SUBJECT: BIOLOGY (BIO2)

CLASS XII

SEMESTER III

THEORY

FULL MARKS –30

(MCQ Type Question)

UNIT	Topic	No of periods assigned
Unit - I Reproduction	1. Sexual reproduction in flowering plant	10
	2. Human Reproduction	08
	3. Reproductive health	11
Unit – II : Genetics And Evolution	4. Heredity and variation	12
	5. Molecular Basis of Inheritance	7
	6. Evolution	7
	7. Mechanism of evolution	5

DETAIL SYLLABUS

UNIT	Topic / Sub Topic	No of periods assigned
	Unit - I Reproduction	
	1. Sexual reproduction in flowering plant	10
	1. Development of male and female gametophytes;	
	2. Pollination-types, agencies and examples; Outbreedings devices; Doublefertilization;	
	3.Post fertilization events - Development of endosperm and embryo, Development of seed and formation of fruit.	
	2. Human Reproduction	08
	1. Male and female reproductive systems;	
	2. Microscopic anatomy of testis and ovary (in brief);	
	3. Gametogenesis-spermatogenesis & oogenesis;	
	4. Menstrual cycle; Fertilisation embryo development upto blastocyst formation, implantation; Pregnancy and placenta formation (Elementary idea); Parturition (Elementary idea); Lactation (Elementary idea).	
	3. Reproductive health	11
	1. Need for reproductive health and prevention of sexually transmitted diseases(STD);	
	2. Birth control – Need and Methods, Contraception and Medical Termination ofPregnancy (MTP);	
	3. Amniocentesis; Infertility and assisted reproductive technology – IVF (Elementaryidea for general awareness).	
	Unit – II : Genetics And Evolution	
	4. Heredity and variation	12
	1. Mendelian Inheritance; Deviations from Mendelism- Incomplete dominance, Mul-tiple alleles and Inheritance of blood groups,	
	2. Chromosome theory of inheritance; Chromosomes and genes;	
	3. Sex determination - in humans;	

	4. Linkage and crossing over; Sex linked inheritance - Haemophilia, Colour blind-ness;	
	5. Mendelian disorder in humans - Thalassemia; chromosomal disorders in hu-mans; Down's syndrome, Turner's and Klinefelter's syndromes.	
	5. Molecular Basis of Inheritance	7
	1. DNA replication, transcription and translation (brief outlines only),	
	2. DNA finger printing.	
	6. Evolution	7
	1. Origin of life; evidences for evolution.	
	2. Darwin's contribution in concept of evolution.	
	7. Mechanism of evolution	5
	1. Variation (Mutation and mutagens and Recombination) and Natural Selection with examples.	

BIOLOGY (BIO2)
CLASS XII
SEMESTER IV

THEORY

FULL MARKS – 40

(SAQ AND LAQ Type Question)

UNIT	Topic	No of periods assigned
1	**Unit-I : Biology and Human Welfare**	
	1. Health and Disease	**8**
	2. Improvement in food production	**5**
	3. Microbes in human welfare	**5**
	4. Economic Botany	**10**
	5. Economic Zoology **6.**	**12**
2	**Unit-II : Biotechnology and its Applications**	
	7. Principles and process of Biotechnology **8.**	**12**
3	**Unit-III : Ecology and Environment**	
	9. Organisms and environment	**7**
	10. Ecosystems	**6**
	11. Biodiversity and its conservation	**7**
	12. Environmental issues	**12**

DETAIL SYLLABUS

UNIT	Topic / Sub Topic	No of periods assigned
1	**Unit-I : Biology and Human Welfare Unit-I : Biology and Human Welfare**	
	1. Health and Disease	8
	1. Pathogens; parasites causing human diseases (Malaria, Filariasis, Ascariasis, Typhoid, Pneumonia, common cold, amoebiasis, ring worm);	
	2. Basic concepts of immunology - vaccines; Cancer, HIV and AIDs; drug and alcohol abuse	
	2. Improvement in food production	5
	1. Plant breeding (selection and hybridization process),	
	2. Single cell protein, Biofortification.	
	3. Microbes in human welfare	5
	1. In household food processing, industrial production, sewage treatment, energy generation and as biocontrol agents and biofertilizers.	
	4. Economic Botany	10
	1. Economic importance of algae and fungi and of higher plants (drug yielding, fibre yielding, timber yielding, oil yielding plants) Salient features of some economically important families – Poaceae, Solan-aceae, Fabaceae and Cucurbitaceae.	
	5. Economic Zoology	12
	1. Sericulture, Apiculture, Pisciculture, Prawn culture,	
	2. Poultry and Dairy farming, Animal breeding (cow); other economic aspects of poultry and dairy farming – manure and biogas production.	
	Unit-II: Biotechnology and its Applications	
	6. Principles and process of Biotechnology	12
	1. Concept of totipotency, plant tissue and organ culture, artificial seed, uses of tissue culture technique,	
	2. Genetic engineering (Recombinant DNA technology).	
	3. Application of Biotechnology in health and agriculture:	

	Human insulin and vac-cine production, gene therapy; Genetically modified organisms-Bt crops;Transgenic Animals.	
	Unit-III: Ecology and Environment	
	7. Organisms and environment	7
	1. Ecological adaptations;	
	2. Population attributes - growth, birth rate and death rate, age distribution.	
	8. Ecosystems	6
	1. Patterns, components; productivity and decomposition;	
	2. Nutrient cycling (carbon and phosphorous).	
	9. Biodiversity and its conservation	7
	1. Concept of Biodiversity; Importance of Biodiversity; Loss of Biodiversity;Biodiversity conservation; Hotspots, endangered organisms, extinction, Red Data Book, Biosphere reserves, National parks and Sanctuaries.	
	10. Environmental issues	12
	1. Air pollution and its control;	
	2. Water pollution and its control;	
	3. Agrochemicals and their effects;	
	4. Solid waste management; Greenhouse effect and global warning; Ozone deple-tion; Deforestation.	

PROJECT / PRACTICAL
CLASS XII

FULL MARKS – 30

NO OF PERIODS ASSIGNED – 72
DETAIL SYLLABUS

Practical: Biology Lab

Sl. No.	Topic
1.	**Demonstration of experiment on plant physiology -** A. Light is essential for photosynthesis. B. Transpiration (Bell jar or poly bag method) C. Absorption of water D. Osmosis (Potato osmoscope) E. Diffusion

2.	Study of different parts of plant (two plants each from families Poaceae, Solan aceae, Fabaceae and Cucurbitaceae
3.	Field practice of hybridization.
4.	**Identification of crop plants.** A. Paddy B. Wheat C. Maize D. Mung E. Soyabean F. Cucumber G. Mango H. Radish I. Carrot J. Jute K. Kalmegh L. Thankuni M. Ashwagandha N. Vinca
5.	**Spot identification of –** A. Silk worm B. Honey bee C. Rice bug

Sl. No.	**Topic**
	D. Stem borer E. Rice Hispa F. Major carp G. Minor carp H. Tiger prawn
6.	Collect soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity. Correlate with the kinds of plants found in them.
7.	Visit to Sericulture, Apiculture and Pisciculture farm.
8.	Field report on any one of the above.