

5

Roll No.....

Total No. of Questions : 10]

[Total No. of Printed Pages : .....

✓ PHM-1.2.4

**PHARMACEUTICAL**

**CHEMISTRY-III**

**(ORGANIC CHEMISTRY)**

**(B.Pharm., 2nd Semester, 2054)**

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) Examine the following compounds for planes of symmetry and predict which of

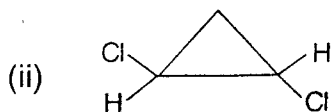
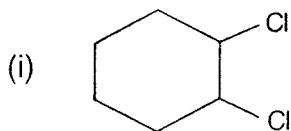
PHM-1.2.4

Turn Over

**H-72**

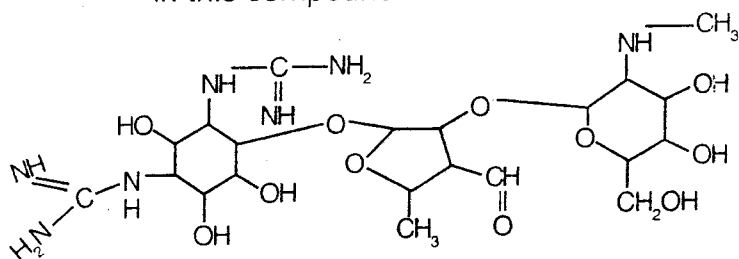
( 2 )

they are optically active :



- (b) The structure of the antibiotic streptomycin is shown below :

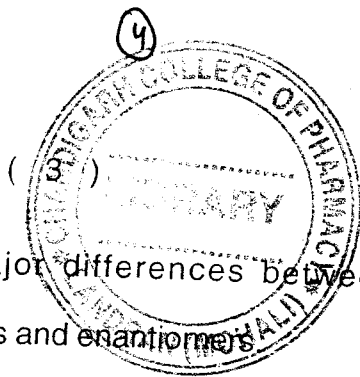
Identify the asymmetric carbon atom/atoms in this compound :



- (c) A solution contains 60% (+) lactic acid and 40%(-) lactic acid. Does this solution rotate the plane of plane polarized light ?

PHM-1.2.4

H-72



- (c) List two major differences between diastereomers and enantiomers.
- (e) When methane is treated with  $\text{Cl}_2$  in the presence of UV light, small amounts of ethane and chlorinated ethanes are also formed. Explain.
- (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 ?

PHM-1.2.4

Turn Over

- (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 ( $CH_3NH_2$ ).  $2\frac{1}{2}$

PHM-1.2.4

**H-72**

(b) Which is the stronger acid of each pair :

(i)  $\text{H}_3\text{O}^+$  or  $\text{H}_2\text{O}$

(ii)  $\text{NH}_4^+$  or  $\text{NH}_3$

(iii)  $\text{H}_2\text{S}$  or  $\text{HS}^-$

(iv)  $\text{H}_2\text{O}$  or  $\text{OH}^-$

(v) What relationship is there between

charge and acidity ?  $2\frac{1}{2}$

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  $-102^\circ$ . Calculate the specific rotation of cholesterol.

(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)  $\text{SOCl}_2$
  - (b) Aq.  $\text{NaOH}$
  - (c)  $\text{P}_2\text{O}_5$
  - (d)  $\text{LiAlH}_4$
  - (e)  $\text{Cl}_2/\text{Red P.}$

PHM-1.2.4

H-72

**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

( 8 )

- (b) 3-Chloro-3 methyl pentane
- (c) 1, 2-Dibromo-2-methyl butane
- (d) 1, 3-Dichloropentane
- (e) 3-Chloro-2, 2, 5-trimethylhexane
- (f)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH DCl}$

PHM-1.2.4

H-72