

QUESTION BANK
CLASS XII
SUBJECT : BIOLOGY

Unit-I, Reproduction

(weightage- 16 marks)

Ch.1 Sexual reproduction in flowering plants

- Q1. Define a seed, fruit, perisperm and pericarp.
- Q2. Define artificial hybridisation. Why is it used? Mention its various steps
- Q3. What are different outbreeding devices in flowering plants? Explain
- Q5 Explain megasporogenesis with diagrams
- Q6. Explain microsporogenesis.
- Q7 Draw a labeled diagram of monocot and dicot seed.
- Q8 Explain different types of pollination. Which type of pollination causes variations & Why?
- Q9. List post fertilization changes in angiosperms.
- Q10. Define apomixis and polyembryony. Why do apomict seeds are considered to be better?

Ch-2 Human Reproduction

- Q1.What are the constituents of seminal plasma?
- Q2 What are different layers & their functions of the uterus in human females?
- Q3. Draw a labelled diagram of sectional view of seminiferous tubule.
- Q4. Explain the process of oogenesis and spermatogenesis in humans.
- Q5. Draw a labelled diagram of sperm and ovum in humans.
- Q6 Explain the menstrual cycle in human females.
- Q7. Trace the pathway of sperm movement till its release.
- Q8. Explain events of fertilization in humans.
- Q9. How does implantation take place in a human female?
- Q10. How does placenta work as an endocrine tissue?
- Q11.Trace the development of an embryo up to the stage of parturition.

Q12. Define colostrum and foetal ejection reflexes

Ch-3 Reproductive Health

Q 1. Define amniocentesis and lactational amenorrhea.

Q 2. Explain ART. Explain different methods to assist infertile couples to have children.

Q3. Removal of gonads is not considered as a good contraceptive method. Why?

Q4. What are contraceptive devices? Explain various methods and their mode of action.

Q5. What is amniocentesis? Why is it banned?

Q6. What is RCH? What are its aims?

Q7. What is MTP? Mention its advantages and disadvantages.

Q8, Expand STDs. How can STDs be prevented?

Q9. “ Infertility can be caused due to poor life style” Justify the statement with suitable arguments.

Q10. Write any four characteristics for an ideal contraceptive.

Unit-II, Genetics and Evolution

(weightage- 20 marks)

Ch-4 Principles of Inheritance and variation

Q1. Define Test cross, Polygenic inheritance and pleiotropy with example

Q.2. Differentiate between.....incomplete dominance and codominance with example

Q3. Explain Mendel's law of independent assortment with an example.

Q4. Show inheritance pattern of one sex- linked dominant, sex- linked recessive and one autosomal Mendelian disorder.

Q5. Explain sex determination in birds and honeybees.

Q6, What do you mean by multiple alleles? Explain with example

Q7 Define law of dominance and law of Segregation. Explain with example

Q8. Why is Pedigree analysis important in Humans? Explain various symbols used to study Pedigree analysis.

Q9. Explain chromosomal theory of inheritance.

Q10. Define Linkage and Crossing over. What did Morgan attribute in deviation of Mendelian ratio in F2 generation?

Q11. Differentiate between point mutation and frameshift mutations with example.

Q12.a) Name the base change and the amino acid change, responsible for sickle cell anaemia.

b) Name the disorder with the following chromosome complement.

(i) 22 pairs of autosomes + XXY,

(ii) 22 pairs of autosomes + 21st chromosome + XY.

Q13. A test is performed to know whether the given plant is homozygous dominant or heterozygous. Name the test and phenotypic ratio of this test for a monohybrid cross.

Q14. Identify the sex of organism as male or female in which the sex chromosomes are found as

(i) ZW in birds (ii) XY in Drosophila (iii) ZZ in birds, (iv) XO in grasshopper.

Q15. . The human male never passes on the gene for haemophilia to his son. Why is it so ?

Q16. Mention four reasons why Drosophila was chosen by Morgan for his experiments in genetics.

Q17. A woman with O blood group marries a man with AB blood group

(i) Work out all the possible phenotypes and genotypes of the progeny.

(ii) Discuss the kind of dominance in the parents and the progeny in this case.

Ch-5. Molecular basis of Inheritance

Q.1 Draw a double stranded polynucleotide chain

Q2. What is central Dogma?

Q3. What is a nucleosome? Show its well labelled diagram and explain packaging of DNA.

Q4. Differentiate between Euchromatin and Heterochromatin.

Q5. Explain the work of Hershey and Chase? What did they prove?

Q6. How is DNA proved to be a better genetic material?

Q7. What is Transcription? How is it different in Eukaryotes from prokaryotes?

Q8. Draw a labelled diagram of an adapter molecule/t-RNA.

Q9. Explain translation process of peptide formation

Q.10. Show a replicating fork with complete labelling.

Q.11. How does a Lac Operon work in the presence of an inducer?

- Q12. DNA replication is semi conservative. How was it proved?
- Q13. What is HGP? Mention its goals.
- Q14. What is DNA fingerprinting? How is it done? Mention its importance.
- Q15. Define , Polymorphism, Satellite DNA, Bioinformatics, splicing.
- Q16. Expand VNTR, SNPs, UTR, snRNA.
- Q17. If a double stranded DNA has 20% of cytosine, Calculate the percentage of adenine in the DNA?
- Q18. Name the factors for RNA polymerase enzymes which recognise the start and termination signals on DNA for transcription process in Bacteria.
- Q19. RNA viruses mutate and evolve faster than other viruses. Why?
- Q20. Give two reasons why both the strands of DNA are not copied during transcription.
- Q21. State the 4 criteria which a molecule must fulfill to act as a good genetic material.

Ch-5. Evolution

- Q1. If the abiotic origin of life is in progress on a planet other than earth, what should be the conditions there?
- Q2. Name the person who proposed that population tends to increase geometrically while food production supply arithmetically.
- Q3. Name the scientist who had also come to a similar conclusion as that of Darwin about natural selection as a mechanism of evolution. Which place did he visit to come to conclusions?
- Q4. State the two principal outcomes of the experiments conducted by Louis on the origin of life.
- Q5. Explain Oparin-Haldane theory of chemical evolution of life.
- Q6. How do Darwin and Hugo de veries differ regarding the mechanism of evolution?
- Q7. How did Louis Pasteur disprove spontaneous generation theory ?
- Q8. Classify the following as examples of homology and analogy-
- (i) Hearts of fish and crocodile ii) Wings of butterfly and birds
- iii) Eyes of Octopus and Mammals iv) Tubers of Potato and sweet potato
- v) Thorns of Bougainvillea and spines of Opuntia vi) Thorn of Bougainvillea and tendrils of Cucurbits.

Q9. How would the gene flow or genetic drift affect the population in which either of them take place?

Q10. Write two differences between Homo erectus and Homo habilis?

Q11. (i) State the Hardy-Weinberg principle.

(ii) When there is a disturbance in the Hardy-Weinberg equilibrium, what would it result in?

(iii) According to this principle, what is the sum total of all allelic frequencies ?

Q12. Stanley Miller and Harold Urey performed an experiment by recreating the probable conditions of the atmosphere of the primitive earth.

i) What was the aim of the experiment ?

ii) In what forms was the energy supplied for chemical reactions to occur?

iii) For how long was the experiment run continuously? Name two products formed.

Q13. Industrial Melanism' in peppered moth is an excellent example of 'Natural selection'. Justify the statement.

Q14. What are the two key concepts of Darwinian theory of evolution?

Unit-III Biology in Human Welfare

(weightage- 12 marks)

Ch-6. Human Health and Diseases

Q1. Name the test that confirms typhoid.

Q2. What are retro viruses? Explain the attack of retrovirus on human cells and its effect?

Q3. Give cause and symptoms of following diseases....Ascariasis, Amoebiasis, Dengue, Pneumonia, ringworm

Q4. Name the plant source of cocaine and opium. How do these drugs affect the human system?

Q5. What is cancer? What are its types?

Q6. How can we diagnose cancer and what are the treatment techniques used?

Q7. What are primary and secondary lymphoid organs?

Q8. What are Auto immune disorders? Explain with example

Q9. List the harmful effects caused by alcohol and drug abuse. What are the reasons you think, youth get attracted to these things? Explain any three factors

Q10. Expand....NACO, MALT, CMI, ELISA, AIDS..

Q11. Breast fed babies are more immune to diseases than bottle fed babies. Why?

Q12. Where are B-cells and T-cells formed? How do they differ from each other

Q13. Lymph nodes are secondary lymphoid organs. Describe the role of lymph nodes in our immune response.

Q14. What is the role of histamine in inflammatory response ? Name a few drugs which reduce the symptoms of allergy

Q15. Answer the following with respect to Cancer.

(a) How does a cancerous cell differ from a normal cell?

(b) Benign tumor is less dangerous than malignant tumor. Why?

(c) Describe causes of cancer.

(d) Mention two methods of treatment of the disease.

Q16. The pathogen of a disease depends on RBCs of humans for growth and reproduction. The person with this pathogen suffers with chill and high fever

(a) Identify the disease. (b) Name the pathogen. (c) What is the cause of fever?

(d) Represent the life cycle of the pathogen diagrammatically.

Q17. The immune system of a person is suppressed. He was found positive for pathogen in the diagnostic test ELISA.

(a) Name the disease the patient is suffering from.

(b) Which pathogen is identified by ELISA test?

(c) Which cells of the body are attacked by the pathogen?

(d) Suggest preventive measures of the infection.

Ch-7. Microbes in Human Welfare

Q1. Explain the working of Sewage treatment plants.

Q2. Explain use of microbes in household products

Q3. Give two –two examples of alcoholic drinks prepared by distillation and without distillation method

Q4. Name the microbes from which cyclosporine- A and Statins are obtained. Also mention their uses.

Q5. What are the properties of an antibiotic?

Q6. What is the use of *Aspergillus niger*, *Acetobactor aceti* and *Clostridium butylicum*?

Q7. Draw a well labelled diagram of a Biogas plant.

Q8. Microbes can be used to decrease the use of chemical fertilizers and pesticides. Explain how this can be accomplished?

Q9. How do biofertilizers enrich the fertility of soil?

Q10. What are baculoviruses? How are they useful in IPM?

Unit-IV (weightage-12 marks)

Ch-8 Biotechnology-Principles and Procedures

Q1. Write conventional nomenclature of EcoRI.

Q2. An extra chromosomal segment of circular DNA is used to carry genes of interest into the host cell. What is the name given to it?

Q3. Mention the uses of cloning vectors in biotechnology.

Q4. Identify the recognition sites in the given sequences at which E.coli will cut and make sticky ends.

5'GAATTC-3'

3'CTTAAG-5'

Q5. Name two main steps which are collectively referred to as down streaming process. Why is this process significant ?

Q6. How does plasmid differ from chromosomal DNA?

Q15. What is Bt? Why and how is it used in agricultural practices?

Q16. Give a short note on Baculovirus.

Q17. Since DNA is a hydrophilic molecule, it cannot pass through cell membranes. Name and explain the technique with which the DNA is forced into (i) a bacterial cell (ii) a plant cell, (iii) an animal cell.

Q18. In recombinant DNA technology, vectors are used to transfer a gene of interest in the host cells. Mention any three features of vectors that are most suitable for this purpose.

Q19. Why is "Agrobacterium-mediated genetic engineering transformation" in plants considered as natural genetic engineering?

Q20. A selectable marker is used in the selection of recombinants on the basis of their ability to produce colour in presence of chromogenic substrate.

(a) Mention the name of the mechanism involved.

(b) Which enzyme is involved in the production of colour?

(c) How is it advantageous over using antibiotic resistant genes as a selectable marker?

Q21. The development of bioreactors is required to produce large quantities of products.

(a) Give optimum growth conditions used in bioreactors.

(b) Draw a well labelled diagram of a simple stirred-tank bioreactor.

(c) How does a simple stirred tank bioreactor differ from a sparged stirred tank bioreactor?

Ch- 9 Biotechnology and its Applications

Q1. Give uses of r-DNA technology in medical and agriculture field

Q.2 What is a selectable marker in Plasmid PBR-322?

Q3. Mention the role of Restriction enzymes, Gel-electrophoresis and PCR in biotechnology.

Q4. Draw a well labelled diagram of plasmid PBR-322.

Q5. Write the role of 'Ori' in plasmid.

Q6. Draw a bioreactor with labelling.

Q7. Explain the process of RNA interference.

Q8. How is genetically engineered insulin formed?

Q9. What is gene therapy procedure for ADA deficient people?

Q10. What is Bt? How is it used in agriculture?

Q11. Explain the process of forming a r-DNA .

Q12. What is a Palindromic sequence? Frame 4 Different palindromic sequences.

Q13. What are GMOs? How have GM plants been useful?

Q14. What are Transgenic animals? How are they useful to mankind?

Q15. Draw a well labelled diagram of Plasmid PBR322.

Q16. What are bioreactors? Draw a well labelled diagram of Stirred tank Bioreactor.

Q17. Explain briefly....PCR, Chitinase, Downstreaming process

Q18. State the principle used in ELISA.

Q19 What are two core techniques used in modern biotechnology?

Q20. What are Restriction Enzymes? How are they named? Explain with suitable example.

Unit-V (weightage- 10 marks)

Ch-11 Organism and Its population

- Q1. Explain various types of interactions in a population with examples.
- Q2. Differentiate between Hibernation and Aestivation
- Q3. Describe different Age pyramids. How does the study of these pyramids help policy makers?
- Q4. What is sexual deceit? Explain with an example.
- Q5. Give a short note on adaptation in plants and animals of different habitats.
- Q6. Predators help in maintaining species diversity in a community. Explain
- Q7. Define..Allen rule, conformers, regulators and population density
- Q8. Explain the factors that affect the increase or decrease of population in an area.
- Q9. What are various population attributes? Explain any four.
- Q10. What is the ecological principle behind the biological control method of managing pest insects?

Ch-12, Ecosystem

- Q1. What is the shape of a pyramid of biomass in the sea? Why is it so?
- Q2. Distinguish between
- (a) Grazing food chain and detritus food chain
 - (b) Production and decomposition
 - (c) Upright and inverted pyramid
 - (d) Food chain and Food web
 - (e) Litter and detritus
 - (f) Primary and secondary productivity
- Q3. what is the rate of decomposition if (i) Detritus is rich in lignin and chitin. (ii) Detritus is rich in nitrogen and sugars.
- Q4. Describe the components of an ecosystem.
- Q5. Define ecological pyramids? Explain different types of ecological pyramids.
- Q6. What is primary productivity? Give a brief description of factors that affect primary productivity.
- Q7. Define decomposition and describe the process and products of decomposition.
- Q8. Give an account of energy flow in an ecosystem.

Ch-13. Biodiversity and Conservation

Q1. What is the significance of slope of regression in an area-species relationship?

Q2. What are sacred grooves? What is their role in conservation?

Q3. What were the findings of David Tilman? Enlist the factors important for a stable biological community

Q4. Explain the Evil Quartet of biodiversity loss.

Q5. Explain biodiversity at various levels of biological organisation. Which level of diversity rice and mango belongs to?

Q6. How do we conserve biodiversity in situ and ex situ? Explain with suitable examples

Q7. State the reasons that tropics account for greater biological diversity.

Q8. Explain the theory given by Paul Ehrlich.

Q9. There were a total five episodes of Mass Extinction of species since the origin of life on earth. The sixth Extinction is presently in progress. How is it different from the previous episodes? Explain

Q10. Introduction of Alien species in an area may cause decline or extinction of indigenous species. Explain with examples.