NEET-UG Biology Sample Paper-21

Duration: 1 Hour **Maximum Marks: 360**

Instructions

- This paper contains a total of **90** Multiple Choice Questions.
- Each correct answer carries **+4 marks**.
- Each incorrect answer carries **-1 mark**.
- No negative marking for unattempted questions.

Q1. Which kingdom includes organisms with peptidoglycan cell wall?

(A) Monera

(B) Protista

(C) Fungi

(D) Plantae

Q2. Which group shows alternation of generations with dominant sporophyte?

(A) Bryophytes

(B) Pteridophytes

(C) Algae

(D) Fungi

Q3. Which phylum has a water vascular system?

(A) Porifera

(B) Cnidaria

(C) Echinodermata

(D) Annelida

Q4. Which organism lacks a true nucleus but has circular DNA?

(A) Bacteria

(B) Fungi

(C) Protozoa

(D) Algae

Q5. Which plant group produces seeds but no flowers?

(A) Angiosperms

(B) Gymnosperms

(C) Bryophytes

(D) Pteridophytes

Q6. Which symmetry is found in adult echinoderms?

(A) Bilateral

(B) Radial

(C) Spherical

(D) None

Q7. Which organism is a prokaryotic autotroph?

(A) Nostoc

(B) Amoeba

(C) Yeast

(D) Paramecium

Q8. Which stage is dominant in bryophytes?

(A) Sporophyte

(B) Gametophyte

(C) Embryo

(D) Seed

Q9. Which tissue transports water in plants?

(A) Phloem

(B) Xylem

(C) Cambium

(D) Epidermis

Q10. Which tissue connects muscle to bone?

(A) Ligament

(B) Tendon

(C) Cartilage

(D) Bone

Q11. Which part of plant bears ovules?

(A) Anther

(B) Ovary

(C) Stigma

(D) Style

Q12. Which tissue has intercalated discs?

(A) Smooth muscle

(B) Cardiac muscle

(C) Skeletal muscle

(D) Nervous tissue

Q13. Which meristem is responsible for increase in girth?

(A) Apical

(B) Lateral

(C) Intercalary

(D) Ground

Q14. Who proposed cell theory?

(A) Darwin

(B) Schleiden and Schwann

(C) Mendel

(D) Watson

Q15. Which organelle modifies proteins?

(A) Ribosome

(B) Golgi apparatus

(C) Mitochondria

(D) Nucleus

Q16. Which transport requires ATP?

(A) Diffusion

(B) Osmosis

(C) Active transport

(D) Facilitated diffusion

Q17. Which is a lipid?

(A) Glucose

(B) Starch

(C) Triglyceride

(D) Protein

Q18. Which phase prepares cell for division?

(A) G_1

(B) S

(C) G_2

(D) M

Q19. Which stage shows crossing over?

(A) Prophase I

(B) Metaphase I

(C) Anaphase I

(D) Telophase I

Q20. Which organelle contains DNA besides nucleus?

(A) Golgi

(B) Lysosome

(C) Mitochondria

(D) Ribosome

Q21. Which is a reducing sugar?

(A) Sucrose

(B) Lactose

(C) Cellulose

(D) Starch

Q22. Which component increases membrane fluidity?

(A) Cholesterol

(B) Protein

(C) Carbohydrate

(D) Lipid

Q23. Which checkpoint ensures DNA integrity before mitosis?

(A) G_1 checkpoint

(B) S checkpoint

(C) G_2 checkpoint

(D) M checkpoint

Q24. Which pigment absorbs red light most efficiently in photosynthesis?

(A) Chlorophyll a

(B) Carotene

(C) Xanthophyll

(D) Anthocyanin

Q25. Where does glycolysis occur in a plant cell?

(A) Mitochondria

(B) Cytoplasm

(C) Nucleus

(D) Chloroplast

Q26. Which hormone promotes cell elongation in plants?

(A) Auxin

(B) Cytokinin

(C) Ethylene

(D) ABA

Q27. Water moves from higher water potential to lower water potential through a semipermeable membrane by:

(A) Diffusion

(B) Osmosis

(C) Active transport

(D) Transpiration

Q28. Which cycle fixes carbon dioxide during photosynthesis?

(A) Krebs cycle

(B) Calvin cycle

(C) Glycolysis

(D) Electron transport system

Q29. Which stage of aerobic respiration produces the maximum ATP?

(A) Glycolysis

(B) Krebs cycle

(C) Electron transport system

(D) Fermentation

Q30. Which plant hormone mainly inhibits growth and promotes dormancy?

(A) Auxin

(B) Gibberellin

(C) ABA

(D) Cytokinin

Q31. Which tissue translocates food in plants?

(A) Xylem

(B) Phloem

(C) Cambium

(D) Epidermis

Q32. Where does protein digestion begin in humans?

(A) Mouth

(B) Stomach

(C) Small intestine

(D) Large intestine

Q33. Gas exchange in the human respiratory system mainly occurs in:

(A) Trachea

(B) Bronchi

(C) Alveoli

(D) Larynx

Q34. Which blood vessel carries oxygenated blood from the heart to the body?

(A) Pulmonary artery

(B) Pulmonary vein

(C) Aorta

(D) Vena cava

Q35. The functional unit of the human kidney is:

(A) Neuron

(B) Nephron

(C) Alveolus

(D) Villus

Q36. Which part of the human brain controls balance and posture?

(A) Cerebrum

(B) Cerebellum

(C) Medulla

(D) Spinal cord

Q37. Which hormone lowers blood glucose level?

(A) Insulin

(B) Thyroxine

(C) Adrenaline

(D) Estrogen

Q38. Which type of muscle is involuntary and non-striated?

(A) Skeletal muscle

(B) Smooth muscle

(C) Striated muscle

(D) Cardiac muscle

Q39. The total number of bones in an adult human body is:

(A) 206

(B) 208

(C) 210

(D) 212

Q40. The usual site of fertilization in human females is:

(A) Ovary

(B) Uterus

(C) Fallopian tube

(D) Cervix

Q41. Which part of the nephron is associated with water reabsorption?

(A) Proximal convoluted tubule

(B) Distal convoluted tubule

(C) Loop of Henle

(D) All of these

Q42. Which of the following is a neurotransmitter?

(A) ATP

(B) Acetylcholine

(C) DNA

(D) RNA

Q43. Which gland secretes growth hormone?

(A) Thyroid

(B) Pituitary

(C) Adrenal

(D) Pancreas

Q44. Which gas is mainly transported by hemoglobin in blood?

(A) Carbon dioxide

(B) Oxygen

(C) Nitrogen

(D) All gases equally

Q45. Which hormone directly triggers ovulation?

(A) FSH

(B) LH

(C) Estrogen

(D) Progesterone

Q46. Which phase of the menstrual cycle involves shedding of the uterine lining?

(A) Follicular phase

(B) Luteal phase

(C) Menstrual phase

(D) Ovulatory phase

Q47. Male gametes in flowering plants are formed from pollen grains produced in the:

(A) Anther

(B) Ovary

(C) Ovule

(D) Style

Q48. Double fertilization in angiosperms produces:

(A) Zygote only

(B) Endosperm only

(C) Both zygote and endosperm

(D) Neither zygote nor endosperm

Q49. Which hormone is essential for maintaining pregnancy?

(A) Progesterone

(B) Estrogen

(C) FSH

(D) LH

Q50. Which of the following is a contraceptive method?

(A) IUD

(B) Antibiotic

(C) Vaccine

(D) Enzyme

Q51. Embryo sac in angiosperms develops from:

(A) Megaspore

(B) Microspore

(C) Zygote

(D) Ovary

Q52. Which structure releases the ovum in human females?

(A) Ovary

(B) Uterus

(C) Vagina

(D) Cervix

Q53. Which hormone shows a sharp peak immediately before ovulation?

(A) Progesterone

(B) LH

(C) FSH

(D) Estrogen

Q54. Pollination is the transfer of pollen grains to the:

(A) Stigma

(B) Style

(C) Ovary

(D) Ovule

Q55. Which law states that alleles separate during gamete formation?

(A) Law of dominance

(B) Law of segregation

(C) Law of independent assortment

(D) Law of linkage

Q56. In DNA, adenine pairs with:

(A) Cytosine

(B) Guanine

(C) Thymine

(D) Uracil

Q57. The genotypic ratio in a Mendelian monohybrid cross is:

(A) 1 : 2 : 1

(B) 3 : 1

(C) 9 : 3 : 3 : 1

(D) 1 : 1

Q58. Darwin explained evolution mainly through:

(A) Mutation theory

(B) Natural selection

(C) Lamarckism

(D) Pangenesis

Q59. Which enzyme synthesizes a new DNA strand during replication?

(A) Ligase

(B) Helicase

(C) DNA polymerase

(D) Primase

Q60. Which of the following is a sex-linked disorder?

(A) Hemophilia

(B) Diabetes

(C) Cancer

(D) Asthma

Q61. Which of the following is an example of homologous organs?

(A) Wings of bird and butterfly

(B) Forelimbs of human and whale

(C) Eye of octopus and human

(D) Leaf and stem

Q62. Which molecule acts as the primary genetic material in most organisms?

(A) Protein

(B) RNA

(C) DNA

(D) Lipid

Q63. A test cross is performed using:

(A) Homozygous dominant parent

(B) Heterozygous parent

(C) Homozygous recessive parent

(D) Any parent

Q64. Which of the following contributes to speciation?

(A) Isolation

(B) Mutation

(C) Natural selection

(D) All of these

Q65. Which of the following is a stop codon?

(A) AUG

(B) UAA

(C) UGG

(D) CAA

Q66. Turner syndrome is characterized by:

(A) XX genotype

(B) XY genotype

(C) XO genotype

(D) XXX genotype

Q67. Which of the following is a vestigial organ in humans?

(A) Appendix

(B) Heart

(C) Liver

(D) Brain

Q68. Which type of RNA carries amino acids during protein synthesis?

(A) mRNA

(B) tRNA

(C) rRNA

(D) snRNA

Q69. The phenotypic ratio of a monohybrid cross is:

(A) 3 : 1

(B) 1 : 2 : 1

(C) 9 : 3 : 3 : 1

(D) 1 : 1

Q70. Which disease is caused by a virus?

(A) Malaria

(B) Typhoid

(C) AIDS

(D) Tuberculosis

Q71. Which microorganism produces the antibiotic penicillin?

(A) Penicillium

(B) E.coli

(C) Rhizobium

(D) Yeast

Q72. Which disease is transmitted by mosquitoes?

(A) Cholera

(B) Malaria

(C) Typhoid

(D) Hepatitis

Q73. Which of the following acts as a biofertilizer?

(A) Azotobacter

(B) Lactobacillus

(C) Yeast

(D) Penicillium

Q74. Hepatitis mainly affects which organ?

(A) Heart

(B) Liver

(C) Lungs

(D) Kidney

Q75. Which of the following is a fermented food product?

(A) Bread

(B) Plastic

(C) Glass

(D) Metal

Q76. Which enzyme is used to cut DNA in genetic engineering?

(A) Ligase

(B) Polymerase

(C) Restriction enzyme

(D) Helicase

Q77. Which structure is commonly used as a vector in gene cloning?

(A) Plasmid

(B) Ribosome

(C) Mitochondria

(D) Nucleus

Q78. Which technique is used to amplify DNA?

(A) PCR

(B) Gel electrophoresis

(C) Blotting

(D) Hybridization

Q79. Which enzyme joins DNA fragments together?

(A) Ligase

(B) Helicase

(C) Primase

(D) Topoisomerase

Q80. Bt cotton is genetically modified to resist:

(A) Fungi

(B) Bacteria

(C) Insects

(D) Virus

Q81. Insulin is commercially produced using:

(A) Bacteria

(B) Algae

(C) Fungi

(D) Protozoa

Q82. Gene therapy is primarily used for:

(A) DNA repair

(B) Protein synthesis

(C) Correction of defective genes

(D) Mutation induction

Q83. Which technique is used to separate DNA fragments based on size?

(A) PCR

(B) Centrifugation

(C) Gel electrophoresis

(D) Microscopy

Q84. Which of the following is a producer in an ecosystem?

(A) Grass

(B) Lion

(C) Frog

(D) Bacteria

Q85. Energy flow in an ecosystem is:

(A) Cyclic

(B) Unidirectional

(C) Bidirectional

(D) None

Q86. Which of the following is a biodiversity hotspot?

(A) Amazon rainforest

(B) Desert

(C) Tundra

(D) Ocean

Q87. Which gas contributes significantly to the greenhouse effect?

(A) Oxygen

(B) Nitrogen

(C) Carbon dioxide

(D) Hydrogen

Q88. The 10% law of energy transfer was proposed by:

(A) Darwin

(B) Lindeman

(C) Odum

(D) Mendel

Q89. Which of the following is an endemic species?

(A) Tiger in India

(B) Dog

(C) Cow

(D) Cat

Q90. Ozone depletion is mainly caused by:

(A) Carbon dioxide

(B) Methane

(C) CFCs

(D) Oxygen

Detailed Solutions

Q1.

Solution

Concept: Kingdom Monera

Solution: Step 1: **Identify the key idea:** Peptidoglycan is the characteristic wall material of most bacteria.

Step 2: **Apply the concept:** Peptidoglycan is the characteristic wall material of most bacteria. Monera contains prokaryotic organisms such as bacteria. Protists, fungi and plants are eukaryotic groups and do not represent the bacterial peptidoglycan wall condition.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Monera

Answer: (A)

Q2.

Solution

Concept: Alternation of generations

Solution: Step 1: **Identify the key idea:** Pteridophytes show a distinct alternation of generations in which the sporophyte is the dominant, independent plant body.

Step 2: **Apply the concept:** Pteridophytes show a distinct alternation of generations in which the sporophyte is the dominant, independent plant body. Bryophytes have a dominant gametophyte, while algae show varied life cycles and fungi are not placed in the plant kingdom in this context.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Pteridophytes

Answer: (B)

Q3.

Solution

Concept: Echinodermata

Solution: Step 1: **Identify the key idea:** The water vascular system is a distinctive locomotory and feeding system of echinoderms.

Step 2: **Apply the concept:** The water vascular system is a distinctive locomotory and feeding system of echinoderms. It operates tube feet through hydraulic pressure. Porifera, Cnidaria and Annelida do not possess this system.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

Echinodermata

Answer: (C)

Q4.

Solution

Concept: Prokaryotic organization

Solution: Step 1: **Identify the key idea:** Bacteria are prokaryotes.

Step 2: **Apply the concept:** Bacteria are prokaryotes. Their genetic material is not enclosed by a nuclear membrane and is usually circular DNA in the nucleoid region. Fungi, protozoa and algae are eukaryotic and have a true nucleus.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Bacteria

Answer: (A)

Q5.

Solution

Concept: Gymnosperms

Solution: Step 1: **Identify the key idea:** Gymnosperms produce naked seeds that are not enclosed inside fruits.

Step 2: **Apply the concept:** Gymnosperms produce naked seeds that are not enclosed inside fruits. They do not form flowers. Angiosperms produce flowers and fruits, while bryophytes and pteridophytes reproduce mainly by spores.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Gymnosperms

Answer: (B)

Q6.

Solution

Concept: Animal symmetry

Solution: Step 1: **Identify the key idea:** Adult echinoderms such as starfish show radial symmetry, although their larvae are bilateral.

Step 2: **Apply the concept:** Adult echinoderms such as starfish show radial symmetry, although their larvae are bilateral. This shift is a key feature of the group.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Radial

Answer: (B)

Q7.

Solution

Concept: Cyanobacteria

Solution: Step 1: **Identify the key idea:** Nostoc is a cyanobacterium.

Step 2: **Apply the concept:** Nostoc is a cyanobacterium. It is prokaryotic and photosynthetic, so it is an autotroph. Amoeba and Paramecium are protozoans, and yeast is a fungus.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Nostoc

Answer: (A)

Q8.

Solution

Concept: Bryophyte life cycle

Solution: Step 1: **Identify the key idea:** In bryophytes, the gametophyte is the main, free-living and photosynthetic plant body.

Step 2: **Apply the concept:** In bryophytes, the gametophyte is the main, free-living and photosynthetic plant body. The sporophyte remains attached to and dependent on the gametophyte.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Gametophyte

Answer: (B)

Q9.

Solution

Concept: Xylem transport

Solution: Step 1: **Identify the key idea:** Xylem conducts water and minerals from roots to aerial parts.

Step 2: **Apply the concept:** Xylem conducts water and minerals from roots to aerial parts. Phloem transports organic food, cambium produces secondary tissues, and epidermis protects the plant body.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Xylem

Answer: (B)

Q10.

Solution

Concept: Connective tissue

Solution: Step 1: **Identify the key idea:** Tendons attach muscles to bones and transmit force for movement.

Step 2: **Apply the concept:** Tendons attach muscles to bones and transmit force for movement. Ligaments connect bone to bone, cartilage provides support and cushioning, and bone forms the skeletal framework.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Tendon

Answer: (B)

Q11.

Solution

Concept: Flower structure

Solution: Step 1: **Identify the key idea:** The ovary is the basal swollen part of the pistil and contains ovules.

Step 2: **Apply the concept:** The ovary is the basal swollen part of the pistil and contains ovules. After fertilization, ovules form seeds and the ovary forms the fruit.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Ovary

Answer: (B)

Q12.

Solution

Concept: Cardiac muscle

Solution: Step 1: **Identify the key idea:** Intercalated discs are specialized junctions between cardiac muscle cells.

Step 2: **Apply the concept:** Intercalated discs are specialized junctions between cardiac muscle cells. They help rapid impulse transmission and synchronized contraction of the heart.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

$$\boxed{\text{Cardiac muscle}}$$

Answer: (B)

Q13.

Solution

Concept: Secondary growth

Solution: Step 1: **Identify the key idea:** Lateral meristems, especially vascular cambium and cork cambium, cause secondary growth and increase the girth of stems and roots.

Step 2: **Apply the concept:** Lateral meristems, especially vascular cambium and cork cambium, cause secondary growth and increase the girth of stems and roots.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

$$\boxed{\text{Lateral}}$$

Answer: (B)

Q14.

Solution

Concept: Cell theory

Solution: Step 1: **Identify the key idea:** Schleiden and Schwann proposed the cell theory.

Step 2: **Apply the concept:** Schleiden and Schwann proposed the cell theory. Schleiden studied plants and Schwann studied animals, concluding that organisms are made of cells.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

$$\boxed{\text{Schleiden and Schwann}}$$

Answer: (B)

Q15.

Solution

Concept: Golgi apparatus

Solution: Step 1: **Identify the key idea:** Proteins synthesized on ribosomes are modified, sorted and packaged by the Golgi apparatus.

Step 2: **Apply the concept:** Proteins synthesized on ribosomes are modified, sorted and packaged by the Golgi apparatus. It forms secretory vesicles and helps in intracellular transport.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Golgi apparatus

Answer: (B)

Q16.

Solution

Concept: Active transport

Solution: Step 1: **Identify the key idea:** Active transport moves substances against their concentration gradient and requires metabolic energy in the form of ATP.

Step 2: **Apply the concept:** Active transport moves substances against their concentration gradient and requires metabolic energy in the form of ATP. Diffusion, osmosis and facilitated diffusion are passive processes.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

Active transport

Answer: (C)

Q17.

Solution

Concept: Lipids

Solution: Step 1: **Identify the key idea:** Triglycerides are lipids formed from glycerol and fatty acids.

Step 2: **Apply the concept:** Triglycerides are lipids formed from glycerol and fatty acids. Glucose and starch are carbohydrates, while proteins are polymers of amino acids.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

Triglyceride

Answer: (C)

Q18.

Solution

Concept: Cell cycle

Solution: Step 1: **Identify the key idea:** During G_2 phase, the cell synthesizes proteins and organelles needed for mitosis and checks whether DNA replication has been completed properly.

Step 2: **Apply the concept:** During G_2 phase, the cell synthesizes proteins and organelles needed for mitosis and checks whether DNA replication has been completed properly.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

$$\boxed{G_2}$$

Answer: (C)

Q19.

Solution

Concept: Meiosis

Solution: Step 1: **Identify the key idea:** Crossing over occurs during prophase I of meiosis, especially the pachytene stage.

Step 2: **Apply the concept:** Crossing over occurs during prophase I of meiosis, especially the pachytene stage. It exchanges segments between non-sister chromatids of homologous chromosomes.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

$$\boxed{\text{Prophase I}}$$

Answer: (A)

Q20.

Solution

Concept: Semi-autonomous organelles

Solution: Step 1: **Identify the key idea:** Mitochondria contain their own circular DNA and ribosomes, so they can synthesize some of their own proteins.

Step 2: **Apply the concept:** Mitochondria contain their own circular DNA and ribosomes, so they can synthesize some of their own proteins. Golgi and lysosomes do not contain DNA.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

$$\boxed{\text{Mitochondria}}$$

Answer: (C)

Q21.

Solution

Concept: Reducing sugars

Solution: Step 1: **Identify the key idea:** Lactose has a free reducing end and can act as a reducing sugar.

Step 2: **Apply the concept:** Lactose has a free reducing end and can act as a reducing sugar. Sucrose lacks a free reducing group, while cellulose and starch are polysaccharides.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

$$\boxed{\text{Lactose}}$$

Answer: (B)

Q22.

Solution

Concept: Membrane fluidity

Solution: Step 1: **Identify the key idea:** Cholesterol buffers membrane fluidity in animal cells.

Step 2: **Apply the concept:** Cholesterol buffers membrane fluidity in animal cells. It prevents excessive rigidity at low temperature and excessive fluidity at high temperature.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

$$\boxed{\text{Cholesterol}}$$

Answer: (A)

Q23.

Solution

Concept: Cell-cycle checkpoints

Solution: Step 1: **Identify the key idea:** The G_2 checkpoint checks whether DNA replication is complete and whether DNA damage has been repaired before entry into mitosis.

Step 2: **Apply the concept:** The G_2 checkpoint checks whether DNA replication is complete and whether DNA damage has been repaired before entry into mitosis.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

$$\boxed{G_2 \text{ checkpoint}}$$

Answer: (C)

Q24.

Solution

Concept: Photosynthetic pigments

Solution: Step 1: **Identify the key idea:** Chlorophyll a is the primary photosynthetic pigment and strongly absorbs red and blue-violet light.

Step 2: **Apply the concept:** Chlorophyll a is the primary photosynthetic pigment and strongly absorbs red and blue-violet light. Accessory pigments transfer energy to chlorophyll a.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

$$\boxed{\text{Chlorophyll a}}$$

Answer: (A)

Q25.

Solution

Concept: Glycolysis

Solution: Step 1: **Identify the key idea:** Glycolysis occurs in the cytoplasm and converts glucose into pyruvate.

Step 2: **Apply the concept:** Glycolysis occurs in the cytoplasm and converts glucose into pyruvate. The subsequent aerobic steps occur mainly in mitochondria.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

$$\boxed{\text{Cytoplasm}}$$

Answer: (B)

Q26.

Solution

Concept: Auxin

Solution: Step 1: **Identify the key idea:** Auxin promotes cell elongation, especially in shoots, by loosening cell walls and enabling expansion.

Step 2: **Apply the concept:** Auxin promotes cell elongation, especially in shoots, by loosening cell walls and enabling expansion. Cytokinins promote cell division, ethylene ripening, and ABA dormancy.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

$$\boxed{\text{Auxin}}$$

Answer: (A)

Q27.

Solution

Concept: Osmosis

Solution: Step 1: **Identify the key idea:** Osmosis is movement of water through a semipermeable membrane from higher water potential to lower water potential.

Step 2: **Apply the concept:** Osmosis is movement of water through a semipermeable membrane from higher water potential to lower water potential. It does not require ATP.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Osmosis

Answer: (B)

Q28.

Solution

Concept: Calvin cycle

Solution: Step 1: **Identify the key idea:** The Calvin cycle fixes carbon dioxide in the stroma of chloroplasts using ATP and NADPH from light reactions.

Step 2: **Apply the concept:** The Calvin cycle fixes carbon dioxide in the stroma of chloroplasts using ATP and NADPH from light reactions. RuBisCO catalyzes the first carboxylation step.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Calvin cycle

Answer: (B)

Q29.

Solution

Concept: Oxidative phosphorylation

Solution: Step 1: **Identify the key idea:** The electron transport system produces the maximum ATP during aerobic respiration by oxidative phosphorylation across the inner mitochondrial membrane.

Step 2: **Apply the concept:** The electron transport system produces the maximum ATP during aerobic respiration by oxidative phosphorylation across the inner mitochondrial membrane.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

Electron transport system

Answer: (C)

Q30.

Solution

Concept: Abscisic acid

Solution: Step 1: **Identify the key idea:** Abscisic acid inhibits growth, promotes seed dormancy, and helps plants respond to stress such as drought by closing stomata.

Step 2: **Apply the concept:** Abscisic acid inhibits growth, promotes seed dormancy, and helps plants respond to stress such as drought by closing stomata.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

ABA

Answer: (C)

Q31.

Solution

Concept: Phloem transport

Solution: Step 1: **Identify the key idea:** Phloem translocates organic food, mainly sucrose, from source organs to sink organs.

Step 2: **Apply the concept:** Phloem translocates organic food, mainly sucrose, from source organs to sink organs. Xylem transports water and minerals.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Phloem

Answer: (B)

Q32.

Solution

Concept: Protein digestion

Solution: Step 1: **Identify the key idea:** Protein digestion begins in the stomach where pepsin acts on proteins in acidic medium.

Step 2: **Apply the concept:** Protein digestion begins in the stomach where pepsin acts on proteins in acidic medium. Further digestion continues in the small intestine.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Stomach

Answer: (B)

Q33.

Solution

Concept: Alveoli

Solution: Step 1: **Identify the key idea:** Alveoli are thin-walled sacs surrounded by capillaries.

Step 2: **Apply the concept:** Alveoli are thin-walled sacs surrounded by capillaries. Their large surface area and moist lining make them the primary site of gas exchange.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

$$\boxed{\text{Alveoli}}$$

Answer: (C)

Q34.

Solution

Concept: Systemic circulation

Solution: Step 1: **Identify the key idea:** The aorta carries oxygenated blood from the left ventricle to the systemic circulation.

Step 2: **Apply the concept:** The aorta carries oxygenated blood from the left ventricle to the systemic circulation. Pulmonary artery carries deoxygenated blood to the lungs.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

$$\boxed{\text{Aorta}}$$

Answer: (C)

Q35.

Solution

Concept: Nephron

Solution: Step 1: **Identify the key idea:** The nephron is the structural and functional unit of kidney.

Step 2: **Apply the concept:** The nephron is the structural and functional unit of kidney. It performs filtration, reabsorption, secretion and urine formation.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

$$\boxed{\text{Nephron}}$$

Answer: (B)

Q36.

Solution

Concept: Cerebellum

Solution: Step 1: **Identify the key idea:** The cerebellum coordinates voluntary movements and maintains balance and posture.

Step 2: **Apply the concept:** The cerebellum coordinates voluntary movements and maintains balance and posture. Cerebrum handles higher functions and medulla controls vital reflexes.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Cerebellum

Answer: (B)

Q37.

Solution

Concept: Insulin

Solution: Step 1: **Identify the key idea:** Insulin secreted by beta cells of pancreas lowers blood glucose by promoting glucose uptake and glycogen formation.

Step 2: **Apply the concept:** Insulin secreted by beta cells of pancreas lowers blood glucose by promoting glucose uptake and glycogen formation.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Insulin

Answer: (A)

Q38.

Solution

Concept: Smooth muscle

Solution: Step 1: **Identify the key idea:** Smooth muscles are non-striated and involuntary.

Step 2: **Apply the concept:** Smooth muscles are non-striated and involuntary. They are found in walls of organs such as intestine, blood vessels and urinary bladder.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Smooth muscle

Answer: (B)

Q39.

Solution

Concept: Human skeleton

Solution: Step 1: **Identify the key idea:** An adult human skeleton usually has 206 bones.

Step 2: **Apply the concept:** An adult human skeleton usually has 206 bones. Some bones fuse during development, reducing the count from infancy to adulthood.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

$$\boxed{206}$$

Answer: (A)

Q40.

Solution

Concept: Fertilization

Solution: Step 1: **Identify the key idea:** Fertilization usually occurs in the ampullary-isthmic region of the fallopian tube.

Step 2: **Apply the concept:** Fertilization usually occurs in the ampullary-isthmic region of the fallopian tube. The zygote later moves toward the uterus.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

$$\boxed{\text{Fallopian tube}}$$

Answer: (C)

Q41.

Solution

Concept: Nephron reabsorption

Solution: Step 1: **Identify the key idea:** Water reabsorption occurs in different nephron segments: PCT reabsorbs a major portion, loop of Henle contributes to concentration, and DCT participates under hormonal control.

Step 2: **Apply the concept:** Water reabsorption occurs in different nephron segments: PCT reabsorbs a major portion, loop of Henle contributes to concentration, and DCT participates under hormonal control.

Step 3: **Conclusion:** Therefore, the correct option is (D).

Final Answer:

$$\boxed{\text{All of these}}$$

Answer: (D)

Q42.

Solution

Concept: Synaptic transmission

Solution: Step 1: **Identify the key idea:** Acetylcholine is a neurotransmitter released at many synapses and at neuromuscular junctions.

Step 2: **Apply the concept:** Acetylcholine is a neurotransmitter released at many synapses and at neuromuscular junctions. DNA and RNA are nucleic acids, while ATP is mainly an energy molecule.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Acetylcholine

Answer: (B)

Q43.

Solution

Concept: Pituitary gland

Solution: Step 1: **Identify the key idea:** Growth hormone is secreted by the anterior pituitary gland.

Step 2: **Apply the concept:** Growth hormone is secreted by the anterior pituitary gland. It regulates growth of bones and body tissues.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Pituitary

Answer: (B)

Q44.

Solution

Concept: Gas transport

Solution: Step 1: **Identify the key idea:** Hemoglobin mainly transports oxygen as oxyhemoglobin.

Step 2: **Apply the concept:** Hemoglobin mainly transports oxygen as oxyhemoglobin. A portion of carbon dioxide is also carried by hemoglobin, but oxygen is the primary gas associated with hemoglobin transport.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Oxygen

Answer: (B)

Q45.

Solution

Concept: LH surge

Solution: Step 1: **Identify the key idea:** A surge in luteinizing hormone directly triggers ovulation by causing rupture of the mature Graafian follicle and release of the secondary oocyte.

Step 2: **Apply the concept:** A surge in luteinizing hormone directly triggers ovulation by causing rupture of the mature Graafian follicle and release of the secondary oocyte.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

LH

Answer: (B)

Q46.

Solution

Concept: Menstrual cycle

Solution: Step 1: **Identify the key idea:** The menstrual phase involves breakdown and shedding of the endometrial lining due to fall in estrogen and progesterone levels.

Step 2: **Apply the concept:** The menstrual phase involves breakdown and shedding of the endometrial lining due to fall in estrogen and progesterone levels.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

Menstrual phase

Answer: (C)

Q47.

Solution

Concept: Stamen

Solution: Step 1: **Identify the key idea:** Pollen grains are produced in the anther, the fertile part of the stamen.

Step 2: **Apply the concept:** Pollen grains are produced in the anther, the fertile part of the stamen. The male gametes develop inside pollen grains after mitotic divisions.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Anther

Answer: (A)

Q48.

Solution

Concept: Double fertilization

Solution: Step 1: **Identify the key idea:** One male gamete fuses with the egg to form the zygote, while the other fuses with polar nuclei to form endosperm.

Step 2: **Apply the concept:** One male gamete fuses with the egg to form the zygote, while the other fuses with polar nuclei to form endosperm. Thus both are produced.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

Both zygote and endosperm

Answer: (C)

Q49.

Solution

Concept: Pregnancy maintenance

Solution: Step 1: **Identify the key idea:** Progesterone maintains the endometrium and supports implantation and early pregnancy.

Step 2: **Apply the concept:** Progesterone maintains the endometrium and supports implantation and early pregnancy. Its fall can lead to uterine lining breakdown.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Progesterone

Answer: (A)

Q50.

Solution

Concept: Contraception

Solution: Step 1: **Identify the key idea:** An intrauterine device is a contraceptive placed in the uterus to prevent fertilization or implantation.

Step 2: **Apply the concept:** An intrauterine device is a contraceptive placed in the uterus to prevent fertilization or implantation. Antibiotics, vaccines and enzymes are not contraceptive methods here.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

IUD

Answer: (A)

Q51.

Solution

Concept: Megagametogenesis

Solution: Step 1: **Identify the key idea:** The functional megaspore undergoes mitotic divisions to form the embryo sac or female gametophyte.

Step 2: **Apply the concept:** The functional megaspore undergoes mitotic divisions to form the embryo sac or female gametophyte. Microspores form pollen grains.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Megaspore

Answer: (A)

Q52.

Solution

Concept: Ovulation

Solution: Step 1: **Identify the key idea:** The ovary releases the secondary oocyte during ovulation.

Step 2: **Apply the concept:** The ovary releases the secondary oocyte during ovulation. The released oocyte is then picked up by the fimbriae of the fallopian tube.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Ovary

Answer: (A)

Q53.

Solution

Concept: LH surge

Solution: Step 1: **Identify the key idea:** A sharp LH surge immediately precedes and triggers ovulation.

Step 2: **Apply the concept:** A sharp LH surge immediately precedes and triggers ovulation. FSH also rises slightly, but LH peak is the characteristic ovulatory signal.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

LH

Answer: (B)

Q54.

Solution

Concept: Pollination

Solution: Step 1: **Identify the key idea:** Pollination is transfer of pollen grains from anther to stigma.

Step 2: **Apply the concept:** Pollination is transfer of pollen grains from anther to stigma. Fertilization occurs later after pollen tube growth toward the ovule.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

$$\boxed{\text{Stigma}}$$

Answer: (A)

Q55.

Solution

Concept: Mendelian inheritance

Solution: Step 1: **Identify the key idea:** The law of segregation states that the two alleles of a gene separate during gamete formation so each gamete receives only one allele.

Step 2: **Apply the concept:** The law of segregation states that the two alleles of a gene separate during gamete formation so each gamete receives only one allele.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

$$\boxed{\text{Law of segregation}}$$

Answer: (B)

Q56.

Solution

Concept: Base pairing

Solution: Step 1: **Identify the key idea:** In DNA, adenine pairs with thymine through two hydrogen bonds.

Step 2: **Apply the concept:** In DNA, adenine pairs with thymine through two hydrogen bonds. Cytosine pairs with guanine through three hydrogen bonds.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

$$\boxed{\text{Thymine}}$$

Answer: (C)

Q57.

Solution

Concept: Monohybrid cross

Solution: Step 1: **Identify the key idea:** A monohybrid cross between two heterozygotes gives genotypes TT, Tt, Tt and tt, producing a genotypic ratio of 1 : 2 : 1.

Step 2: **Apply the concept:** A monohybrid cross between two heterozygotes gives genotypes TT, Tt, Tt and tt, producing a genotypic ratio of 1 : 2 : 1.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

$$\boxed{1 : 2 : 1}$$

Answer: (A)

Q58.

Solution

Concept: Natural selection

Solution: Step 1: **Identify the key idea:** Darwin proposed natural selection as the main mechanism of evolution.

Step 2: **Apply the concept:** Darwin proposed natural selection as the main mechanism of evolution. Organisms with favorable variations survive and reproduce more successfully.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

$$\boxed{\text{Natural selection}}$$

Answer: (B)

Q59.

Solution

Concept: DNA replication

Solution: Step 1: **Identify the key idea:** DNA polymerase adds nucleotides to the growing DNA strand using the parental strand as template.

Step 2: **Apply the concept:** DNA polymerase adds nucleotides to the growing DNA strand using the parental strand as template. Helicase unwinds DNA and ligase joins fragments.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

$$\boxed{\text{DNA polymerase}}$$

Answer: (C)

Q60.

Solution

Concept: Sex-linked inheritance

Solution: Step 1: **Identify the key idea:** Hemophilia is commonly inherited as an X-linked recessive disorder.

Step 2: **Apply the concept:** Hemophilia is commonly inherited as an X-linked recessive disorder. It appears more frequently in males because they have only one X chromosome.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Hemophilia

Answer: (A)

Q61.

Solution

Concept: Homology

Solution: Step 1: **Identify the key idea:** Human and whale forelimbs share a common structural plan and evolutionary origin but perform different functions, making them homologous organs.

Step 2: **Apply the concept:** Human and whale forelimbs share a common structural plan and evolutionary origin but perform different functions, making them homologous organs.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Forelimbs of human and whale

Answer: (B)

Q62.

Solution

Concept: Genetic material

Solution: Step 1: **Identify the key idea:** DNA is the primary genetic material in most organisms because it stores hereditary information and replicates accurately.

Step 2: **Apply the concept:** DNA is the primary genetic material in most organisms because it stores hereditary information and replicates accurately. Some viruses use RNA as genetic material.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

DNA

Answer: (C)

Q63.

Solution

Concept: Test cross

Solution: Step 1: **Identify the key idea:** A test cross is performed by crossing an individual with unknown genotype with a homozygous recessive individual to determine whether it is homozygous or heterozygous.

Step 2: **Apply the concept:** A test cross is performed by crossing an individual with unknown genotype with a homozygous recessive individual to determine whether it is homozygous or heterozygous.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

Homozygous recessive parent

Answer: (C)

Q64.

Solution

Concept: Speciation

Solution: Step 1: **Identify the key idea:** Speciation can be driven by isolation, mutation, recombination and natural selection.

Step 2: **Apply the concept:** Speciation can be driven by isolation, mutation, recombination and natural selection. These factors build genetic differences between populations.

Step 3: **Conclusion:** Therefore, the correct option is (D).

Final Answer:

All of these

Answer: (D)

Q65.

Solution

Concept: Genetic code

Solution: Step 1: **Identify the key idea:** UAA is a stop codon that terminates translation.

Step 2: **Apply the concept:** UAA is a stop codon that terminates translation. AUG is a start codon and UGG codes for tryptophan.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

UAA

Answer: (B)

Q66.

Solution

Concept: Chromosomal disorder

Solution: Step 1: **Identify the key idea:** Turner syndrome occurs in females with monosomy X, represented as XO.

Step 2: **Apply the concept:** Turner syndrome occurs in females with monosomy X, represented as XO. Such individuals have 45 chromosomes.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

XO genotype

Answer: (C)

Q67.

Solution

Concept: Vestigial organ

Solution: Step 1: **Identify the key idea:** The appendix is considered vestigial because it has reduced function compared with its presumed ancestral role.

Step 2: **Apply the concept:** The appendix is considered vestigial because it has reduced function compared with its presumed ancestral role. Heart, liver and brain are essential organs.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Appendix

Answer: (A)

Q68.

Solution

Concept: Translation

Solution: Step 1: **Identify the key idea:** Transfer RNA carries specific amino acids to the ribosome during translation and pairs its anticodon with the codon on mRNA.

Step 2: **Apply the concept:** Transfer RNA carries specific amino acids to the ribosome during translation and pairs its anticodon with the codon on mRNA.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

tRNA

Answer: (B)

Q69.

Solution

Concept: Monohybrid phenotype

Solution: Step 1: **Identify the key idea:** In a complete dominance monohybrid cross between heterozygotes, three offspring show dominant phenotype and one shows recessive phenotype.

Step 2: **Apply the concept:** In a complete dominance monohybrid cross between heterozygotes, three offspring show dominant phenotype and one shows recessive phenotype.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

$$\boxed{3:1}$$

Answer: (A)

Q70.

Solution

Concept: Viral disease

Solution: Step 1: **Identify the key idea:** AIDS is caused by the Human Immunodeficiency Virus.

Step 2: **Apply the concept:** AIDS is caused by the Human Immunodeficiency Virus. Malaria is caused by Plasmodium, typhoid by bacteria, and tuberculosis by Mycobacterium.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

$$\boxed{\text{AIDS}}$$

Answer: (C)

Q71.

Solution

Concept: Antibiotics

Solution: Step 1: **Identify the key idea:** Penicillin is produced by the fungus Penicillium.

Step 2: **Apply the concept:** Penicillin is produced by the fungus Penicillium. It inhibits bacterial cell wall synthesis and was one of the earliest antibiotics discovered.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

$$\boxed{\text{Penicillium}}$$

Answer: (A)

Q72.

Solution

Concept: Vector-borne disease

Solution: Step 1: **Identify the key idea:** Malaria is transmitted by the female Anopheles mosquito.

Step 2: **Apply the concept:** Malaria is transmitted by the female Anopheles mosquito. Cholera and typhoid are water or food borne, while hepatitis transmission depends on type.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

$$\boxed{\text{Malaria}}$$

Answer: (B)

Q73.

Solution

Concept: Biofertilizers

Solution: Step 1: **Identify the key idea:** Azotobacter fixes atmospheric nitrogen and enriches soil fertility.

Step 2: **Apply the concept:** Azotobacter fixes atmospheric nitrogen and enriches soil fertility. Lactobacillus is used in curd formation, yeast in fermentation, and Penicillium in antibiotic production.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

$$\boxed{\text{Azotobacter}}$$

Answer: (A)

Q74.

Solution

Concept: Hepatitis

Solution: Step 1: **Identify the key idea:** Hepatitis is inflammation of the liver, commonly caused by hepatitis viruses.

Step 2: **Apply the concept:** Hepatitis is inflammation of the liver, commonly caused by hepatitis viruses. Therefore, the liver is the principal affected organ.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

$$\boxed{\text{Liver}}$$

Answer: (B)

Q75.

Solution

Concept: Fermentation

Solution: Step 1: **Identify the key idea:** Bread is produced using yeast fermentation.

Step 2: **Apply the concept:** Bread is produced using yeast fermentation. Carbon dioxide released during fermentation makes dough rise.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Bread

Answer: (A)

Q76.

Solution

Concept: Restriction enzymes

Solution: Step 1: **Identify the key idea:** Restriction enzymes cut DNA at specific recognition sequences and act as molecular scissors in genetic engineering.

Step 2: **Apply the concept:** Restriction enzymes cut DNA at specific recognition sequences and act as molecular scissors in genetic engineering.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

Restriction enzyme

Answer: (C)

Q77.

Solution

Concept: Cloning vectors

Solution: Step 1: **Identify the key idea:** Plasmids are small circular DNA molecules used as vectors to carry foreign DNA into host cells during cloning.

Step 2: **Apply the concept:** Plasmids are small circular DNA molecules used as vectors to carry foreign DNA into host cells during cloning.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Plasmid

Answer: (A)

Q78.

Solution

Concept: PCR

Solution: Step 1: **Identify the key idea:** Polymerase chain reaction amplifies a selected DNA segment using primers, thermostable DNA polymerase and repeated temperature cycles.

Step 2: **Apply the concept:** Polymerase chain reaction amplifies a selected DNA segment using primers, thermostable DNA polymerase and repeated temperature cycles.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

PCR

Answer: (A)

Q79.

Solution

Concept: DNA ligase

Solution: Step 1: **Identify the key idea:** DNA ligase joins DNA fragments by forming phosphodiester bonds.

Step 2: **Apply the concept:** DNA ligase joins DNA fragments by forming phosphodiester bonds. It is essential in recombinant DNA formation and Okazaki fragment joining.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Ligase

Answer: (A)

Q80.

Solution

Concept: Bt crops

Solution: Step 1: **Identify the key idea:** Bt cotton contains a gene from Bacillus thuringiensis that produces an insecticidal protein effective against certain insect pests.

Step 2: **Apply the concept:** Bt cotton contains a gene from Bacillus thuringiensis that produces an insecticidal protein effective against certain insect pests.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

Insects

Answer: (C)

Q81.

Solution

Concept: Recombinant DNA technology

Solution: Step 1: **Identify the key idea:** Human insulin can be produced commercially by genetically engineered bacteria carrying human insulin genes.

Step 2: **Apply the concept:** Human insulin can be produced commercially by genetically engineered bacteria carrying human insulin genes.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Bacteria

Answer: (A)

Q82.

Solution

Concept: Gene therapy

Solution: Step 1: **Identify the key idea:** Gene therapy aims to correct or compensate for defective genes by introducing functional genetic material into patient cells.

Step 2: **Apply the concept:** Gene therapy aims to correct or compensate for defective genes by introducing functional genetic material into patient cells.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

Correction of defective genes

Answer: (C)

Q83.

Solution

Concept: Gel electrophoresis

Solution: Step 1: **Identify the key idea:** Gel electrophoresis separates DNA fragments according to size as negatively charged DNA moves through agarose gel toward the positive electrode.

Step 2: **Apply the concept:** Gel electrophoresis separates DNA fragments according to size as negatively charged DNA moves through agarose gel toward the positive electrode.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

Gel electrophoresis

Answer: (C)

Q84.

Solution

Concept: Producers

Solution: Step 1: **Identify the key idea:** Grass is autotrophic and produces food by photosynthesis.
Step 2: **Apply the concept:** Grass is autotrophic and produces food by photosynthesis. Lion and frog are consumers. Some bacteria can be decomposers or producers, but grass is the clear producer here.
Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Grass

Answer: (A)

Q85.

Solution

Concept: Energy flow

Solution: Step 1: **Identify the key idea:** Energy flows from producers to consumers and decomposers in one direction.
Step 2: **Apply the concept:** Energy flows from producers to consumers and decomposers in one direction. Unlike nutrients, energy is not recycled.
Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Unidirectional

Answer: (B)

Q86.

Solution

Concept: Biodiversity hotspot

Solution: Step 1: **Identify the key idea:** Amazon rainforest has very high species richness and endemism, making it a biodiversity-rich region.
Step 2: **Apply the concept:** Amazon rainforest has very high species richness and endemism, making it a biodiversity-rich region. The other options are broad biome types.
Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Amazon rainforest

Answer: (A)

Q87.

Solution

Concept: Greenhouse effect

Solution: Step 1: **Identify the key idea:** Carbon dioxide absorbs infrared radiation and contributes significantly to the greenhouse effect.

Step 2: **Apply the concept:** Carbon dioxide absorbs infrared radiation and contributes significantly to the greenhouse effect. Oxygen and nitrogen are not major greenhouse gases.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

Carbon dioxide

Answer: (C)

Q88.

Solution

Concept: Energy transfer

Solution: Step 1: **Identify the key idea:** Lindeman proposed the 10 percent law, according to which only about 10 percent of energy is transferred from one trophic level to the next.

Step 2: **Apply the concept:** Lindeman proposed the 10 percent law, according to which only about 10 percent of energy is transferred from one trophic level to the next.

Step 3: **Conclusion:** Therefore, the correct option is (B).

Final Answer:

Lindeman

Answer: (B)

Q89.

Solution

Concept: Endemism

Solution: Step 1: **Identify the key idea:** An endemic species is restricted to a particular geographical region.

Step 2: **Apply the concept:** An endemic species is restricted to a particular geographical region. Among the given options, tiger in India is intended as the endemic example in this sample question.

Step 3: **Conclusion:** Therefore, the correct option is (A).

Final Answer:

Tiger in India

Answer: (A)

Q90.

Solution

Concept: Ozone depletion

Solution: Step 1: **Identify the key idea:** Chlorofluorocarbons release chlorine radicals in the stratosphere.

Step 2: **Apply the concept:** Chlorofluorocarbons release chlorine radicals in the stratosphere. These radicals catalytically destroy ozone molecules and cause ozone depletion.

Step 3: **Conclusion:** Therefore, the correct option is (C).

Final Answer:

CFCs

Answer: (C)

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	B	3	C	4	A	5	B
6	B	7	A	8	B	9	B	10	B
11	B	12	B	13	B	14	B	15	B
16	C	17	C	18	C	19	A	20	C
21	B	22	A	23	C	24	A	25	B
26	A	27	B	28	B	29	C	30	C
31	B	32	B	33	C	34	C	35	B
36	B	37	A	38	B	39	A	40	C
41	D	42	B	43	B	44	B	45	B
46	C	47	A	48	C	49	A	50	A
51	A	52	A	53	B	54	A	55	B
56	C	57	A	58	B	59	C	60	A
61	B	62	C	63	C	64	D	65	B
66	C	67	A	68	B	69	A	70	C
71	A	72	B	73	A	74	B	75	A
76	C	77	A	78	A	79	A	80	C
81	A	82	C	83	C	84	A	85	B
86	A	87	C	88	B	89	A	90	C