Scientist B - Crop Physiology/Latex Harvest Technology

Name of the post	Subject	Syllabus
Scientist B - Crop Physiology/Latex Harvest Technology	**Agriculture**	General Agriculture-All basic courses (Agronomy, Genetics & Plant Breeding, Soil Science & Agricultural Chemistry, Plant Physiology, Plant Pathology, Agricultural Economics & Agricultural Marketing, Statistics, Plant Biotechnology , Plant Biochemistry)
	Botany	**Plant Diversity & Evolution:** Viruses, Bacteria, Algae, Fungi, Lichens, Bryophytes, Pteridophytes, Gymnosperms, Angiosperms. **Plant Structure & Function:** Morphology, Anatomy (of angiosperms), Embryology, Plant Physiology, Biochemistry. **Genetics & Molecular Biology:** Cell Biology, Genetics, Genomics, Recombinant DNA Technology, Plant Biotechnology. **Ecology & Environment:** Plant Ecology, Phytogeography, Environmental Botany, Plant Pathology. **Applied Botany:** Economic Botany, Plant Breeding, Phytopathology, Biotechnology Applications.
	Biochemistry	**Biomolecules:** Structure, properties, and functions of Amino Acids & Proteins, Carbohydrates, Lipids, Nucleic Acids (DNA/RNA).**Enzymes:** Kinetics, mechanisms, regulation, and classification (biocatalysts).**Metabolism:** Major pathways like Glycolysis, Citric Acid Cycle, Oxidative Phosphorylation, Fatty Acid Metabolism, Amino Acid Metabolism, Nucleotide Metabolism. **Bioenergetics:** Energy production (ATP), thermodynamics in biological systems. **Molecular Biology:** DNA Replication, Transcription, Translation, Gene Regulation (e.g., Lac Operon), PCR. **Cell Biology:** Cell organelles, membranes, transport, cell signaling. **Genetics:** Basic principles,

		genetic material, mutations.
	Plant Physiology	**Water Relations & Transport:** Water potential, osmotic adjustment, transpiration, cohesion-tension theory, root absorption, aquaporins. **Mineral Nutrition:** Essential elements, uptake mechanisms, deficiency symptoms, functions, mycorrhizae. **Photosynthesis:** Light & dark reactions, electron transport, C3/C4/CAM pathways, photorespiration. **Respiration:** Glycolysis, TCA cycle, electron transport chain, oxidative phosphorylation. **Plant Hormones (PGRs):**Auxins, gibberellins, cytokinins, ABA, ethylene; roles in growth/development. **Growth & Development:** Photomorphogenesis (phytochrome, cryptochromes), photoperiodism, vernalization, seed physiology. **Solute Transport:** Translocation of assimilates (phloem loading/unloading).
	Plant Biochemistry	**Biomolecules & Cell Biology:** Structure/function of carbohydrates, lipids, proteins, nucleic acids. Cell structure (organelles, membranes, cell wall). Cell cycle, division, and protein secretion/targeting. **Metabolism & Bioenergetics.** Glycolysis, TCA cycle, oxidative phosphorylation. Photosynthesis (light/dark reactions, C3/C4/CAM pathways). Electron transport chains, ATP formation. **Plant-Specific Metabolism** Nitrogen fixation & assimilation, sulfate reduction. Mineral nutrient uptake and metabolism. Sucrose-starch interconversion, lipid/carbohydrate storage. Plant hormones and signal transduction. **Molecular Biology** DNA/RNA structure, replication, transcription, translation, genetic code. Gene organization (nuclear, mitochondrial, chloroplast genomes). Genetic engineering, gene cloning, vectors. **Techniques** Microscopy (light, electron). Spectrophotometry, fluorimetry. Chromatography, electrophoresis. Bioinformatics,

		genomics, proteomics. **Applied Plant Biochemistry** Plant cell/tissue culture, micropropagation. Biochemistry of food grains, fruits, vegetables (nutrition).