

Question Paper

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



MANIPAL ACADEMY OF HIGHER EDUCATION

Pharmaceutical Organic Chemistry II [PCH-BP301T - S2]

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 highly reactive towards EAS reactions: (1)

- [aniline](#)
- [benzoic acid](#)
- [bromobenzene](#)
- [toluene](#)

2) Identify the strong deactivator towards EAS reactions: (1)

- [-CN](#)
- [-OCH₃](#)
- [-Br](#)
- [-CHO](#)

3) One of the following is known as arene: (1)

- [aniline](#)
- [phenol](#)
- [toluene](#)
- [nitrobenzene](#)

4) One of the following compounds has lowest reactivity towards EAS: (1)

- [toluene](#)
- [benzoic acid](#)
- [phenol](#)
- [methoxybenzene](#)

5) Iodination of benzene requires following reagent to generate iodine electrophile: (1)

- [F-TEDA BF₄](#)
- [aluminium chloride](#)
- [ferric chloride](#)
- [hydrogen peroxide](#)

6) What kind of intermolecular forces is present in hexane molecule? (1)

- [dipolar interactions](#)
- [present in the same group](#)

[Van der Waals interactions](#)
[hydrogen bonding](#)

7) Which of the following statements is **TRUE** about saponification value of oil? (1)

[The shorter the chain of fatty acid, the lower is the saponification value](#)
[The higher the saturation in fatty acid, the lower is the saponification value](#)
[The lower the saturation in fatty acid, the higher is the saponification value](#)
[The shorter the chain of fatty acid, the higher is the saponification value](#)

8) One of the following analytical constants help in classifying oils into drying, semidrying and non-drying: (1)

[acetyl value](#)
[acid number](#)
[ester value](#)
[iodine value](#)

9) The intermolecular force which is present in hydrochloric acid is: (1)

[hydrogen bonding](#)
[London forces](#)
[dipolar interactions](#)
[covalent bonding](#)

10) Reichert-Meissl value is used to measure (1)

[free fatty acids](#)
[water soluble fatty acids](#)
[unsaturated fatty acids](#)
[hydroxyl groups in fatty acids](#)

11) A reaction in which a carboxylic acid loses CO_2 is known as _____ . (1)

[Carbonylation](#)
[Carboxylation](#)
[Amination](#)
[Decarboxylation](#)

12) Which of the following cycloalkanes has the least ring strain? (1)

[Cyclopropane](#)
[Cyclohexane](#)
[Cyclopentane](#)
[Cycloheptane](#)

13) Name the method by which cyclic ketones is converted into cycloalkanes in presence of Zn amalgam and Conc. HCl (1)

[Wolff-Kishner reduction](#)
[Clemmensen's reduction](#)

[Diel's Alder reaction](#)

[Haworth reaction](#)

- 14) The hybridization in cyclopropane according to Coulson and Moffitt theory is (1)

[Sp3](#)

[Sp5](#)

[Sp](#)

[Sp2](#)

- 15) When alkenes are treated with methylene iodide (CH_2I_2) in the presence of a zinc & copper, resulting in the formation of cyclopropane derivatives. The name of the reaction is. (1)

[Simon-Smith reaction](#)

[Clemenson's reduction](#)

[Diel's Alder reaction](#)

[Oxidation reaction.](#)

- 16) Which is fused cyclic aromatic compound? (1)

[Biphenyl](#)

[Diphenyl methane](#)

[Diphenylamine](#)

[Naphthalene](#)

- 17) Electrophile attack on naphthalene predominantly occurs at (1)

[C1](#)

[C3](#)

[C2](#)

[C4](#)

- 18) In Friedel crafts acylation of naphthalene use of non-polar solvent gives (1)

[1-substituted product](#)

[2-substituted product](#)

[3-substituted product](#)

[4-substituted product](#)

- 19) In polar solvent Friedel-Crafts acylation in anthracene occurs at-. (1)

[C9 position](#)

[C2 position](#)

[C4 position](#)

[C1 position](#)

- 20) Phenanthrene is the basic moiety present in (1)

[Steroids](#)

[Carbohydrates](#)

[Aromatic amino acids](#)

[Long chain fatty acids](#)

II Long Answers

Answer all the questions.

- 1) a. Give any three methods of preparation and two reactions of Aromatic amines. (10)
b. How the electron withdrawing -chloro and -nitro groups influence the acidity of phenols? Explain with suitable illustrations.
- 2) Explain with mechanism the nitration of toluene. Predict the major products and justify your answer. (10)

III Short Answers

Answer all the questions.

- 1) Discuss the principle involved in determination of acetyl value and Reichert-Meissl value. Mention their importance of determination. (5)
- 2) Differentiate oils and fats. Why oils are liquids whereas fats are solids in nature? (5)
- 3) Give three methods of preparation and two reactions for aromatic carboxylic acids. (5)
- 4) Explain Coulson and Moffitt's theory with suitable illustrations. (5)
- 5) Give the limitations of Bayer's strain theory and justify the Sach Mohr corrections taking cyclohexane as a prototype. (5)
- 6) Give two preparation methods, two reactions and one use of Anthracene. (5)
- 7) Give an account of aromaticity in naphthalene using suitable illustrations. (5)

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