

MINIMUM LEARNING PACKAGE-XII (BIOLOGY)

DAY-1

TOPICS-(1) Practice of drawing and labeling diagrams and flowcharts.

(2) criteria of a good diagram-

- (a) neat, and proportionate, well labeled .
- (b) labels indicating arrows should be horizontal to the diagram.
- (c) labels should be evenly placed from diagram.

EXPECTED LEARNING OUTCOMES-

- (1) Student will be able to draw neat, proportionate diagrams.
- (2) Learn to label diagrams properly.
- (3) Learn to convert textual information in form of Flowchart.
- (4) Language deficient student will easily learn concepts through diagrams and flowcharts

SUGGESTED EXERCISE-Practice Diagrams of:-

- (a) T.S mature anther.
- (b) T.S Anisotropous Ovule
- (c) structure of spermatozoa
- (d) T.S Mammalian ovary
- (e) Flowchart depicting flow of Energy through different trophic level
- (f) Biological Magnification.

DAY-2

TOPICS-

- (1) General characteristics of living organisms.
- (2) General features about structure and functions of cell.
- (3) Cell organelles and their functions.
- (4) Prokaryotic cell plan and Eukaryotic cell p

EXPECTED LEARNING OUTCOMES-

Student will learn-

- (i) general description of cell, prokaryotic cell and eukaryotic cell.
- (ii) various cell organelles.

SUGGESTED EXERCISES-

- (1) Draw diagrams of a plant cell and animal cell. (2) discuss the functions of mitochondria, chloroplasts, ribosomes and nucleus.
- (3) What are the characteristics of a prokaryotic cell? Give examples.

DAY-3

TOPICS-

- (1) Detailed structure of chromosome-chromatids, centromere, telomere.
 - (2) Types of chromosomes-Acrocetric, Metacentric, Telocentric and sub-metacentric chromosome.
 - (3) DNA and RNA-structure and constituents like pentose sugar, nitrogenous bases.
 - (4) Double helical model of DNA.
- Types of RNA-rRNA, mRNA, tRNA-their function and structure.

LEARNING OUTCOMES-Student will develop basic understanding of DNA and RNA-structure and functions.

- EXERCISE**-(1) Name the bonds present in between two polynucleotide chains of DNA.
(2) What are the features which makes it suitable for being genetic material?

DAY-4

TOPICS-(1) Cell Division-basic concept,types.cell cycle.

(2) Different phases of meiosis .significance of meiosis especially crossing over.

(3) different phases of mitosis.

EXPECTED LEARNING OUTCOMES-

(i) Student will learn basic concepts about cell division

(ii) significance of crossing over in inheritance.

(iii) reasons for polyploidy.

SUGGESTED EXERCISE-

(1) Define the following terms-

(2) Why siblings of same parents are not similar?

DAY-5

TOPICS- (i)Structure of nucleus,chromatin material-heterochromatin and euchromatin.

(ii)Structure of chromosomes,types of chromosomes-acrocentric,metacentric,sub-metacentric,telocentric.

DNA,RNA –functions and components.

EXPECTED LEARNING OUTCOMES-

(i)Student will have better understanding of-

(i) components of nucleus

(ii)basic structure of chromosomes,their role in transmission of hereditary traits.

(iii) basic difference b/w DNA and RNA.

SUGGESTED EXERCISES-

(i) Draw a well labeled diagram of Chromosome and Nucleus.

(ii)Discuss the constituents of DNA and RNA.

DAY-6

TOPICS-

(i) Double helical model of DNA.

(ii) Types of RNA-mRNA ,tRNA, rRNA and their functions.

(iii)Packaging of DNA molecule

(iv)Proteins-primary, secondary and tertiary structure

Types of proteins, lipids, carbohydrate.

EXPECTED LEARNING OUTCOMES-

(i) student will understand the nature of super coiling of DNA nucleo-histone complex.

(ii) packaging of DNA, biomolecules like proteins,lipids etc.

EXPECTED EXERCISE-(i) What is the difference between primary,secondary and tertiary structure of proteins?

(ii) What is the role of histone protein?

(iii)What is nucleohistone complex? Discuss the structure with the help of a diagram?

DAY-7

TOPICS-

(i)Concept of character,trait,allele,homozygous,heterozygous, monohybrid cross, dihybrid cross,haploid,diploid,polyploidy,genes,phenotype ,genotype and other relevant terms.

(ii) Laws of Mendel-(i) Law of Segregation and (ii) Law of Independent Assortment

EXPECTED LEARNING OUTCOME- (i) Student will understand concepts and terms used in Genetics.

(ii) student will understand the Laws of Mendel and his contributions in Genetics.

SUGGESTED EXERCISES- (i) Differentiate b/w the following terms-

- (a) Dominant allele and Recessive allele
- (b) Homozygous and Heterozygous
- (c) Dihybrid cross and Monohybrid cross
- (d) Genotype and Phenotype

DAY-8

TOPIC- ECOLOGY

- (i) Ecosystem, components of Ecosystem-Abiotic and Biotic.
- (ii) Adaptations in plants and animals.(basic idea)
- (iii) population interactions like Mutualism, competition, Amensalism etc.

EXPECTED LEARNING OUTCOME-

- (i) student's understanding of ecosystem will increase.
- (ii) Interaction among population will be understood.

SUGGESTED EXERCISES-

(i) Name the interaction between following organisms:-

- (a) Human and Mosquitoes
- (b) Lion and Deer
- (c) Rhizobium bacteria in root nodules of leguminous plants.
- (d) Amaranth on Mango tree.

DAY-9

TOPICS- BIODIVERSITY

- (i) General idea of Biodiversity, Levels of Biodiversity.
- (ii) Importance of biodiversity, causes of loss of biodiversity, significance of Biodiversity conservation.

EXPECTED LEARNING OUTCOME- (i) student will better understand and appreciate the natural wealth of our country.

(ii) they will strive for conservation of biodiversity.

SUGGESTED EXERCISE-

- (i) How do the National Parks and Sanctuary help in conservation of Biodiversity.
- (ii) Why forests and wildlife in it are important to us?

DAY-10

TOPICS-

- (i) Health and disease- definition of health and disease,
- (ii) Infectious and non-infectious diseases
- (iii) lifestyle diseases like obesity, diabetes
- (iv) Swachh Bharat Mission
- (v) General awareness on Swine Flu, Bird Flu, AIDS, Diabetes.
- (vi) Pollution-Air Pollution, Water Pollution, solid waste management, Radioactive pollution.

EXPECTED LEARNING OUTCOME- (i) student will develop better understanding of their environment. (ii) Better awareness will be created on topic of pollution and hygiene.

SUGGESTED EXERCISE-

(i) Discuss the methods of solid waste disposal in your school. Invite suggestions from students for better solid waste management.

(ii) Organise a discussion in the class on "Swacchh Bharat Mission". Discuss the benefits of this Mission with the students.