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341252(41)

B. Pharmacy (Second Semester) Examination

Nov.-Dec. 2019

(PCI Scheme)

(Pharmacy Branch)

PHARMACEUTICAL ORGANIC CHEMISTRY-I

Theory (P202T)

Time Allowed : Three hours

Maximum Marks : 75

Note : *Answer all questions from Section A. Attempt any two questions from section B and seven questions from Section C.*

Section - A

(Multiple Choice Questions)

Note : *Attempt all questions from MCQs. All questions carry 01 mark each.*

1. Choose the correct answer : **20×1=20**

(i) Which of the following statements about alkanes is not correct

(a) The name "paraffin" reflects the lack of reactivity of alkanes.

(b) Alkanes contain only strong sigma bonds.

(c) The electro negativities of C and H are about the same, so C-H bonds have no significant polarity.

(d) The electro negativities of C and H differ greatly; the H is the negative pole of the bond.

(ii) Which statement describes the geometry and hybridization?

(a) Planar and sp^2 hybridized.

(b) Tetrahedral and sp^3 hybridized.

(c) Planar and sp hybridized.

(d) Planar and sp^3 hybridized.

(iii) How many isomers are there of $C_5H_{11}Cl$?

(a) Six

(b) Seven

(c) Eight

(d) Nine

(iv) The general formula for alkanes is?

(a) C_nH_{2n+2}

(b) C_nH_{2n}

(c) C_nH_{2n-2}

(d) None of the above

(v) Which of the following compounds will react most rapidly with water?

(a) Acetone

(b) Acetyl chloride

(c) Acetic Anhydride

(d) Ethyl Acetate

(vi) Acetic anhydride is obtained by the reaction of?

(a) Acetic acid with sodium

(b) Acetic acid with water

(c) Acetic acid with diethyl ether

(d) Acetic acid with P_2O_5

(vii) How long is the C=C double bond in ethane?

(a) 1·44A°

(b) 1·33 A°

(c) 1·20 A°

(d) 1·54 A°

(viii) What cause the rotational barriers in alkenes?

(a) $C(sp^2) - C(sp^2)$ overlap

(b) C(sp) – C(sp) overlap

(c) C(p) – C(p) overlap

(d) $C(sp^2) - C(p)$ overlap

(ix) Which of the following alkenes can exist as cis/trans isomers?

(a) 2-hexene

(b) 1-hexene

(c) 2, 3 dimethylbutene

(d) 2-methyl-2-pentene

(x) Which reagent is a good nucleophile?

(a) NH_3

(b) HBr

(c) Br_2

(d) BH_3

(xi) Which type of reactant shows the greatest reactivity in a S_N^2 reaction?

(a) Secondary alkyl halides

(b) Tertiary alkyl halides

(c) Primary alkyl halides

(d) Methyl halides

(xii) Which statements best describes the mechanism of a S_N1 reaction?

(a) Carbocation formation with retention.

(b) Concerted reaction with partial racemization.

(c) Carbocation formation with partial racemization

(d) Concerted reaction with retention

(xiii) Which combination of chemicals is known as the "Lucas Reagent"?

(a) NaCl, HCl, $CuCl_2$

(b) HCl, $ZnCl_2$

(c) HCl, $SnCl_2$

(d) NaCl, $SnCl_2$

(xiv) What alcohol has the lowest solubility in water?

(a) Pentanol

(b) Methanol

(c) Butanol

(d) Ethanol

(xv) What is boiling point of ethanol?

(a) 83°C

(b) 73°C

(c) 88°C

(d) 78°C

(xvi) Which of the following carbonyl compounds reacts most rapidly with nucleophilic reagents?

(a) Benzaldehyde

(b) 3, 3-dimethylbutanal

(c) Acetophenone

(d) 2, 2-dimethyl cyclohexanone

(xvii) Which of the following aldehydes, used alone will undergo an aldol reaction?

(a) Formaldehyde, CH_2O

(b) Butanal, $CH_3(CH_2)_2CHO$

(c) Benzaldehyde, C_6H_5CHO

(d) 2-Propenal, $CH_2 = CHCHO$

(xviii) Common name of Methanoic Acid is :

(a) Acetic Acid

(b) Valeric Acid

(c) Formic Acid

(d) Propionic Acid

(xix) Carbylamine test is given by :

(a) Primary amines

(b) Secondary amines

(c) Tertiary amines

(d) None of these

(xx) Which of the following statements is false about primary amines?

(a) They can be prepared by reduction of nitriles with $LiAlH_4$

(b) They do not form salts with acids.

(c) They react with ice-cold nitrous acid to form nitrogen.

(d) They are basic and soluble in water.

Section - B

(Long Answer Type Question) **2×10=20**

Note : *Attempt any two questions. Each question carries 10 marks.*

2. Give a brief note on S_N^1 and S_N^2 reaction with example. Write factors which affect S_N^1 and S_N^2 reaction.

3. Explain following reactions for carbonyl compounds (any two) :

(a) Aldol condensation

(b) Cannizzaro Reaction

(c) Nucleophilic addition reaction

4. Write qualitative test of aliphatic amines and write structure and use of ethylenediamine.

Section - C

(Short Answer Type Question) **7×5=35**

Note : *Attempt any **Seven** questions. Each question carries 5 marks.*

5. Explain rule of IUPAC nomenclature with suitable examples.

6. Write electrophilic addition reaction of alkenes and explain Markovnikovs rule.

7. Give a note on free radical addition reactions of conjugated dienes.

8. Write structure and use of trichloroethylene, dichloromethane and idoform.

9. Report qualitative tests of alcohols.

10. Define carbonyl compounds. Give a short note on benzoin condensation.

11. Explain inductive effect and qualitative tests of ester.

12. Write structure and uses of salicylic acid, benzoic acid and tartaric acid.

13. Explain basicity of aliphatic amines with a short note on factors affect basicity of aliphatic amines.