid](#)
[oleic acid](#)
[stearic acid](#)
[linoleic acid](#)

7) Which of the following oil or fat **DOES NOT** undergo saponification? (1)

[olive oil](#)
[coconut oil](#)
[mineral oil](#)
[butter fat](#)

8) Due to one of the following reasons, oils have low melting point than fats (1)

[hydrogen bonding](#)
[long chain carbon atoms](#)
[presence of unsaturated fatty acid chains](#)
[presence of saturated fatty acids](#)

9) One of the following statements is **INCORRECT** on intermolecular forces: (1)

[attractive forces between molecules](#)
[do not make new compounds](#)
[makes the molecules "sticky"](#)
[it is a chemical bond](#)

10) Different tocopherols are identified based on (1)

[number and position of hydroxyl groups on side chain](#)
[number and position of methyl groups on ring system](#)
[length of the side chain](#)
[sources from different plants](#)

11) According to Baeyer strain theory, which of the following conformer of cycloalkane is more stable (1)

[Chair form](#)
[Boat form](#)
[Twist-chair form](#)
[Twist-boat form](#)

12) Identify the **INCORRECT** statement regarding cycloalkanes (1)

[These have \$sp^3\$ hybridized carbons.](#)
[These have tetrahedral bond angles.](#)
[Stability of the cycloalkanes varies directly with their respective size.](#)
[These undergo nucleophilic substitution reactions.](#)

13) Which of the following cycloalkanes is most reactive? (1)

[Cyclohexane](#)

[Cyclopropane](#)

[Cyclobutane](#)

[Cyclopentane](#)

14) The bond angle between carbon atoms in cyclohexane is (1)

[109° 28'](#)

[60°](#)

[90°](#)

[120°](#)

15) As compared to benzene, Naphthalene is (1)

[More reactive and more aromatic](#)

[More reactive and less aromatic](#)

[Less reactive and less aromatic](#)

[Less reactive and more aromatic](#)

16) Following is an example for polynuclear hydrocarbon (1)

[Benzene](#)

[Toluene](#)

[Cyclohexane](#)

[Anthracene](#)

17) Naphthalene upon oxidation with KMnO_4 in acidic medium gives (1)

[Phenyl gluconic acid](#)

[Phthalic anhydride](#)

[Phthalic acid](#)

[Phthalonic acid](#)

18) The basic scaffold present in propranolol is (1)

[Naphthalene](#)

[Phenanthrene](#)

[c\) Anthracene](#)

[Diphenyl methane](#)

19) Following positions of naphthalene are highly reactive towards electrophilic aromatic substitution reactions (1)

[Position 1,2](#)

[Position](#)

[9,10](#)

[Position 2,4](#)

[Position](#)

[7,11](#)

20) One of the following products is formed when a primary amine reacts with chloroform in alcoholic KOH (1)

[An isocyanide](#)

[An alcohol](#)

[An Aldehyde](#)

[Cyanide](#)

II Long Answers

Answer all the questions.

- 1) Explain with mechanism the bromination of phenol. Predict the major products and justify your answer. (10)
- 2) a. Give any three methods of preparation and two reactions of Phenols. (10)
b. How substituents affect the basicity of aromatic amines? Explain with suitable illustrations.

III Short Answers

Answer all the questions.

- 1) Discuss the various chemical reactions of oils and fats. (5)
- 2) Define saponification value. Give the principle involved in its determination and mention its importance. (5)
- 3) Give two preparation methods, two reactions and one use of Naphthalene. (5)
- 4) Give the Haworth synthesis of phenanthrene. Give any two uses of phenanthrene. (5)
- 5) Explain Bayer's strain theory with suitable examples. Mention its limitations. (5)
- 6) Give any five methods of preparation of cycloalkanes. (5)
- 7) Explain the effect of electron withdrawing and electron releasing groups on the acidity of carboxylic acids. (5)

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