BIOLOGY SYLLABUS (Theory) **Max. marks: 70**

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UNIT	TITLE	CHAPTER WISE MARKS	TOTAL MARKS
VI	**REPRODUCTION**		**14**
	Sexual reproduction in flowering plants	05	
	Human reproduction	05	
	Reproductive health	O4	
VII	**GENETICS AND EVOLUTION**		**18**
	Principles of inheritance and variations	09	
	Molecular basis of inheritance	09	
VIII	**BIOLOGY AND HUMAN WELFARE**		**14**
	Human health and diseases	O8	
	Microbes in human welfare	06	
IX	**BIOTECHNOLOGY AND ITS APPLICATIONS**	O7	**12**
	Biotechnology – principles and processes	05	
	Biotechnology and its applications		
X	**ECOLOGY AND ENVIRONMENT**		**12**
	Organisms and populations	08	
	Biodiversity and its conservation	**04**	
		TOTAL	**70**

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Unit – VI Reproduction

Chapter- 2: Sexual Reproduction in Flowering Plants

Flower structure, development of male and female gametophyte, pollination – types, agencies and examples; outbreeding devices, pollen-pistil interaction; double fertilization, post-fertilization events, development of endosperm and embryo, development of seed and formation of fruit; special modes – apomixes, parthenocarpy, polyembryony, significance of seed dispersal and fruit formation.

Chapter – 3: Human Reproduction

Male and female reproductive system; microscopic anatomy of testis and ovary; gametogenesis – spermatogenesis and oogenesis; menstrual cycle, fertilization embryo development upto blastocyst formation, implantation, pregnancy and placenta formation (elementary idea), parturition (elementary idea) lactation (elementary idea)

Chapter – 4 Reproductive Health

Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs); birth control – need and methods, contraception and medical termination of pregnancy (MTP); amniocentesis; infertility and assisted reproductive technologies – IVF, ZIFT, GIFT (elementary idea for general awareness).

Unit – VII Genetics and Evolution

Chapter – 5 Principles of Inheritance and Variation

Heredity and variation: Mendelian inheritance; deviations from Mendelism – incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, pleiotropy; elementary idea of polygenic inheritance; chromosome theory of inheritance; chromosomes and genes; Sex determination – in human being birds and honey bee; linkage and crossing over; sex linked inheritance – haemophilia, colour blindness; Mendelian disorders in humans – thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes.

Chapter – 6: Molecular Basis of Inheritance

Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central Dogma; transcription, genetic code, translation; gene expression and regulation – lac operon; Genome, Human and rice genome projects; DNA fingerprinting.

Unit – VIII Biology and Human Welfare

Chapter – 8: Human Health and Diseases

Pathogens; parasites causing human diseases (Malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control; Basic concepts of immunology – vaccines; cancer, HIV and AIDS; Adolescence – drug and alcohol abuse.

Chapter 10: Microbes in Human Welfare

Microbes in food processing, industrial production, sewage treatment, energy grneration and microbes as bio – control agents and bio – fertilizers. Antibiotics; production and judicious use.

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Units – IX Biotechnology and its Applications

Chapter – 11: Biotechnology – Principles and Processes

Genetic Engineering (Recombinant DNA Technology).

Chapter – 12: Biotechnology and its Application

Application of biotechnology in health and agriculture: Human insulin and vaccine production, stem cell technology, gene therapy: genetically modified organisms – Bt crops; transgenic animals; biosafety issues, biopiracy and patents.

Unit – X Ecology and Environment

Chapter – 13: Organisms and Populations

Organisms and environment: Habitat and niche, population and ecological adaptations; population interactions – mutualism, competition, predation, parasitism; population attributes – growth, birth rate and death rate, age distribution.

Chapter – 15: Biodiversity and its conservation

Biodiversity – Concept, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred Groves, biosphere reserves, national parks, wildlife sanctuaries and Ramsar sites.