



DEPARTMENT OF CHEMISTRY

"T3, EXAMINATION May 2018"

Semester: VI
Subject: Chemistry of Biomolecules & Natural Products
Branch: B.Sc. Chemistry
Course Type: Core
Time: 3 Hours
Max.Marks: 80

Date of Exam: 18/05/2018
Subject Code: CHH330-T
Session: I
Course Nature: Hard
Program: B.Sc (Hons.) Chemistry
Signature: HOD/Associate HOD:

Note: All Questions are compulsory from Part A (2X 10=20 Marks). Attempt any two questions from part B (30 Marks). Attempt any two questions from Part C (30 Marks).

PART-A

(10x2 marks)

- Q1. (a) Write a note on mutarotation in glucose.
(b) What happens when glucose undergoes oxidation in presence of nitric acid.
(c) Draw the structural formula of Lactose
(d) What happens when starch undergoes hydrolysis
(e) Explain the term Epimer and Epimerization
(f) How to convert Indigo- blue into Indigo- white. Give reaction only
(g) How to convert Fluorescein into Uranine. Give reaction only
(h) Give the requisites of a dye
(i) Explain Bathochromic Shift
(j) Explain Mordant dye.

PART-B

- Q2. (a) Establish the open chain structure of the glucose molecule and give the detail evidence with chemical reaction involved in structure elucidation. (15 marks)
- Q3. (a) Give detail stepwise reaction to convert (5x2 marks)
(i) Fructose into Glucosazone.
(ii) A ketohexose compound fructose into aldohexose compound Glucose
- (b) Give detail reaction involved in Kiliani-Fischer Synthesis (5 marks)

Q4. (a) Establish the molecular structure of sucrose molecule with the detail stepwise discussion (10 marks)

(b) How to convert D-(+)-Glucose into D (+)- Mannose (5 marks)

Part C

Q5. How to isolate Indigotin dye from *Isatis tinctoria*. Explain the detail structure elucidation of Indigotin with suitable chemical reactions. (15 marks)

Q. 6 (a) How to convert Anthraquinone into Alizarin dye, explain with suitable stepwise chemical reaction involved. (5 marks)

(b) Explain Molecular orbital theory of colour constitution of dyes (4 marks)

(c) Explain the synthesis of Malachite green and give their uses. (6 marks)

Q 7 (a) Explain the synthesis of Congo red. How it works as acid base indicator (6 marks)

(b) How to synthesize Phenolphthalein dye. Explain its coloration process in addition of alkali and excess of alkali with suitable chemical reaction. (9 marks)
