

**SRI VIJAY VIDYALAYA MAT. HR. SEC. SCHOOL,
DHARMAPURI**

**12 BIO – ZOOLOGY IMPORTANT PUBLIC
REPEATED QUESTIONS**

1: REPRODUCTION OF ORGANISMS

1. What is parthenogenesis? Give two examples from animals? (May -2022) (A-21)
2. Which type of reproduction is effective -Asexual or sexual and why?
3. Why is the offspring formed by asexual reproduction referred as a clone?
4. The unicellular organisms which reproduce by binary fission are considered immortal. Justify
5. How is juvenile phase different from reproductive phase?
6. During unfavourable conditions, how the Amoeba reproduces?
7. What are the types of natural parthenogenesis?
8. Write different types of syngamy
9. Define repeated fission. e.g.
10. Define Plasmotomy
11. Define apolysis.
12. What is Conjugation?
13. What are the Phases of life cycle?
14. Explain the various types of parthenogenesis

2: HUMAN REPRODUCTION

1. Mention the differences between spermiogenesis and spermatogenesis : (J-22)
2. How is polyspermy avoided in humans? What is Colostrum? Write its significance .
3. Define morula
4. Twins are two off springs produced in the same pregnancy.
5. Define "Let-Down" reflex (A-21)
6. Braxter-Hick's contractions lead to false labour
7. Placenta is an endocrine Tissue – Justify ?
8. Draw a labelled sketch of a spermatozoan and explain the structure ? (S-20) (J-22) (A-21)

9. What is Inhibin ? State its functions? (A-21)
10. What is the composition for semen? (May-2022)
11. Describe the structure of the human ovum with a neat labelled diagram? (A-21) (S-20) (J-22)
12. Define Gametogenesis ? (J-22)
13. Give a schematic representation of spermatogenesis (J-22) and Oogenesis in humans?
14. Explain the various phases of menstrual cycle ?
15. Explain the role of oxytocin and relaxin in parturition and lactation?
16. Mention the significance of Epididymis in the testis? 17. What are Sertoli cells and its uses ?
18. Roll of hormone in Spermatogenesis ? (S-20)
19. Define : Menstrual or ovarian cycle Menopause – define ?
20. What is Ectopic pregnancy ? (S-20)
21. POLY CYSTIC OVARY SYNDROME (PCOS)
22. Describe on extra embryonic membranes :- (M-2022)
23. The major reproductive events in human beings are as follows:-
24. Define Interstitial cells or Leydig cells
25. Define CRYPTORCHISM
26. The wall of the uterus has three layers of tissues.
27. Define corpus luteum
28. Define corpus albicans.
29. Describe the structure of the Events of Fertilization (A-21) (S-20)
30. Expand the acronyms a. FSH b. LH c. hCG d. hPL
31. What is ovulation in which day of menstrual cycle it takes place (A-21)
32. Write the basic features of reproduction. (J-22)

3 : REPRODUCTIVE HEALTH

1. What is amniocentesis? Why a statutory ban is imposed on this technique? (A-21) M- 20(A-21)
2. Which method do you suggest the couple to have a baby, if the male partner fails to inseminate the female or due to very low sperm count in the ejaculate?

3. What are the strategies to be implemented in India to attain total reproductive health? (May-2022)
4. Differentiate foeticide and infanticide. :- (M-2022) (J-22)
5. The procedure of GIFT involves the transfer of female gametes into the fallopain tube, can gametes be transferred to the uterus to achieve the same result? Explain.
6. Amnicentesis, the foetal sex determination test, is banned in our country, Is it necessary?
7. comment. Importance of PCSO Act – (May-2022)
8. Zygote intra-fallopian transfer (ZIFT)
9. Gamete intra-fallopian transfer (GIFT)
10. Write the causes of infertility
11. Suggest a solution for the prevention of male infertility to the patients with Azoospermia?
12. The various steps involve in the Invitrofertilization (IVF) or Test Tube Baby? (S-20)
13. Define Foetoscope
14. order to prevent female foeticide and infanticide, Government of India has taken various steps (ACTS)
15. An ideal contraceptive device characters (J-22)
16. Lactational amenorrhoea (J-22)
17. Define Saheli,
18. Intra-cytoplasmic sperm injection (ICSI)
19. How are STDs transmitted?
20. Write the preventive measures of STDs.
21. Candidiasis
22. Trichomoniasis
23. surrogacy (S-20)
24. Chorionic villus sampling (CVS) (A-21)
25. Vasectomy & Tubectomy(A-21)
26. Name of the acts which aim at creating a safe and secure evs for both female and males. Add a note on its importance. (J-22)

4 : PRINCIPLES OF INHERITANCE AND VARIATION

1. What is haplodiploidy? (A-21)

2. What is Lyonisation? (Lyon's hypothesis / Dosage compensation Barr body)
3. What is criss-cross inheritance?. OR (colour blind man X normal visioned woman) (Annual -2020) OR (Sex linked characters in human being) (J-22)
4. Why are sex linked recessive characters more common in the male human beings?
5. What are holandric genes? (A-21)
Mention the symptoms of Phenyl ketonuria.)
6. mention the symptoms of Down's syndrome / (21-Trisomy) :- (Annual -2020)
7. Explain the genetic basis of ABO blood grouping man/ multiple alleles and their eg (S-20)
8. How is sex determined in human beings ? (M-22)
9. Give an account of genetic control of Rh factor
10. Explain the mode of sex determination in honeybees
11. What are the applications of Karyotyping ?. (J-22) (A-21) (J-22)
12. Define Kin Selection
13. What is Haemophilia : (A-21)
14. The prevent erythroblastosis foetalis – (M-2022)
15. Define Karyotyping – Idiogram
16. Define Pedigree analysis
17. Define Huntington's chorea:
18. Define multiple allelism.
19. Define secretors
20. Explain the process of Incompatibility of Rh Factor – Erythroblastosis foetalis
21. How does the organism compensate for this dosage differences between the sexes?
22. Define Sex determining region Y (SRY).
23. Marriage between colour blind man and normal visioned woman
24. Marriage between normal visioned man and colour blind woman. (S-20)
25. a character present in grandfather to grandson through daughter draw a flowchart of inheritance (M-20)
26. Male honey bee have 16 chromosome and female

honey bee have 32 chromosomes give the reason for it (S-20)

27. Draw any four symbols of commonly used in pedigree chart. (J-22)

5 : MOLECULAR GENETICS

1. Genetic code is „universal (J-22)
2. Differentiate - Leading strand and lagging strand
3. Differentiate - Template strand and Coding strand (MAY-2022)
4. Mention any two ways in which single nucleotide polymorphism (SNPs) identified in human genome can bring revolutionary change in biological and medical science.?
5. State any three goals of the human genome project. (May-2022) (J-22)
6. Distinguish between structural gene, regulatory gene and operator gene.
7. In E.coli, three enzymes β -galactosidase, permease and transacetylase are produced in the presence of lactose.
8. Explain why the enzymes are not synthesized in the absence of lactose.
9. HGP is the windows for treatment of various genetic disorders, justify the statement.
10. Why the human genome project is called a mega project ?
11. Why tRNA is called an adapter molecule?
12. What are the three structural differences between RNA and DNA ? (A-21)
13. Name the anticodon required to recognize the following codons:
Codons :AAU CGA UAU GCA
Anticodon :UUA GCU AUA CGU
14. Write the source of energy for this replication and name the enzyme involved in this process.
15. If the coding sequence in a transcription unit is written as follows:
The Sequence of DNA :
5' TGC ATG CAT GCA TGC ATG CAT GCA TGC 3'

The sequence of mRNA:

3"ACG UAC GUA CGU ACG UAC GUA CGU ACG 5"

16. Transcription (M-22)-
17. One gene-one enzyme hypothesis
18. Difference between the Euchromatin – Hetero chromatin
19. What are the advantages of DNA finger printing. (May-2022)
20. What is pharmacogenomics?
21. The salient features of genetic code :- (M22) (J-22)
22. Write about the Salient features of HGP (M-2022)
23. What are Operons ? How many operon groups are present in E.coli ? (M-20)
24. Classical concept of gene introduced by Sutton and Gene defined.
25. Define transformation.
26. Differentiate purines and pyrimidines
27. Define Erwin Chargaff RULES
28. Define ribozyme
29. Explain the various properties of genes.
30. Experimental proof of DNA replication
31. Define Central dogma (A-21)
32. Differentiate TATA box and Pribnow box
33. Differentiate monocistronic mRNA (eukaryotes) or polycistronic mRNA (prokaryotes).
34. Why the transcription and translation take place simultaneously in the same compartment in bacteria or prokaryotes.
35. Both the strands of DNA are not copied during transcription for two reasons.
36. What is Wobble Hypothesis
37. Sickle cell anaemia in humans which results from a point mutation
38. Diagram of Holley's two-dimensional clover leaf model of transfer RNA
39. Define Shine – Dalgarno sequence
40. What are the main goals of Human Genome Project (J-22)
41. The methodologies of the Human Genome Project involved two major approaches.

42. Define SNPs – Single nucleotide polymorphism
43. What are the future challenges of HGP .
44. LAC OPERON (A-21) (S-20)
45. WHAT ARE THE OPERON ? HOW MANY OPERON GROUPS ARE PRESENT IN E.COLI:?(A-21)
46. Methodologies of the Human Genome Project involved two major approaches (M-20).
47. TRANSCRIPTION (S-20)
48. Relationship of between gene and DNA are best understood by mutation studies. Justify the statement (S-20)
49. Which technique is used to identified criminals? GIVES ITS other applications (A-21)
50. Salient features of Human Genome Project (A-21)
51. In DNA how can be we are decided symbols of 5' and 3'.. justify (S-20)
52. The length of DNA is far greater than the dimension of a typical mammalian nucleus (approximately 10^{-6} m) how is such a long DNA polymer package a cell. (S-20)
53. Nucleosome formation (J-22)

6 : EVOLUTION

1. List out the major gases seems to be found in the primitive earth. (May-2022)
2. Explain the three major categories in which fossilization occur ? (A-21)
3. Differentiate between divergent evolution and convergent evolution with one example for each.
4. Explain how mutations, natural selection and genetic drift affect Hardy Weinberg equilibrium.
5. How did Darwin explain fitness of organisms?
6. Mention the main objections to Darwinism. (A-21)
7. Taking the example of Peppered moth, explain the action of natural selection. What do you call the above phenomenon?
8. Darwin's finches and Australian marsupials are suitable examples of adaptive radiation – Justify the statement.
9. Who disproved Lamarck's Theory of acquired

- characters ? How ? (May-2022)
10. Explain stabilizing, directional and disruptive selection with examples
11. Explain the evolutionary path of Man How does Neanderthal man differ from the modern man in appearance ?
12. Define Big bang theory
13. Define Vestigial organs (S-20)
14. Define Gene flow
15. What are coacervates(A-21)
16. What is Atavistic organs?
17. Define Lamarck's theory (S-20)
18. Explain the Modern synthetic theory.
19. Darwin's theory of Natural Selection.
20. Theory of chemical evolution or Oparin and Haldane
21. Six periods of Paleozoic era.
22. coenozoic era is subdivided into five epochs.
23. Define protobionts'
24. Experimental approach to the origin of life of Urey and Miller (J-22)
25. Define Petrification.
26. Define Paleontology
27. Define "biogenetic law or theory of recapitulation
28. " Salient features of Mutation Theory (A-21)
29. Define Adaptive radiations
30. Define Genetic drift / Sewall Wright Effect
31. Define founder's effect.
32. Homo sapiens
33. Cro-Magnon
34. Neanderthal human
35. Homo erectus
36. Homo habilis
37. Origin and Evolution of Man(M-20)
38. Theory of biogenesis
39. The theory of spontaneous generation or Abiogenesis, (J-22)
40. IN A POPULATION SAYS THAT 'A' ALLELES HAS FREQUENCY (p) OF 0.2 and 'a' alleles has frequency (q) of 0.8. then $p+q=1$. Find out the next generation

- % for AA/, Aa and aa genotypes. (S-20)
41. Differentiate relative and absolute dating (J-22)

7: Human Health and Diseases

1. What are interferons? Mention their role.
2. Name and explain the type of barriers which involve macrophages.
3. List out chemical alarm signals produced during inflammation.
4. Explain the process of replication of retrovirus after it gains entry into the human body.
5. Explain the structure of immunoglobulin with suitable diagram. (May-2022). (A-21) (J-22)
6. What are the cells involved innate immune system?
7. What is vaccine? What are its types?
8. A person is infected by HIV. How will you diagnose for AIDS?
9. Autoimmunity is a misdirected immune response. Justify (May-2022) .
10. List the causative agent, mode of transmission and symptoms for Diphtheria and Typhoid
11. A patient was hospitalized with fever and chills. Merozoites were observed in her blood.
12. What is your diagnosis? (i) Write the scientific name of the filarial worm that causes filariasis. (M-22) (ii) Write the symptoms of filariasis. (iii) How is this disease transmitted? (A-21)
13. List the common withdrawal symptoms of drugs and alcohol abuse. (S-20)
14. Why do you think it is not possible to produce vaccine against 'common cold'? (J-22)
15. Amoebiasis :- (May-2022)
16. Malaria vaccine - (May-2022)
17. Innate immunity protects our body against diseases :- (May-2022)
18. Cell mediated immunity
19. Antibody mediated immunity or humoral immunity
20. Thymus Uses(M-20)
21. Differentiate Paratope and Epitope

22. Autoimmunity is a misdirected immune response. Justify (May-2022) .
23. Define Anaphylaxis
24. Define Hapten
25. Peyer's patches
26. Tonsils (palatine tonsils)
27. Spleen
28. Adenoids
29. Antigen (Ag)
30. Antibodies
31. Hypersensitivity / Overactive Immune Response
32. Differentiate infectious diseases or communicable diseases and Non-infectious diseases
33. Risk of bacterial resistance can be reduced by observing the following steps.
34. Zoonotic virus
35. Viral diseases are generally grouped into four types on the basis of the symptoms produced in the body organs.
35. Diagram of Entamoeba histolytica
36. Three species of Trypanosoma cause sleeping sickness in man
37. Diagram of Trypanosoma gambiense. Kala - azar or visceral leishmaniasis(A-21)
38. Types of malaria (J-22)
39. Define diapedesis.
40. The unique features of acquired immunity
41. Differences between active and passive immunity(A-21)
42. Differences between primary and secondary immune responses
43. Differences between primary or central lymphoid organs and secondary or peripheral lymphoid organs.
44. Dendritic cells.
45. Define immunogen.
46. The functions of immunoglobulin
47. Structure of HIV
48. AIDS awareness programme by NACO (National AIDS Control Organisation), NGOs (Non-Governmental Organisations) and WHO are to

- prevent the spreading of AIDS.
49. Differences between normal cell and cancer cell
 50. The drugs which are commonly abused medicine to treat patients with mental illness like depression and insomnia and are often abused.
 51. Plants with hallucinogenic properties
 52. If immunological surveillance is effective, cancer should not occur justify (S-20)
 53. Ascaris lumbricoides(M-19)
 54. Booster dosage is essential for passive acquired immunity why? (S-20)
 55. Human infection of HIV carried out by reverse transcriptase, explain (S-20)
 56. Explain the asexual methods of reproduction of Plasmodium. (S-20) life cycle of Plasmodium in man (J-22)

8: MICROBES IN HUMAN WELFARE

1. Give any two bioactive molecules produced by microbes and state their uses. (S-20 HOUSE HOLD PRODUCTS)
2. How is milk converted into curd? Explain the process of curd formation.
3. Define the following terms :- a. Antibiotics
b. Zymology (A-21)
c. Superbug(J-22)
4. Write short notes on the following.
a) Brewer's yeast -b) Ideonella sakaiensis (J-22)
c) Microbial fuel cells - (May-2022)
5. List the advantages of biogas plants in rural areas. When does antibiotic resistance develop? (M-2022)
6. Which is referred to as Industrial alcohol? why? / Preparation of Ethanol (March -2020). (A-21)
7. What is Bioremediation? (J-22)
8. Differentiate between the Prebiotics - Probiotics
9. Antibiotics and its uses
10. Single cell protein (SCP)
11. What is a fermentor (bioreactor) and their characters.

12. Penicillin is also referred as the "queen of drugs"
13. Antibiotics and their types
14. What is Biodiesel and produces plant NAMES.
15. DEFINE clot buster
16. DEFINE Cyclosporin A
17. DEFINE Statins
18. Differentiate between situ bioremediation and ex situ bioremediation.
19. Explain the Microorganisms involved in bioremediation.

9: APPLICATIONS OF BIOTECHNOLOGY

1. Mention the number of primers required in each cycle of PCR.
2. Write the role of primers and DNA polymerase in PCR. Name the source organism of the DNA polymerase used in PCR.
3. How is the amplification of a gene sample of interest carried out using PCR? (May-2022)
4. What is genetically engineered Insulin? Explain how "Rosie" is different from a normal cow? (J-22)
4. How was Insulin obtained before the advent of rDNA technology?.
5. What were the problems encountered?
6. What are transgenic animals? Give examples
7. Gene therapy is an attempt to correct a Genetic defect by providing a normal gene into the individual. By this the function can be restored. An alternate method would be to provide gene product known as enzyme replacement therapy, which would also restore the function. Which in your opinion is a better option? Give reasons for your answer
8. Explain how ADA deficiency can be corrected?
9. What are DNA vaccines? (A-21)
10. Differentiate between Somatic cell gene therapy and germline gene therapy (A-21) (J-22)
11. Embryonic Stem cells (ES cells) .
12. Adult stem cells
13. The most important and potential application of

- human stem cells :- (March- 2020)
14. One of the applications of biotechnology is „gene therapy” to treat a person born with a hereditary disease i) What does “gene therapy” mean? (M-22)
ii) Name the hereditary disease for which the first clinical gene therapy was used. iii) Mention the steps involved in gene therapy to treat this disease.
 15. PCR is a useful tool for early diagnosis of an Infectious disease. Elaborate
 16. What are recombinant vaccines?
 17. Explain the types Explain why cloning of Dolly, the sheep was such a major scientific breakthrough?
 18. Mention the advantages and disadvantages of cloning (J-22)
 19. Explain how recombinant Insulin can be produced. (A-21)
 20. What are the applications of PCR (J-22)
Recombinant DNA (rDNA)
 21. Interferons
 22. Totipotency (Toti-total)
 23. Pluripotency (Pluri-several)
 24. Multipotency (multi-Many) (May-2022) –
 25. Oligopotency (Oligo-Few) (May-2022)
 26. Unipotency (Uni- Single)
 27. Uses Of Transgenesis
 28. Edible vaccines
 29. Two strategies involved in gene therapy namely (S-20)
 30. The various steps involved in the production of transgenic organisms.
 31. What is the most important application of human stem cells (A-21)
 32. Yeast is more suitable for production of interferon rather than e.coli give the reasons (S-20).
 33. Explain vaccine and their types. (J-22)
 34. Describe the structure of lymph node (A-21)
 35. Explain the method of diagnosis of AIDS by ELISA test. (S-20)

10 . ORGANISMS AND POPULATION.

1. What is a Habitat ? .
2. Define ecological niche.
3. What is Acclimatisation ?
4. What is Pedogenesis ?
5. What is soil permeability ?
6. Differentiate between Eurytherms and Stenotherms. (May-2022) (S-20)
7. Explain hibernation and aestivation with examples. (J-22)
8. Give the diagnostic characters features of a Biome ?
9. Classify the aquatic biomes of Earth.
10. What are the ways by which organisms respond to abiotic factors ?
11. Classify the adaptive traits found in organisms.
12. Write short notes on : Natality and Mortality :- (M -20) & (May -2022) (J-22)
13. Differentiate J and S shaped curve
14. Give an account of the properties of soil :- (M-22) (A-21) (J-22)
15. Differentiate between Tundra and Taiga Biomes
16. List the adaptations seen in terrestrial animals
17. Tabulates and analysis of two species population interaction. (A-21)
18. Explain parasitism with an example.
19. Differentiate between predator and prey.
20. Van't Hoff's rule Bergman's rule.
21. The Allen Rules
22. Jordan's rule
23. Phototaxis
24. Phototropism
25. Photokinesis
26. Adaptations of aquatic animals
27. Define Biome
28. How can be survive the camel on xerophytic habitat,
29. Light Essential properties of water
30. Soil (Pedogenesis) -four major functions-(J-22)
31. Define Acclimatization.
32. Define Conformers

33. Define Ethology
34. Structural adaptations
35. Behavioural adaptations
36. Physiological adaptations
37. Define catadromous migration
38. Define anadromous migration,
39. Differences between r- selected and K selected species.
40. Population density (M-20)
41. List out the intrinsic factor and extrinsic factors for population growth (S-20)
42. How do people acclimatize to higher altitude within few days (A-21)
43. Solar energy advantages. (M-19)
44. Allopatric and sympatric speciation (M-19)
45. Describe the population growth models/curves (S-20)

11. BIODIVERSITY AND ITS CONSERVATION

1. Define endemism. (S-20)
2. How many hotspots are there in India ? Name them. (A-21)
3. What are the three levels of biodiversity ? (J-22)
4. Name the active chemical found in the medicinal plant Rauwolfia vomitoria.
5. What type of diversity it belongs “Amazon forest is considered to be the lungs of the planet”-Justify this statement
6. Red data book“-What do you know about it ?
7. Compare and Contrast the insitu and exsitu conservation.
8. What are called endangered species ? Explain with examples. (S-20)
9. Why do we find a decrease in biodiversity distribution, if we move from the tropics towards the poles.
10. What are the factors that drive habitat loss ?
11. Alien species invasion is a threat to endemic

- species – substantiate this statement.
12. Mention the major threats to biodiversity caused by human activities.
 13. Explain What is mass extinction?
 14. Will you encounter one such extinction in the near future. Enumerate the steps to be taken to prevent it. 1.Mass extinction :- (May-2022) 2. Steps to taken for the Preventive measure :-
 15. In north eastern states, the jhum culture is amajor threat to biodiversity – substantiate.
 16. List out the various causes for biodiversity losses. (A-21) (J-22)
 17. How can we contribute to promote biodiversity conservation ? ,,
 18. Write a note on :- 1. Protected areas , 2. Wildlife sanctuaries 3.WWF :
 19. What are types of Species diversity :- (May-2022)
 20. What are the purpose of preparation of Red List.
 21. The reasons for the richness of biodiversity in the Tropics are biodiversity.
 22. Rivet Popper Hypothesis'
 23. Species - Area relationships
 24. Major functional attributes are biodiversity
 25. Where are the Sparrows?
 26. Global Climate changes
 27. Coextinctions (A-21)
 28. General strategies in Conservation of biodiversity
 29. Sacred Groves
 30. Gene bank (M-20)
 31. In Many parts of the Chennai number of dove increase rather than crow. What type of habitat loss it is? define(S-20)
 32. Human beings and nature can co-exist while respecting each other's need. Explain this statement with MAB programme. (S-20)

12. ENVIRONMENTAL ISSUES.

1. What is SMOG and how it is harmful for us?
2. List all the wastes that you generate, at home, school or during your trips to other places. Could

- you very easily reduce the generation of these wastes?
3. Which would be difficult or rather impossible to reduce?
 4. Write notes on the following:- a. Eutrophication :
 5. What effect can fertilizer run off have on an aquatic ecosystem?
 6. How can we control eutrophication? (M-22) (S-20)
 7. Discuss the role of an individual to reduce environmental pollution.
 8. How does recycling help reduce pollution ?
 9. Discuss briefly the following : a. Catalytic converter b. Ecosan (J-22)
 10. What are some solutions to toxic dumping in our oceans?
 11. Effects of Air Pollution Greenhouse gases / Global warming:- .
 12. Effect of Water pollution :/ we are polluting water source. What will be the consequence of pollution on organism (S-20)
 - Effect of Noise Pollution :-
 13. Effect of Agrochemicals :- (March -2020)
 14. Methods of disposal of radioactive wastes :- (M22)
 15. Explain Medical waste and management ? (M-22, J-22)
 16. The management of E-Waste ? (May-2022)
 17. The mangement of Plastic Waste :- (J-22)
 18. Differentiate Rapidly degradable or non-persistent pollutants: Slowly degradable or persistent pollutants (J-22) (A-21)
 19. Peroxyacetyl nitrate (PAN)
 20. Ozone depletion:
 21. Acid rain:
 22. Food chains
 23. Biomagnification (A-21)
 24. Eutrophication
 25. Oligotrophic stage and mesotrophic stage.
 26. Cultural or Accelerated Eutrophication.
 27. Integrated Wastewater Management
 28. Benefits of Organic Farming.

29. Major sources of solid waste
30. Waste management practices.
31. Control and Management of radioactive wastes.
32. Plastic are no more environmental hazardous waste.
33. What is the bioremedial solution for it. (S-20)