

M.Sc. Semester IV (2017-18)
Paper(ELECTIVE) : Advanced Biochemistry
(*In option for paper IV clinical biochemistry*)

Credit: 05
Marks: 80+20=100

Unit I – Genome Organization

Organization & structure of eukaryotic chromosome, Role of nuclear matrix in chromosome organization & function.

Heterochromatin & Euchromatin, DNA reassociation kinetics (cot curve analysis), repetitive & unique sequence, satellite DNA, DNA melting & buoyant density, nucleoside phasing.

Unit II – Molecular Biological Technique

Nucleic acid isolation- isolation of genomic DNA, RNA, Plasmid DNA, PCR, Blotting techniques & hybridization techniques, RNA interference.

Genetic mapping genetic marker- RFLP, mini & macro satellite, RAPD, AFLP, gene knockout.

Unit III – Cell signaling

Signaling molecules & their receptors, function of G protein couple receptor, protein tyrosin kinase and cytokine receptor, pathway of intracellular signal transduction.

Unit IV – Plant metabolism

Photosynthesis- general features of photophosphorylation, light absorption, light driven electron flow, ATP synthesis by p of phosphorylation.

N₂ metabolism : biological N₂ fixation, nitrogenase complex, biotechnology of N₂ fixation, role of leghemoglobin, regulation of nif gene

Unit V- metabolic disorder

Inborn error of protein metabolism, Inborn error of carbohydrate metabolism, Inborn error of lipid metabolism, lipid storage disease, diabetes, atherosclerosis, arthritis, gout.

Suggested readings:

- 1 Biotechnology-B.D.Singh
- 2 principle of gene manipulation by R .W. Old & primrose
- 3 cell biology by karp
- 4 recent advance in plant biochemistry by Mehta S.L. & Lodha ML
- 5 biochemistry disorder in human disease by thompson & wootton

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