**KARIM CITY COLLEGE, JAMSHEDPUR**

**DEPARTMENT OF BOTANY**

**SYLLABUS DISTRIBUTION**

**AS PER FYUGP, NEP -2020**

**SEMESTER - V Paper Title – Major Paper 9 (MJ-9)**

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

**Molecular Biology**

**DR.AFTAB ALAM KHAN:**

**Course Outcomes:** -

On completion of this course, the students will be able to; 1. Analyse the

structures and chemical properties of DNA and RNA through various historic

experiments. 2. Differentiate the main types of prokaryotes through their

grouping abilities and their characteristic 3. Evaluate the experiments

establishing central dogma and genetic code. 4. Gain an understanding of

various steps in transcription, protein synthesis and protein modification.

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

**Unit I:**

Nucleic Acids: Carriers of Genetic Information and Structure 10 lectures

Historical perspective; DNA as the carrier of genetic information (Griffith’s,

Hershey &amp; Chase, Avery, McLeod &amp; McCarty, Fraenkel-Conrat’s experiments).

DNA Structure: Miescher to Watson and Crick- historic perspective, DNA

structure, Salient features of double helix, Types of DNA, Types of genetic

material.

**Unit II:**

The replication of DNA and Central dogma 10 lectures Chemistry of DNA

synthesis (Kornberg’s discovery); General principles – bidirectional, semi-

conservative and semi discontinuous replication, Enzymes involved in DNA

replication. DNA proofreading. The Central Dogma (Adaptor hypothesis and

discovery of mRNA template), Central Dogma Reverse (RNA viruses etc.),

**DR. SHARMILA CHAKRABORTY:**

**Unit III: 10 lectures**

Ge10 lectures netic15 lectures code and transcription Genetic code (deciphering

&amp; salient features) and wobble hypothesis. Transcription in prokaryotes and

eukaryotes. Principles of transcriptional regulation; Concept of operon

Prokaryotes: lac operon. Regulation of lactose metabolism and tryptophan

synthesis in E.coli.

**Unit IV: 15 lectures**

Mechanism of Translation Translation prokaryotes and eukaryotes;

Understand the steps in process of translation – Initiation, Elongation and

Termination. Enzymes and factors involved in Translation. Ribosome structure

and assembly ( In prokaryotes and eukaryotes );Charging of tRNA, amino acyl

tRNA synthetises; Fidelity of translation; Inhibitors of protein synthesis; Post-

translational modifications of proteins,