Question	Answer
Approximately how many genes are present on chromosome 1?	2968 genes.
Besides negative regulation, what other regulation controls lac operon?	Positive regulation.
Besides structural genes, what else affects inheritance of characters?	Promoter and regulatory sequences.
Describe the corolla in Solanaceae.	Five united petals with valvate aestivation.
Describe the leaves of Solanaceae plants.	Alternate, simple, rarely pinnately compound, exstipulate, with reticulate venation.
During transcription, what acts as the template for RNA synthesis?	One strand of DNA.
From where do fibrous roots originate?	From the base of the stem.
From where do leaves originate?	Shoot apical meristems.
From which type of ovary does a drupe develop?	Monocarpellary superior ovary.
Give an example of a palmately compound leaf.	Silk cotton.
Give an example of an endospermic seed.	Castor.
Give an example of polyadelphous stamens.	Citrus.
Give an example of valvate aestivation.	Calotropis.
Give examples of hypogynous flowers.	Mustard, china rose, and brinjal.
Give examples of parietal placentation.	Mustard and Argemone.
How is adhesion represented in floral formula?	By a line drawn above the symbols of floral parts.
How is DNA organised in the nucleoid?	In large loops held by proteins.
How is the genetic code read during translation?	In triplets.
How is the lac operon repressor synthesised?	Constitutively (all the time).
How long does *E. coli* take to complete DNA replication?	About 18 minutes.
How many base pairs are present in bacteriophage lambda?	48502 bp.
How many RNA polymerases are present in eukaryotic nuclei?	At least three.

Question	Answer
In RNA, which additional group is present at the 2' position of ribose sugar?	An additional –OH group.
In which year was Human Genome Project completed?	2003.
In which year was the Human Genome Project launched?	1990.
Into which monosaccharides does beta-galactosidase hydrolyse lactose?	Glucose and galactose.
Name additional functions of some stems.	Storage of food, support, protection, and vegetative propagation.
Name food plants belonging to Solanaceae.	Tomato, brinjal, and potato.
Name the different types of placentation.	Marginal, axile, parietal, basal, central, and free central.
Name the four floral whorls of a typical flower.	Calyx, corolla, androecium, and gynoecium.
Name the pyrimidine bases.	Cytosine, Uracil, and Thymine.
On what basis is satellite DNA classified?	Base composition, segment length, and number of repetitive units.
On what principle does DNA fingerprinting work?	Differences in repetitive DNA sequences.
On which template strand is DNA replication discontinuous?	On the 5' $\rightarrow$ 3' template strand.
To which class of satellite DNA does VNTR belong?	Minisatellite DNA.
What acts as the substrate for beta-galactosidase?	Lactose.
What are angiosperms characterised by despite their large diversity in morphology?	Presence of roots, stems, leaves, flowers, and fruits.
What are bracteate flowers?	Flowers having bracts at the base of the pedicel.
What are epipetalous stamens?	Stamens attached to petals.
What are ribosomes made of?	Structural RNAs and about 80 proteins.
What are syncarpous carpels?	Fused carpels.
What are the 24 human chromosomes composed of?	22 autosomes and X and Y chromosomes.
What are the characteristics of cells in the meristematic region?	Very small, thin-walled, with dense protoplasm, and divide repeatedly.
What are the two main parts of a seed?	Seed coat and embryo.
What are the two major types of inflorescences?	Racemose and cymose.

Question	Answer
What are the two types of compound leaves?	Pinnately compound and palmately compound leaves.
What conclusion was drawn when DNase inhibited transformation?	DNA is the hereditary material.
What constitutes the backbone of DNA?	Sugar-phosphate backbone.
What did Avery, MacLeod, and McCarty purify from heat-killed S cells?	Proteins, DNA, RNA, and other biochemicals.
What did radioactive bacteria indicate in Hershey-Chase experiment?	DNA entered the bacterial cells.
What did Taylor and colleagues prove?	DNA in chromosomes replicates semiconservatively.
What does BAC stand for?	Bacterial Artificial Chromosome.
What does the bacterial cell do with viral genetic material?	Treats it as its own and manufactures more virus particles.
What happened when heat-killed S strain bacteria were injected into mice?	The mice survived.
What happens to ovules after fertilisation?	They develop into seeds.
What happens to the beads-on-string structure during chromosome formation?	It gets packaged into chromatin fibres and further condensed into chromosomes.
What happens to the leaf base in monocotyledons?	It expands into a sheath covering the stem partially or wholly.
What happens to the primary root in monocotyledonous plants?	It is short-lived and replaced by many roots arising from the stem base.
What is a flower considered morphologically?	A modified shoot.
What is a frameshift mutation?	Mutation caused by insertion or deletion of one or two bases altering the reading frame.
What is a fruit?	A mature or ripened ovary developed after fertilisation.
What is a histone octamer?	A unit formed by eight histone molecules.
What is a ribozyme?	Catalytic RNA molecule.
What is a ribozyme?	RNA molecule with catalytic activity.
What is a unisexual flower?	A flower having either stamens or carpels only.
What is an asymmetric flower?	A flower that cannot be divided into two similar halves by any vertical plane.
What is androecium?	The male reproductive whorl composed of stamens.

Question	Answer
What is bioinformatics?	Use of computational tools for storage, retrieval, and analysis of biological data.
What is formed when a nitrogenous base combines with sugar?	Nucleoside.
What is gamosepalous calyx?	Calyx with united sepals.
What is hilum?	Scar on the seed coat where the developing seed was attached to the fruit.
What is hnRNA?	Heterogeneous nuclear RNA, the precursor of mRNA.
What is meant by degeneracy of genetic code?	Some amino acids are coded by more than one codon.
What is meant by semi-technical description of a flowering plant?	Description of morphological features in brief, scientific language and proper sequence.
What is monoadelphous condition?	Stamens united into one bundle.
What is opposite phyllotaxy?	A pair of leaves arise at each node and lie opposite to each other.
What is polymorphism?	Variation in DNA sequences among individuals.
What is polypetalous corolla?	Corolla with free petals.
What is Sequence Annotation?	Sequencing the whole genome and later assigning functions to sequences.
What is the above-ground portion of a flowering plant called?	Shoot system.
What is the approximate length of DNA double helix in a typical mammalian cell?	Approximately 2.2 metres.
What is the common name of Solanaceae family?	Potato family.
What is the complementary strand for the DNA sequence 5'-ATGCATGCATGCATGCATGCATGCATGC-3'?	3'-TACGTACGTACGTACGTACGTACGTACG-5'.
What is the effect of inserting one base in a genetic code sequence?	It changes the reading frame from the point of insertion.
What is the fully processed hnRNA called?	mRNA.
What is the function of beta-galactosidase?	Hydrolysis of lactose into glucose and galactose.
What is the function of mRNA?	It acts as a template for protein synthesis.
What is the function of root hairs?	Absorption of water and minerals from the soil.
What is the function of tRNA?	Adapter molecule linking codons to amino acids.
What is the major function of DNA?	Storage of genetic information.

Question	Answer
What is the nature of the seed coat in cereals like maize?	Membranous and generally fused with the fruit wall.
What is the primary role of RNA in most organisms?	It functions mainly as a messenger.
What is the prominent middle vein of the leaf called?	Midrib.
What is the regulatory gene of lac operon called?	i gene.
What is the role of rRNA?	Structural and catalytic role during translation.
What is the role of tRNA in protein synthesis?	It acts as an adapter molecule between codons and amino acids.
What is the significance of SNP information?	Helps identify disease-associated sequences and trace human history.
What is the single cotyledon of monocot seed called?	Scutellum.
What is the specific region where DNA replication starts called?	Origin of replication.
What is the style?	The elongated tube connecting the ovary to the stigma.