

Total number of printed pages – 7 **B. Pharm**

PH. 2.10 (New & Old)

Second Semester Examination – 2008

PHARMACEUTICAL CHEMISTRY – II
(Organic Chemistry – I)

Full Marks – 70

Time : 3 Hours

Answer questions either from New or Old syllabus but not from both.

(NEW SYLLABUS)

*Answer Question No. 1 which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer **all** questions : 2 × 10
- (a) Explain how ionic and covalent bonds are formed.



- (b) Write the structures of the following compounds :
- (i) 2-methyl-3-pentanone
- (ii) 4-hydroxy-3-pentenoic acid.
- (c) Differentiate between inductive and mesomeric effects giving one example in each case.
- (d) Outline any two general methods for the preparation of alkenes.
- (e) Explain the structure and acidity of Acetylene.
- (f) What are alkadienes ? Give the structures of one conjugated and one non-conjugated alkadiene.
- (g) Give the structures of the products obtained when 2-butanol is subjected to dehydration. Indicate which is the more predominant product and why ?

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- (h) Give the structure of one example each for primary, secondary, tertiary and quaternary amines.
- (i) Outline Williamson's synthesis for the preparation of methyl ethyl ether.
- (j) Explain why carboxylic acids are more acidic compared to alcohols.
2. Explain the mechanism of halogenation of alkenes. Discuss the evidence in support of the mechanism. 10
3. What are carbocations and carbanions? How can they be generated? Discuss their stability giving examples. 10
4. Give an account of the following : 10
- (a) Detection and location of carbon-carbon double bonds in a molecule.
- (b) Mechanism of hydration of olefins.
5. Compare and contrast the SN1 and SN2 reactions with regard to their mechanisms,

- stereochemistry and the effect of substrate structure on reactivity. 10
6. Outline any three general methods for the preparation of amines. Explain the effect of structure on the basicity giving specific examples. 10
7. Describe any three general methods for the preparation of alcohols. Explain how hydrogen bonding affects their physical properties. Discuss their important chemical properties. 10
8. Write notes on the following : 2.5×4
- (a) Bayer's strain theory
- (b) Hybridisation of orbitals
- (c) Diel's Alder reaction
- (d) Markovnicov and antimarkovnicov additon.

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(OLD SYLLABUS)

*Answer Question No. 1 which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer all questions : 2 × 10
- (a) Define Keto-Enol tautomerism with suitable example.
 - (b) Define and differentiate enantiomerism and diastereomerism with suitable examples.
 - (c) What is Saytzeff rule ?
 - (d) What is Markovnikov rule ?
 - (e) Acetylene is acidic, explain why ?
 - (f) What is aldol condensation reaction ?
 - (g) Phenol is acidic, explain why ?
 - (h) Define and differentiate inter and intra-molecular hydrogen bonding.

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(i) α -Hydrogens of aldehyde are acidic, explain why ?

(j) What is Clemmensen reduction ?

2. (a) Define and classify isomerism with suitable examples. 4
- (b) Write a brief account on geometrical isomerism. 6
3. (a) Give three general methods of preparation of cycloalkanes. 3
- (b) What is Bayer Strain theory ? 5
- (c) What are the drawbacks of Bayer Strain theory ? 2
4. (a) Give four general methods of preparation of alkyl halides. 4
- (b) Define and differentiate SN^1 and SN^2 mechanism with suitable examples. 6
5. (a) Give four general methods of preparation of Alcohols. 4

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- (b) Distinguish between 1° , 2° and 3° alcohols.
6
6. (a) Write a brief account on nucleophilic addition reactions of aldehydes and ketones.
5
- (b) Write a note on chemical properties of carboxylic acids.
5
7. (a) Give preparation of Ethylacetoacetate.
3
- (b) Write a note on synthetic applications of ethylacetoacetate.
7
8. Write notes on : 5 × 2
- (a) Free radical substitution reactions of alkane
- (b) Aromaticity of Benzene.