

SHIVAJI COLLEGE, UNIVERSITY OF DELHI

DEPARTMENT OF CHEMISTRY

HOME ASSIGNMENT (Academic Year 2023-24)

Name of the Course : B Sc. (Hons) Chemistry Semester: IV
Name of the Paper : (DSC) Carbohydrates, Lipids and Heterocyclic Compounds
Faculty Name : Dr Reeta
Maximum Marks : 12 Marks

Make a PPT or assignment given topics below as distributed in class

- Monosaccharides: Constitution and absolute configuration of glucose and fructose,
- epimers and anomers, mutarotation,
- determination of ring size of glucose and fructose,
- Haworth projection and conformational structures; Interconversion of aldoses and ketoses;
- KillianiFischer synthesis and Ruff degradation; Linkage between monosaccharides:
- Comparative study of the structure of disaccharides (sucrose, maltose, lactose) and polysaccharides (starch, cellulose and glycogen) excluding their structure elucidation.
- Introduction to lipids, classification. Oils and fats:
- Common fatty acids present in oils and fats, Omega-3&6 fatty acids, trans fats, hydrogenation, hydrolysis, acid value, saponification value, iodine number.
- Biological importance of triglycerides, phospholipids, glycolipids, and steroids
- Heterocyclic Compounds Classification and nomenclature of heterocyclic compounds
- Structure, aromaticity in 5-membered and 6-membered rings containing one heteroatom
- Basicity and relative reactivity towards electrophilic substitution reactions (amongst five membered and six membered rings.
- General methods of synthesis for: furan, thiophene, pyrrole (Paal-Knorr synthesis, Hantzsch synthesis),
- General methods of synthesis for:pyridine (Hantzsch synthesis),
- General methods of synthesis for:indole (Fischer Indole synthesis),
- General methods of synthesis for: quinoline (Skraup synthesis, Friedlander's synthesis, Knorr quinoline synthesis, Doebner-Miller synthesis)
- Physical properties, discussion on the following reaction (with mechanism) for furan, pyrrole, thiophene, pyridine, indole and quinoline: Electrophilic substitution-nitration, sulphonation, halogenation, formylation, acylation

Faculty Signature:

