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**Bioengineering:** What is bio-engineering? how is this field of technology beneficial?

**Biodiversity:** What is Biodiversity?  
What are the levels of biodiversity?  
How is biodiversity useful to humankind?  
What are various threats to biodiversity?

**Microbes:** What are microorganisms?  
Roles of microorganisms in nature.  
Why are microbes necessary evil?  
Beneficial microbes with examples.  
Harmful microbes with examples.

**Cell structure:** - Levels of classification - What are the 5 kingdoms, how are the organisms in each kingdom different with others?  
2) Draw a neat labelled diagram of prokaryotic, / plant / Animal cell with all labels.  
3) Functions of each organelle.  
4) What is cell theory? Brief its postulates.

**Cell growth and Division:** What are the various types of cell division?

**Chromosomes:** What are chromosomes?  
Brief all types of chromosomes with necessary diagrams.  
What are autosomes and allosomes in a creature?

Metabolism: Define Metabolism. what are the major types of metabolism?  
How is ATP an important molecule?

Biomolecules: Brief various types of chemical bonds observed between bio-molecules.

Discuss the functions of proteins.

~~Describe~~ Elaborate about the formation of a DNA double helix. Brief its properties.

Mention any 5 differences between DNA and RNA.

what are the types of RNA? Brief functions of each RNA.

If a DNA double helix has 398 phosphodiester bonds, what will be the number of base pairs in it?

If a DNA has 200 bp. and G-C H bonds are 210. what will be the concentration / content / percentage of Thymine?

If a DNA has 250 bases in total, in which content of A is 50 bases. what will be the number of H-bonds in total.

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which category of lipids forms structures?

protein synthesis: what is a genetic codon/code?  
Brief any 5 properties of a codon.

what are start and stop codons.

Discuss the process of transcription with a necessary diagram.

what is the importance of mRNA editing / splicing?

Schematically represent the process of translation and its stages.

Stem cells: what is cell differentiation? why is it required?

What are stem cells? mention any 3 properties of stem cells.

Brief the types of stem cells depending upon their regenerative & differentiation abilities

what are the major sources of stem cells?

Mention any 6 differences between Embryonic & Adult stem cells.

Stem cells: write any 4 applications of stem cells.

What is therapeutic cloning. Brief the process with necessary diagrams.

Homeostasis: Define homeostasis. why is it important?

what are the various components of homeostasis?

what is intrinsic homeostasis? Brief with an example.

Discuss the mechanisms of extrinsic homeostasis with an example.

Brief the levels of homeostasis during blood clotting process with necessary diagrams.