CSIR UGC NET Life Sciences - Detailed Rewritten Notes

Page 1: Molecular Biology, Cell Biology and Genetics

• Biomolecules and their biological importance. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Structure and functions of proteins, carbohydrates, lipids and nucleic acids. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Enzyme catalysis, enzyme regulation and metabolic pathways. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Cell membrane organization and transport mechanisms. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Structure and functions of organelles including nucleus and mitochondria. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Chromosome organization and gene regulation. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• DNA replication, repair and recombination mechanisms. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Transcription, RNA processing and translation. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Gene expression control in prokaryotes and eukaryotes. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Cell cycle, mitosis and meiosis. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Microbial physiology and cellular adaptation. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Genetic inheritance, linkage and mutation concepts. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Chromosomal abnormalities and quantitative genetics. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

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Page 2: Cell Signaling, Immunology and Development

• Cell communication and receptor-mediated signaling pathways. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• G-protein coupled receptors and second messenger systems. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Host-pathogen interactions and disease development. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Cancer biology, oncogenes and tumor suppressor genes. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Programmed cell death and apoptosis. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Innate immunity and adaptive immunity. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Antibody structure, function and vaccine concepts. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Antigen presentation and immune regulation. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Embryonic development and differentiation. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Stem cell biology and developmental genetics. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Animal organogenesis and morphogenesis. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Plant developmental pathways and flowering mechanisms. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Aging, senescence and developmental regulation. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

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Page 3: Physiology, Biodiversity and Ecology

• Photosynthesis and energy conversion in plants. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Plant respiration and nutrient metabolism. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Plant hormones and environmental responses. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Transport systems in xylem and phloem. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Animal circulation, respiration and excretion. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Nervous system organization and sensory physiology. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Endocrine control and reproductive physiology. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Taxonomy and biological classification systems. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Biodiversity and conservation biology. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Population ecology and ecosystem structure. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Species interactions and ecological succession. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Biogeography and environmental management. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Natural resource conservation and sustainability. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

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Page 4: Evolution, Biotechnology and Research Methods

• Origin of life and evolutionary theories. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Natural selection, adaptation and speciation. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Molecular evolution and phylogenetic analysis. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Animal behavior and ecological adaptations. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Microbial biotechnology and fermentation technology. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Genomics, gene therapy and transgenic organisms. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Plant and animal breeding approaches. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Bioremediation and biosensor technologies. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Recombinant DNA technology and cloning methods. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• PCR, sequencing and molecular diagnostics. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Microscopy and imaging techniques. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Biostatistics, data analysis and experimental design. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

• Field biology methods and ecological surveys. - Detailed study of concepts, applications, significance, mechanisms and examination-oriented understanding for Life Sciences preparation.

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