

Roll No.....

3

Total No. of Questions : 10]

[Total No. of Printed Pages : 4

PHM-1.2.4
PHARMACEUTICAL
CHEMISTRY-III
(Organic Chemistry-I)
(B.Pharmacy, 2nd Semester, 2124)

Time : 3 Hours

Maximum Marks : 80

Note :- Section A is compulsory. Attempt any *Four* questions from Section B and any *Three* questions from Section C.

Section-A

Marks : 2 Each

1. (a) Define Stereochemistry.
- (b) What are Molecular Orbitals ?
- (c) Define Dipole Moment.
- (d) What do the differences in properties between lithium acetylacetonate (m.p. very high, insoluble in CHCl_3) and beryllium acetylacetonate (m.p. 108°C , b.p. 270°C , soluble in HCl_3) suggest about their structure ?

PHM-1.2.4

Turn Over

H-97

- (e) A liquid of molecular weight 60 was found to contain 40.0% carbon and 6.7% hydrogen. What is the molecular formula of compound ?
- (f) Why photolysis of CF_3Cl yields Chlorine rather than fluorine ?
- (g) How many mono-, di- and trichloro-derivatives are possible for cyclopentane ?
- (h) How will you prepare *n*-butane from sec-butyl bromide ?
- (i) Compare stability of 1° , 2° and 3° free radicals.
- (j) Define diastereomers with example.
- (k) Why can neopentyl chloride not be prepared from alcohol ?
- (l) Why phenols are acidic in nature ?
- (m) What is Cannizzaro reaction ?
- (n) Name the reagent causing cis-hydroxylation.
- (o) What are Carbenes ?

PHM-1.2.4



- (f) Give the mechanism of addition of Bromine to ethylene.
- (g) How do you explain the acidic nature of C—H bond in acetylene ?
- (h) How can ethyl bromide be converted into propanoic acid ?
- (i) How will you obtain ethyl alcohol from methyl alcohol ?
- (j) Write a note on aldol condensation.
- (k) Which is the stronger acid—Formic acid or Propionic acid ? Why ?
- (l) Name a chemical test or single chemical reagent which can be used to distinguish between methylamine and diethylamine.
- (m) Write a note on Baeyer's strain theory.
- (n) What happens when $C_{14}H_{10}$ is heated with $Na_2Cr_2O_7$ and H_2SO_4 ?
- (o) Give the mechanism of bromination of benzene.

Section-B

Marks : 5 Each

2. (a) Predict the relative basicity of methyl fluoride (CH_3F), methyl alcohol (CH_3OH) and methyl amine (CH_3NH_2).
- (b) Which is the stronger acid of each pair :
- (i) H_3O^+ or H_2O
 - (ii) NH_4^+ or NH_3
 - (iii) H_2S or HS^-
 - (iv) H_2O or OH^-
 - (v) What relationship is there between charge and acidity ? $2\frac{1}{2}, 2\frac{1}{2}$
3. The concentration of Cholesterol dissolved in chloroform is 6.15 g per 100 ml of solution.
- (a) A portion of this solution in a 5 cm polarimeter tube causes an observed rotation of -102° . Calculate the specific rotation of Cholesterol.

PHM-1.2.4

U-55

- (b) Predict the observed rotation if the same solution were placed in a 10 cm tube.
- (c) Predict the observed rotation if 10 ml of the solution were diluted to 20 ml and placed in a 5 cm tube. 2,1,2
4. What is Diazotization ? What are the necessary conditions to bring about a diazotization reaction ? Give two reactions of diazonium chloride. 1,2,2
5. How are primary, secondary and tertiary aliphatic amines be separated from one another ?
6. How does acetic acid react with the following reagents ?
- (a) SOCl_2
 - (b) Ag.NaOH
 - (c) P_2O_5
 - (d) LiAlH_4
 - (e) $\text{Cl}_2/\text{Red P}$

Section-C Marks : 10 Each

7. How will you convert :
- (a) Acetic acid into propionic acid
 - (b) Propionic acid into acetic acid ? 5,5
8. (a) Discuss the mechanism of Aldol condensation.
- (b) By what tests can you distinguish between aldehydes and ketones ? 4,6
9. Give the following interconversions with the help of an example in each case :
- (a) Primary alcohol into Secondary alcohol
 - (b) Secondary alcohol into Tertiary alcohol
 - (c) Primary alcohol into Tertiary alcohol. 4,3,3
10. Draw and specify as R or S the enantiomers (if any) of :
- (a) 3-bromohexane
 - (b) 3-chloro-3 methyl pentane

PHM-1.2.4

U-55