

**Reduced Syllabus  
Biology**

**Class - XII**

**Full Marks- 80**

**Unit-VI Reproduction**

**Chapter-2 : Sexual Reproduction in flowering Plants**

Flower structure, development of male and female gametophytes, 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 apomixis, parthenocarpy, polyembryony, significance of seed dispersal and fruit formation.

**Chapter -3 : Human Reproduction**

Male and female reproductive systems, microscopic anatomy of testis and ovary, gametogenesis- spermatogenesis and oogenesis, menstrual cycle, fertilisation, 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, birds, and honey bee; linkage and crossing over, sex linked inheritance- haemophilia, colour blindness, Mendelian disorders in human- thalassemia, chromosomal disorders in human, Down's syndrome, Turner's and Klinefelter's syndroms.

**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 and human and rice genome projects, DNA fingerprinting.

**Unit-VIII Biology and Human Welfare**

**Chapter -8 : Human Health and Diseases (মানব স্বাস্থ্য ও রোগসমূহ)**

Pathogens, Parasites causing human diseases (malaria, dengue, chickengunia, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiosis, 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 (মানব কল্যাণে অণুজীব)**

In household food processing, industrial production, sewage treatment, energy generation and microbes as bio-control agents and bio-fertilizers, Antibiotics, production and judicious use.

**Unit-IX Biotechnology and Its Applications**

**Chapter-11 : Biotechnology-Principles and Processes (জৈবপ্রযুক্তি বিদ্যা : নীতি ও পদ্ধতিসমূহ)**

Genetic Engineering (Recombinant DNA Technology)

**Chapter-12 : Biotechnology and its Application (জীবপ্রযুক্তি বিদ্যা এবং এর প্রয়োগ)**

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, bio piracy and patents.

**Unit-X : Ecology and Environment (বাস্তুবিদ্যা ও পরিবেশ)****Chapter-13 : Organisms and Populations (জীবসমূহ এবং পপুলেশন)**

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 (জীববৈচিত্র্য এবং সংরক্ষণ)**

Biodiversity -Concept, patterns, importance, loss of biodiversity, biodiversity conservations, hotspots, endangered organisms, extinction, Red Data Book, biosphere reserves, national parks, sanctuaries and Ramsar sites.

**Class -XII****Blue Print of Questions****Biology**

Chapter Name	VSA 1 Marks	SA -1 2Marks	SA-II & SA-III 2Marks	LA 5 Marks	Total
Unit-VI : Reproduction	04	01	01	01	14
Unit-VII : Genetics	03	02	02	01	18
Unit-VIII: Biology and Human Welfare	05	02	01	--	12
Unit-IX : Biotechnology and Its Applications	05	01	02	--	13
Unit-X : Ecology and Environment	03	02	02	--	13
Total	20	16	24	10	70

# PRACTICAL

## A. List of Experiment

1. Study pollen germination of a slide.
2. Collect and study soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity. Correlate with the kind of plants found in them.
3. Collect water from two different water bodies around you and study them for pH, clarity
4. Prepare a temporary mount of onion root tip to study mitosis.
5. Study the effect of different temperatures and three different pH on the activity of salivary amylase on starch.
6. Isolate DNA from available plant material such as spinach, green pea seeds, papaya etc.

## B. Study/Observation of the following (spotting)

1. Flower adapted to pollination by different agencies (wind, insects, birds).
2. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice)
3. Meiosis onion bud cell or grasshopper testis through permanent slides.
4. T.S. of blastula through permanent slides (Mammalian)
5. Prepared pedigree charts and any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colourblindness.
6. Common disease causing organisms like Ascaris, Entamoeba, Plasmodium, any fungus causing ringworm through permanent slides or specimens. Comment on symptoms of diseases that they cause.
7. Two plants and two animals (models/virtual images) found in xeric condition. Comment upto their morphological adaptations.
8. Two plants and two animals (models/virtual images) found in aquatic condition. Comment upto their morphological adaptations.

## Model Questions

Class-XII

Biology

Full Marks-70

Section-A

Each Question carries 1 mark

1x20=20

Answer the following questions

1. What is exalbuminous seed ?
2. **Fill up the blank** : male and female gametes are \_\_\_\_\_. (haploid/diploid)
3. All sexually transmitted diseases are curable (yes/not).
4. What is spermiation?

**\* OR**

What is colostrum ?

5. What do you mean by initiation codon ?
6. If a double stranded DNA has 562 nos. of cytosine, calculate the number of Guanine in the DNA.
7. Among the given gasses, which one is a Test-cross? (Write the correct answer)  
(a) WW x ww (b) Ww x Wx (c) Ww x ww (d) ww x ww

**\* OR**

Which one of the following is a sexlinked recessive genetic disorder ? write the correct one.

- (a) Hemophilia (b) Thalassemia (c) Sickle cell anemia (d) Phenylketonuria.
8. Cyanobacteria present in paddy field help in fixation of \_\_\_\_\_. (Choose the correct one to fill in the blanks) :  
(a) Cu (b) Zn (c) N<sub>2</sub> (d) Mg,
  9. Which one of the following is synthesized by the process of PCR ? Write the correct answer.  
a) DNA (b) Protein (c) Carbohydrate (d) RNA
  10. Define biofertilizer.
  11. State the use of trichoderma with respect to organ transplant.
  12. BOD of two samples of water A and B were 120 mg/L and 400mg/L respectively, which sample is more polluted ?
  13. Mention the source of smack.
  14. Give the name of molecular scissors.
  15. From which Bacterium Taq-polymerase is collected?
  16. What is genetic engineering ?
  17. Give the full form of ELISA.
  18. In which plant sunken stomata is found ?
  19. What would be the growth pattern, when the resources are unlimited.
  20. Name the interaction between sucker fish and shark.

**Section-B****Each Question Carries 2 marks****2x8=16**

21. Write the definition of linkage and recombination.
22. What do you mean by semi conservative DNA duplication ?
23. What is endosperm ? What type of endosperm is found in coconut milk ?

**\* OR**

What is implant ? Write the full form of ZIFT.

24. What do you mean by withdrawal syndrome ?
25. Write two differences between Active and Passive immunity.
26. What do you mean by pBR322 ?
27. Write two differences between in-situ conservation and ex-situ conservation.
28. In a pond there are 20 lotus plants. Through reproduction 8 new lotus plants were added in a year. Calculate the birth rate of the population.

**Section-C****Each question carries 3 Marks****3x8=24**

29. What is emasculation ? Why apple is called a false fruit ?

**\* OR**

What is Sertoli Cell? What are its functions.

30. What is mutation ? What do you understand by deletion mutation and point mutation ?
31. Write the structure of antibody.

**\* OR**

At what stage does Plasmodium enter into a human body ? Show the stage in the life cycle of the parasite in the infected person, with the help of flow-chart only. 1+2

32. What is biogas ? How is it produced ? 1+2
33. Write the causes of gradual decrease or loss of biodiversity.
34. What is allele ? Write 3(three) differences between Monohybrid cross and dihybrid crosses.
35. What is Cry protein? Write its importance.
36. Describe the logistic population growth curve with suitable diagram. 2+1

**Section-D****Each Question carries 5 Marks :****5x2=10**

37. How fertilization occurs in human being ? What is cleavage ? How lactation occurs ? 2+1+2

**OR**

Write the interactions between pollen grain and stigma and steps of development of female gametophyte. 2+3

38. State the law of independent assortment of Mendel. Explain the law from a dihybrid cross using checker board. 2+3

**OR**

Write three salient features of genetic code. Write practical application of DNA fingerprinting. 3+2