**KARIM CITY COLLEGE, JAMSHEDPUR**

**DEPARTMENT OF BOTANY**

**SYLLABUS DISTRIBUTION**

**AS PER FYUGP, NEP -2022**

**Paper Title – Major Paper 14 (MJ-14)**

**CREDIT-04 [THEORY - 03 + PRACTICAL - 01]**

**Plant Metabolism**

**DR. AFTAB ALAM KHAN:**

**Course Outcomes: -**

On completion of this course, the students will be able to:

1. Differentiate anabolic and catabolic pathways of metabolism

2. Recognize the importance of Carbon assimilation in photorespiration

3. Explain the ATP-Synthesis

4. Interpret the Biological nitrogen fixation in metabolism

**Full Mark - 60 Time: - 3 Hrs.**

**Unit I: 10 lectures**

Concept of Metabolism Introduction, anabolic and catabolic pathways,

regulation of metabolism, role of regulatory enzymes (allosteric, covalent

modulation and Isozymes). Historical background, role of photosynthetic

pigments (chlorophylls and accessory pigments).

**Unit II: 10 lectures:**

Carbon Assimilation photochemical reactions, photosynthetic electron

transport, PSI, PSII, Q cycle, CO2 reduction/ Carbon assimilation: C3 and C4

pathways.

**DR.SHARMILA CHAKRABORTY:**

**Unit III: 10 lectures:**

Metabolism and Oxidation photorespiration; Crassulacean acid metabolism;

Factors affecting CO2 reduction. Glycolysis and its regulation of glycolysis,

oxidative decarboxylation of pyruvate, regulation NADH; TCA cycle,

mitochondrial electron transport, oxidative phosphorylation.

**Unit IV: 15 lectures:**

Lipid and Nitrogen Metabolism s Synthesis and breakdown of triglycerides, β-

oxidation, glyoxylate cycle, gluconeogenesis and its role in mobilisation of

lipids during seed germination, α oxidation. Biological nitrogen fixation

(examples of legumes and non-legumes); Physiology and biochemistry of

nitrogen fixation; Nitrate and Ammonia assimilation: