

Time : 3 Hours

Max. Marks : 100

Note : Attempt all questions from Section A (Objective Type), Five questions from Section-B (Short answer type) and three questions from Section-C (Long/Essay type).

## Section-A

2 x 10 = 20

1.  $\alpha$ -Terpineol on heating with  $H_2SO_4$  forms.....
2. The conversion of Citral to ..... and ..... is actually due to an  $\alpha, \beta$  unsaturated carbonyl group.
3. Complete the following:-  
 Nicotene A  $\xrightarrow[(ii) H_2SO_4]{(i) Br_2/CH_3COOH}$  B  $\xrightarrow[H_2SO_4]{H_2SO_4}$  C+D+E
4. Atropine on strong heating loses a molecule of water to form..... which on oxidation gives.....
5. Diel's hydrocarbon is .....
6. A solution of cholesterol in chloroform when heated with conc.  $H_2SO_4$  develops..... colour in the chloroform layer.
7. Haemin contains four substituted.....nuclei.
8. On hydrolysis with cold dil. KOH solution, Chlorophyll A gives.....and .....
9. Chloramphenicol on hydrolysis with acids or alkalis gives.....and an.....base.
10. Broad spectrum antibiotics are effective in the treatment of .....and.....bacterial infection.

## Section-B

4 x 5 = 20

1. How will you convert (a) Stigmasterol into Progesterone. (b) Catechol into Adrenaline.
2. Discuss the synthesis and medicinal uses of morphine.
3. Discuss the chemistry of  $\beta$ -carotene. How it is related to vitamin A?
4. How will you show that sterols and sex hormone have a common ring?
5. What is isoprene rule? How it helps in elucidating the structure of citral?
6. Write notes on (a) Penicillins (b) Chlorophenicol
7. Write briefly regarding the bio-synthesis of flavinoid.
8. (a) How will you show that haemin and chlorophyll have a common structure?  
(b) Exhaustive methylation for the elucidation of the structure of alkaloids with reference to atropine
9. What are steroids? Discuss the relationship between sterols and bile acids.
10. Give the structured formula of streptomycin and discuss its medicinal applications.

## Section-C

20 x 3 = 60

1. What are Sesquiterpenes? How are they classified? Give name and structure of one member of each class. Discuss the chemistry of Zingiberene.
2. What are natural resources of Quinine? Discuss various degradations that led to the structural determination of Quinine.
3. How are the following established in the molecule of cholesterol?  
(a) Presence and position of a double bond.  
(b) Position and nature of side-chain.  
(c) Position of two angular methyl groups.
4. What are Anthocyanins? Discuss the chemistry of cyanidine chloride. How it is related with Quercetin?
5. What are antibiotics? Give the analytical and synthetic evidence for the structure of tetracycline.