

LONG QUESTIONS FOR BIOLOGY

1. Explain the term biodiversity and its importance?
2. What are the 3 levels of diversity?
3. What are the threats to diversity?
4. Define microorganisms. What are the different groups of microorganisms giving examples in each group?
5. Explain 5 kingdom classification? Where are the microorganisms placed in this system?
6. Explain the significance of microorganism?
7. Define cell? Explain the postulates of cell theory?
8. What are prokaryotes? Draw the structure of a prokaryotic cell?
9. What are the differences between a prokaryotic and eukaryotic cell?
10. Draw a well labeled diagram of an animal cell?
11. Draw a well labeled diagram of a plant cell?
12. What are the differences plant and animal cell?
13. What are the function of different organelles in a cell (mitochondria, ribosomes, lysosomes etc.)?
14. What are the differences between plant and animal cells?
15. Define chromosomes and genes? What is the structure of chromosome?
16. Explain chromosomal packing?
17. What are the different types of chromosomes based on the position of centromere?
18. Explain sex chromosomes (allosomes) and autosomes?
19. What are the functions of chromosomes?
20. Explain the term differentiation? What is the status of the genome during differentiation?
21. Define the terms totipotency, pluripotency and multipotency?
22. Elaborate the term homeostasis with an example? What are the consequences of an imbalanced homeostatic state in the body?
23. What are the different ways in which homeostasis is regulated in the body?
Give examples.
 1. Define nucleotides and nucleosides? What are the composition of different nucleic acids?
 2. What are the differences between DNA and RNA?
 3. What are the salient features of the double helical structure of DNA proposed by Watson and Crick?
 4. Explain Chargaff's rule with an example?
 5. What are stem cells and what are their unique properties?
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 7. How stem cells classified are based on their source? What is the difference between adult and embryonic stem cells?
 8. How stem cells classified are based on their potency?
 9. What are the applications of stem cells? Explain somatic cell nuclear transfer and cloning briefly?
 10. Define central dogma?

11. Draw the structure of mRNA and tRNA?
12. What is genetic code? What are its properties?
13. How is genetic code helpful in protein synthesis?
14. Explain the process of transcription?
15. Define mRNA splicing?
16. Explain the process of protein synthesis?
17. Differentiate between transcription and translation?
18. Differentiate between the transcription process occurring in prokaryotes and eukaryotes?

Diagrams: Plant cell, Animal cell, Prokaryotic cell, Structure of Chromosome, Different types of Chromosomes
