



Register Number:  
Date: 21/11/2020

**ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27**

**M.Sc. CHEMISTRY - III SEMESTER**

**SEMESTER EXAMINATION: NOVEMBER 2020**

**OCH 9319 – NATURAL PRODUCTS, HETEROCYCLIC CHEMISTRY AND  
HETEROGENEOUS CATALYSIS**

**Time- 2 1/2 hrs**

**Max Marks-70**

**This paper contains 2 printed pages and three parts**

**PART A**

**Answer any SIX questions of the following**

**(6 X 2 = 12)**

1. Write the structure of morphine and reserpine.
2. What is isoprene rule? Name a compound obtained by isoprene.
3. What is TS-1 catalyst? Give an example of organic reaction catalyzed by TS-1 catalyst.
4. Write the chemical reaction of Friedlander quinoline synthesis.
5. What is the biological importance of prostaglandins?
6. What are the characteristics of heterogeneous catalyst? Name any two heterogeneous catalyst.
7. How are alkaloids classified?
8. Write the structures of pyrimidine and benzothiazole.

**PART B**

**Answer any FOUR questions of the following**

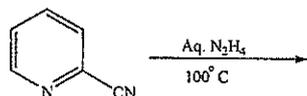
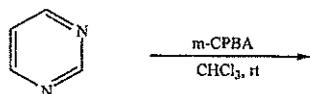
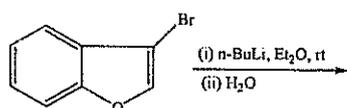
**(4 X 12 = 48)**

9. a) What are the evidences used for structural elucidation of PGE<sub>2</sub>?  
b) Explain the synthesis of prostacyclin with equation. (6+6)
10. a) Discuss the action of acids on pyrrole, furan and thiophene using chemical equations.  
b) Explain Pomeranz Fritsch synthesis of isoquinoline with mechanism.  
c) Write the structure of benzothiophene and its isomer. Which is more stable? Give reason

in support of your answer.

(4+4+4)

11. a) Explain the biosynthesis of thromboxane B<sub>2</sub> in biological system.  
b) Write the synthesis of Vitamin B<sub>12</sub> in biological system. Explain with equations. (6+6)
12. a) Explain the biosynthesis of quinine with chemical equation.  
b) What is the biosynthetic pathway leading to the formation of haemin? (6+6)
13. a) Explain the types and functions of ion-exchange resins? Draw the structural units involved.  
b) What do you mean by anchored catalyst? Explain with example.  
c) Explain the process of leaching with mechanism. (4+4+4)
14. a) Explain Einhorn-Brunner synthesis of 1,2,4-triazole. Comment on its regioselectivity.  
b) Write the products for the following reactions: (6+6)



### PART C

Answer any TWO questions of the following

(2 X 5 = 10)

15. Explain with mechanism the use of 1,3-dicarbonyl compounds in the synthesis of diazines.  
16. Describe the synthesis of benzofuran using 2-hydroxybenzaldehyde as starting material.  
17. Explain how the synthesis of camphor was carried out commercially?

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