

CUET MCQ Questions with Solutions from UNIT 4 (1)

1. Genetic engineering involves:

- A. Manipulating the physical structure of organisms
- B. Altering the genetic material of organisms
- C. Controlling the environment of organisms
- D. Changing protein sequences directly

Answer: B

Solution: Genetic engineering is the deliberate modification of an organism's genetic material to introduce desirable traits or study gene functions.

2. Which of the following is a key tool in recombinant DNA technology?

- A. Centrifuge
- B. Restriction enzyme
- C. Spectrophotometer
- D. Chromatograph

Answer: B

Solution: Restriction enzymes, also known as molecular scissors, cut DNA at specific sequences, enabling genetic manipulation.

3. The first step in recombinant DNA technology is:

- A. DNA isolation
- B. Cloning
- C. Gene transfer
- D. Protein synthesis

Answer: A

Solution: DNA isolation is the foundational step in genetic engineering, providing the genetic material for modification and manipulation.

4. In genetic engineering, vectors are used to:

- A. Replicate cells
- B. Transport genes into host cells
- C. Produce proteins
- D. Clone organisms

Answer: B

Solution: Vectors like plasmids or viruses are carriers that transfer foreign DNA into host cells for replication or expression.

5. DNA ligase is crucial for:

- A. Cutting DNA

- B. Amplifying DNA
- C. Joining DNA fragments
- D. Sequencing DNA

Answer: C

Solution: DNA ligase joins DNA fragments by forming phosphodiester bonds, a key step in creating recombinant DNA.

6. The polymerase chain reaction (PCR) is used for:

- A. DNA replication in vivo
- B. Amplifying DNA in vitro
- C. Protein synthesis
- D. RNA translation

Answer: B

Solution: PCR amplifies specific DNA sequences in vitro, creating multiple copies for genetic analysis and experimentation.

7. A common host organism used in genetic engineering is:

- A. E. coli
- B. Bacillus
- C. Saccharomyces
- D. Clostridium

Answer: A

Solution: E. coli is widely used as a host organism in recombinant DNA technology due to its simplicity and rapid growth.

8. Restriction enzymes are derived from:

- A. Plants
- B. Viruses
- C. Bacteria
- D. Fungi

Answer: C

Solution: Restriction enzymes are naturally produced by bacteria to protect against viral DNA.

9. Golden Rice is an example of:

- A. Hybridization
- B. A genetically modified organism (GMO)
- C. Tissue culture
- D. Conventional breeding

Answer: B

Solution: Golden Rice is genetically engineered to produce beta-carotene, a precursor of Vitamin A, addressing vitamin deficiency.

10. Gel electrophoresis is used for:

- A. DNA isolation
- B. Separating DNA fragments by size
- C. Protein synthesis
- D. Gene transfer

Answer: B

Solution: Gel electrophoresis separates DNA fragments based on size using an electric field, aiding in genetic analysis.

11. The first recombinant DNA product was:

- A. Insulin
- B. Human growth hormone
- C. Interferon
- D. Penicillin

Answer: A

Solution: The first recombinant product was human insulin, produced using genetically engineered bacteria.

12. Plasmids in recombinant DNA technology act as:

- A. Enzymes
- B. Vectors
- C. Proteins
- D. Membranes

Answer: B

Solution: Plasmids are circular DNA molecules used as vectors to transfer genes into host organisms.

13. Agrobacterium tumefaciens is commonly used to transfer genes into:

- A. Bacteria
- B. Animals
- C. Plants
- D. Fungi

Answer: C

Solution: Agrobacterium tumefaciens is a natural genetic engineer used in plant genetic modification.

14. Restriction enzymes recognize:

- A. Random sequences
- B. Palindromic sequences
- C. RNA primers
- D. Repetitive sequences

Answer: B

Solution: Restriction enzymes recognize palindromic DNA sequences, which are identical when read in opposite directions.

15. Ti plasmid is used for:

- A. Protein synthesis
- B. Gene editing in animals
- C. Genetic modification in plants
- D. DNA isolation

Answer: C

Solution: Ti plasmid from *Agrobacterium tumefaciens* transfers genes into plant cells, enabling genetic modification.

16. In genetic engineering, transformation refers to:

- A. Cloning of DNA
- B. Introducing foreign DNA into a host cell
- C. Separating DNA fragments
- D. Amplifying RNA

Answer: B

Solution: Transformation is the process of introducing foreign DNA into a host cell, making it genetically modified.

17. Sticky ends in DNA are formed by:

- A. DNA ligase
- B. Restriction enzymes
- C. RNA polymerase
- D. Helicase

Answer: B

Solution: Restriction enzymes cut DNA at specific sequences, leaving overhanging strands called sticky ends that facilitate the joining of DNA fragments.

18. The enzyme used in PCR to synthesize DNA is:

- A. RNA polymerase
- B. DNA polymerase
- C. Taq polymerase

D. Ligase

Answer: C

Solution: Taq polymerase, derived from *Thermus aquaticus*, is used in PCR due to its heat-resistant properties.

19. The gene gun method is primarily used for:

A. Bacteria

B. Fungi

C. Plants

D. Viruses

Answer: C

Solution: The gene gun or biolistic method introduces DNA into plant cells by bombarding them with tiny DNA-coated particles.

20. Complementary DNA (cDNA) is synthesized from:

A. RNA

B. DNA

C. Proteins

D. Lipids

Answer: A

Solution: cDNA is synthesized from mRNA using reverse transcriptase, preserving only the expressed genes.

21. A GMO is an organism that:

A. Has altered metabolic pathways

B. Contains foreign DNA

C. Is resistant to diseases

D. Produces extra proteins

Answer: B

Solution: GMOs are organisms with artificially inserted foreign DNA to introduce desired traits.

22. Bt cotton is genetically engineered to:

A. Resist herbicides

B. Produce insecticidal proteins

C. Increase water retention

D. Enhance fiber quality

Answer: B

Solution: Bt cotton is engineered to produce a toxin derived from *Bacillus thuringiensis*, protecting it from specific pests.

23. In vectors, antibiotic resistance genes are used for:

- A. Enhancing growth
- B. Selecting transformed cells
- C. Producing proteins
- D. Eliminating mutations

Answer: B

Solution: Antibiotic resistance genes help identify cells that have successfully taken up the vector by growing them on selective media.

24. The steps in PCR are:

- A. Denaturation, annealing, extension
- B. Transcription, translation, replication
- C. Isolation, amplification, cloning
- D. Ligation, transformation, selection

Answer: A

Solution: PCR involves denaturation (separating DNA strands), annealing (binding primers), and extension (synthesizing new DNA).

25. A genomic library contains:

- A. All expressed genes
- B. All mRNA molecules
- C. Entire genome fragments
- D. Only coding regions of DNA

Answer: C

Solution: A genomic library stores all DNA sequences of an organism, including coding and non-coding regions.

26. A major ethical concern of genetic engineering is:

- A. High cost
- B. Environmental impact
- C. Alteration of natural species
- D. Use of complex tools

Answer: C

Solution: Genetic engineering raises ethical concerns about modifying natural species and its potential ecological consequences.

27. The primary goal of the Human Genome Project was to:

- A. Create new proteins
- B. Map all human genes

- C. Clone humans
- D. Develop vaccines

Answer: B

Solution: The Human Genome Project aimed to sequence and map all the genes in the human genome to understand genetic functions.

28. RNA interference (RNAi) is used in genetic engineering to:

- A. Increase protein synthesis
- B. Silence specific genes
- C. Replace faulty DNA
- D. Repair DNA damage

Answer: B

Solution: RNAi is a method to suppress gene expression, useful in studying gene functions and controlling diseases.

29. Bioreactors are used for:

- A. Cloning organisms
- B. Large-scale protein production
- C. Gene editing
- D. DNA sequencing

Answer: B

Solution: Bioreactors are large tanks where microorganisms or cells produce proteins, enzymes, or other biotechnological products.

30. Gene therapy involves:

- A. Cloning organisms
- B. Introducing healthy genes to treat diseases
- C. Vaccinating against pathogens
- D. Modifying proteins

Answer: B

Solution: Gene therapy aims to treat genetic disorders by introducing healthy genes to replace defective ones.

31. A genetically modified organism (GMO) is an organism whose genetic material has been:

- A. Naturally evolved
- B. Artificially modified
- C. Mutated due to radiation
- D. Crossbred with other species

Answer: B

Solution: GMOs are organisms whose DNA is altered using genetic engineering techniques to introduce new traits or improve existing ones.

32. In Bt crops, "Bt" stands for:

- A. Biotech technology
- B. *Bacillus thuringiensis*
- C. Biological toxin
- D. Biotechnology term

Answer: B

Solution: Bt refers to *Bacillus thuringiensis*, a bacterium whose genes are inserted into crops to make them pest-resistant.

33. Which of the following is a genetically modified Bt crop?

- A. Bt Cotton
- B. Golden Rice
- C. Hybrid Maize
- D. Organic Wheat

Answer: A

Solution: Bt cotton is engineered with *Bacillus thuringiensis* genes to resist bollworm infestations.

34. A transgenic animal is created by:

- A. Selective breeding
- B. Genetic engineering
- C. Cloning
- D. Natural mutation

Answer: B

Solution: Transgenic animals are produced by inserting foreign genes into their DNA using genetic engineering.

35. The primary purpose of Bt crops is to:

- A. Increase growth rate
- B. Resist pests
- C. Enhance flavor
- D. Tolerate herbicides

Answer: B

Solution: Bt crops are designed to produce toxins harmful to specific pests, reducing crop damage.

36. Biosafety concerns about GMOs include:

- A. Allergies
- B. Loss of biodiversity
- C. Gene transfer to wild relatives
- D. All of the above

Answer: D

Solution: GMOs raise biosafety issues such as allergenicity, ecological disruption, and unintended gene flow.

37. Which of these is a transgenic animal?

- A. Dolly the Sheep
- B. GloFish
- C. Zebrafish
- D. Clydesdale Horse

Answer: B

Solution: GloFish is a transgenic animal modified to glow under fluorescent light by introducing jellyfish genes.

38. Biopiracy refers to:

- A. Illegal poaching of animals
- B. Unauthorized use of biological resources
- C. Theft of genetic material
- D. Both B and C

Answer: D

Solution: Biopiracy is the unethical exploitation of biological resources and indigenous knowledge without compensation.

39. Golden rice is genetically modified to combat:

- A. Iron deficiency
- B. Vitamin A deficiency
- C. Protein deficiency
- D. Caloric deficiency

Answer: B

Solution: Golden rice is enriched with beta-carotene, a precursor of Vitamin A, to prevent deficiency-related blindness.

40. A patent in biotechnology grants:

- A. Ownership of biological organisms
- B. Exclusive rights to an invention
- C. Universal use of technology

D. Access to natural resources

Answer: B

Solution: Patents protect innovations by granting inventors exclusive rights to their biotechnology inventions.

41. GMOs designed for herbicide tolerance allow:

- A. Enhanced photosynthesis
- B. Resistance to pests
- C. Survival after herbicide application
- D. Increased water absorption

Answer: C

Solution: Herbicide-tolerant GMOs can survive the application of herbicides, making weed control easier.

42. Aqu Advantage Salmon grows faster due to:

- A. Enhanced diet
- B. Genetic modification
- C. Warmer water habitats
- D. Crossbreeding with larger fish

Answer: B

Solution: Aqu Advantage Salmon contains genes for faster growth, making it a genetically modified fish.

43. Transgenic animals are created for:

- A. Studying diseases
- B. Producing pharmaceuticals
- C. Enhancing food production
- D. All of the above

Answer: D

Solution: Transgenic animals are valuable in medical research, drug production, and improving food resources.

44. The Cartagena Protocol focuses on:

- A. Food security
- B. Biosafety of GMOs
- C. Wildlife conservation
- D. Industrial pollution

Answer: B

Solution: The Cartagena Protocol is an international treaty ensuring the safe use and transfer of GMOs.

45. Patents on GMOs raise ethical issues because:

- A. They increase costs for farmers
- B. Limit access to technology
- C. Exploit indigenous knowledge
- D. All of the above

Answer: D

Solution: Patents on GMOs lead to concerns about accessibility, affordability, and biopiracy.

46. The toxin produced by Bt crops affects:

- A. Humans
- B. Beneficial insects
- C. Specific pests
- D. All organisms

Answer: C

Solution: Bt crops produce a toxin that specifically targets pests such as bollworms, while being harmless to humans and beneficial insects when used correctly.

47. The first genetically modified crop approved for commercial production was:

- A. Bt Cotton
- B. Golden Rice
- C. Flavr Savr Tomato
- D. GM Soybean

Answer: C

Solution: Flavr Savr Tomato was the first genetically modified crop, approved in 1994, designed to have a longer shelf life and improved flavor.

48. One major biosafety concern regarding GMOs is:

- A. Improved crop yield
- B. Insect resistance development
- C. Increased food production
- D. Lower pesticide use

Answer: B

Solution: A key concern with GMOs is the possibility of pests developing resistance to the protective traits in genetically modified crops.

49. Bt cotton is genetically modified to protect against:

- A. Leaf rust

- B. Root nematodes
- C. Bollworms
- D. Aphids

Answer: C

Solution: Bt cotton is engineered to produce a toxin that specifically targets bollworms, a major pest affecting cotton plants.

50. Cry genes in Bt crops encode:

- A. Enzymes
- B. Pest-resistant proteins
- C. Growth hormones
- D. Herbicides

Answer: B

Solution: Cry genes from *Bacillus thuringiensis* encode proteins that form toxins against certain insects, providing pest resistance in Bt crops.

CUET MCQ Questions with Solutions from UNIT 4 (2)

1. Human insulin produced using recombinant DNA technology is called:

- A. Synthetic insulin
- B. Recombinant insulin
- C. Natural insulin
- D. Bacterial insulin

Answer: B

Solution: Recombinant insulin is synthesized by introducing the human insulin gene into bacteria, producing a biologically identical product.

2. The human insulin gene is inserted into which organism for mass production?

- A. Bacteria
- B. Plants
- C. Yeast
- D. Algae

Answer: A

Solution: The human insulin gene is introduced into *Escherichia coli* (bacteria) for large-scale insulin production.

3. Gene therapy is used to:

- A. Replace defective genes
- B. Remove unwanted proteins
- C. Modify bacteria
- D. Treat fungal infections

Answer: A

Solution: Gene therapy replaces faulty or defective genes with functional ones to treat genetic disorders.

4. Which disease is a target for gene therapy?

- A. Diabetes
- B. Severe Combined Immunodeficiency (SCID)
- C. Cancer
- D. Tuberculosis

Answer: B

Solution: Gene therapy has been successfully used to treat SCID by introducing functional immune system genes.

5. Golden rice is an example of:

- A. Biofortification

- B. Bioremediation
- C. GM crops for pest resistance
- D. Hydroponics

Answer: A

Solution: Golden rice is genetically engineered to produce beta-carotene, enhancing its Vitamin A content to address malnutrition.

6. The production of vaccines using biotechnology involves:

- A. Cloning pathogens
- B. Generating recombinant proteins
- C. Modifying DNA structure
- D. Isolating natural antibodies

Answer: B

Solution: Vaccines produced biotechnologically often involve recombinant proteins, such as hepatitis B vaccine, derived from yeast.

7. Bt toxin in genetically modified crops is derived from:

- A. *Bacillus thuringiensis*
- B. *Escherichia coli*
- C. *Streptococcus pneumoniae*
- D. *Pseudomonas fluorescens*

Answer: A

Solution: Bt toxin, derived from *Bacillus thuringiensis*, is engineered into crops to protect them from specific pests.

8. The first genetically modified crop introduced in India was:

- A. Bt Cotton
- B. Golden Rice
- C. Bt Brinjal
- D. Herbicide-Resistant Corn

Answer: A

Solution: Bt cotton, engineered for pest resistance, was the first GM crop commercially grown in India.

9. *Agrobacterium tumefaciens* is used in genetic engineering as:

- A. A pest
- B. A natural genetic engineer
- C. A pathogen
- D. A growth hormone

Answer: B

Solution: *Agrobacterium tumefaciens* is used as a vector to transfer desired genes into plants.

10. The recombinant Hepatitis B vaccine is produced in:

- A. Yeast
- B. Bacteria
- C. Fungi
- D. Viruses

Answer: A

Solution: The Hepatitis B vaccine is produced by inserting the viral gene into yeast cells to produce the surface antigen.

11. GM crops like soybean are modified for:

- A. Pest resistance
- B. Drought tolerance
- C. Herbicide resistance
- D. Disease resistance

Answer: C

Solution: Herbicide-resistant crops are engineered to survive the application of herbicides, simplifying weed control.

12. Transgenic animals are used for:

- A. Producing vaccines
- B. Testing drug safety
- C. Gene therapy research
- D. All of the above

Answer: D

Solution: Transgenic animals are widely used for testing drug efficacy, studying diseases, and producing biopharmaceuticals.

13. The first product of recombinant DNA technology was:

- A. Human Insulin
- B. Hepatitis B Vaccine
- C. Antibiotics
- D. Golden Rice

Answer: A

Solution: Human insulin was the first commercial product created using recombinant DNA technology.

14. Edible vaccines are produced in:

- A. Bacteria
- B. Plants
- C. Animals
- D. Fungi

Answer: B

Solution: Edible vaccines are produced in genetically engineered plants like bananas, providing immunity against diseases.

15. DNA fingerprinting is used for:

- A. Solving crimes
- B. Paternity testing
- C. Genetic diversity studies
- D. All of the above

Answer: D

Solution: DNA fingerprinting helps in criminal investigations, determining biological relationships, and studying genetic variations.

16. CRISPR-Cas9 is used in biotechnology for:

- A. Gene editing
- B. DNA replication
- C. Protein synthesis
- D. Vaccine production

Answer: A

Solution: CRISPR-Cas9 is a revolutionary tool for gene editing, allowing precise modifications of DNA sequences in organisms.

17. The production of pharmaceuticals using genetically modified organisms is known as:

- A. Biopharming
- B. Biotechnology
- C. Genetic therapy
- D. Bioremediation

Answer: A

Solution: Biopharming uses GMOs, such as plants and animals, to produce pharmaceutical compounds like hormones and vaccines.

18. Which vaccine is an example of a genetically engineered product?

- A. Polio vaccine
- B. Hepatitis B vaccine
- C. Smallpox vaccine

D. Rabies vaccine

Answer: B

Solution: The Hepatitis B vaccine is a genetically engineered product produced using recombinant DNA technology in yeast.

19. Restriction enzymes are used in genetic engineering to:

A. Cut DNA at specific sites

B. Replicate DNA

C. Synthesize proteins

D. Repair damaged DNA

Answer: A

Solution: Restriction enzymes act as molecular scissors, cutting DNA at specific sequences, crucial for recombinant DNA technology.

20. Which of these is a genetically modified crop for pest resistance?

A. Bt Brinjal

B. Hybrid Tomato

C. Rice Varieties

D. Sugarcane

Answer: A

Solution: Bt brinjal is engineered to resist insect pests using the *Bacillus thuringiensis* gene.

21. Gene cloning involves:

A. Amplifying a specific gene

B. Cloning an organism

C. Cutting DNA randomly

D. None of the above

Answer: A

Solution: Gene cloning is the process of isolating and amplifying a particular gene sequence for research or applications.

22. Golden rice is enriched with:

A. Vitamin A

B. Vitamin B

C. Vitamin C

D. Vitamin D

Answer: A

Solution: Golden rice is genetically modified to produce beta-carotene, a precursor of Vitamin A, addressing Vitamin A deficiency.

23. Somatic gene therapy involves modifications in:

- A. Somatic cells
- B. Germ cells
- C. Embryos
- D. Fertilized eggs

Answer: A

Solution: Somatic gene therapy targets non-reproductive cells to treat genetic disorders without passing changes to the next generation.

24. Genetically modified organisms are used in healthcare for:

- A. Antibiotic production
- B. Vaccine development
- C. Hormone production
- D. All of the above

Answer: D

Solution: GMOs are widely utilized in healthcare to produce vaccines, hormones like insulin, and antibiotics.

25. Antisense RNA technology is used to:

- A. Block specific gene expression
- B. Synthesize proteins
- C. Enhance gene expression
- D. Repair DNA

Answer: A

Solution: Antisense RNA technology inhibits gene expression by binding to the complementary mRNA, preventing protein synthesis.

26. Biosensors in biotechnology detect:

- A. DNA mutations
- B. Environmental toxins
- C. Pathogens
- D. All of the above

Answer: D

Solution: Biosensors are advanced devices used to detect various biological and chemical entities, including toxins, pathogens, and DNA mutations.

27. The first artificial vaccine developed using recombinant technology was for:

- A. Hepatitis B
- B. Polio

- C. Measles
- D. Tuberculosis

Answer: A

Solution: The Hepatitis B vaccine was the first artificially developed vaccine using recombinant DNA technology in yeast.

28. Antibodies produced in genetically modified plants are known as:

- A. Plantibodies
- B. Phytoproteins
- C. Immunomodulators
- D. None of the above

Answer: A

Solution: Plantibodies are antibodies synthesized in transgenic plants and are used for therapeutic purposes.

29. Ethical concerns about gene therapy include:

- A. Safety
- B. Accessibility
- C. Genetic inequality
- D. All of the above

Answer: D

Solution: Gene therapy raises ethical issues like safety, potential misuse, accessibility disparities, and concerns about creating genetic inequalities.

30. Biopesticides derived from biotechnology are:

- A. Organic chemicals
- B. Natural organisms or their byproducts
- C. Artificial compounds
- D. Synthetic proteins

Answer: B

Solution: Biopesticides are natural pest control agents derived from living organisms like *Bacillus thuringiensis* to protect crops.

31. An example of biopiracy is:

- A. Exporting crops legally
- B. Unauthorized patenting of neem or turmeric properties
- C. Developing hybrid plants
- D. Preserving biodiversity in reserves

Answer: B

Solution: Biopiracy involves the unethical patenting of biological resources or traditional knowledge, such as the medicinal properties of neem and turmeric.

32. Transgenic animals are used to:

- A. Study ecosystems
- B. Increase crop production
- C. Produce therapeutic proteins
- D. Generate renewable energy

Answer: C

Solution: Transgenic animals are engineered to produce human proteins for medical purposes, such as insulin or clotting factors.

33. Herbicide-tolerant GMOs help farmers by:

- A. Increasing the crop yield
- B. Killing beneficial organisms
- C. Simplifying weed control
- D. Enhancing biodiversity

Answer: C

Solution: Herbicide-tolerant GMOs allow farmers to use specific herbicides to control weeds without harming the crops.

34. Which organization oversees GMO safety in India?

- A. ICAR
- B. GEAC
- C. NABARD
- D. NGT

Answer: B

Solution: The Genetic Engineering Appraisal Committee (GEAC) regulates the safety of GMOs and their use in India.

35. Bioprospecting is the:

- A. Illegal use of natural resources
- B. Study of biological resources for commercial use
- C. Exploitation of indigenous knowledge
- D. Preservation of endangered species

Answer: B

Solution: Bioprospecting involves researching biological resources to discover commercially valuable compounds or genes, often benefiting pharmaceutical or agricultural industries.

36. A key benefit of Bt crops is:

- A. Enhanced taste
- B. Reduced pesticide use
- C. Faster growth rates
- D. Increased herbicide tolerance

Answer: B

Solution: Bt crops require fewer pesticide applications since they produce their own pest-resistant toxins, benefiting the environment and farmers.

37. A biosafety issue associated with GMOs is:

- A. Increased crop yields
- B. Potential allergenicity
- C. Improved shelf life
- D. Reduced need for fertilizers

Answer: B

Solution: Biosafety concerns for GMOs include the risk of introducing allergens into the food supply, necessitating thorough testing before approval.

38. Transgenic plants can produce:

- A. Pesticides
- B. Vaccines
- C. Growth hormones
- D. Antibiotics

Answer: B

Solution: Transgenic plants can be engineered to produce vaccines, offering an innovative method of disease prevention.

39. The precautionary principle in biosafety means:

- A. Avoiding all GMOs
- B. Taking preventive action before harm occurs
- C. Banning genetically modified crops
- D. Promoting GMOs globally

Answer: B

Solution: The precautionary principle ensures potential risks of GMOs are addressed by preventive measures, even if the risks aren't fully understood.

40. Which international agreement addresses GMO safety?

- A. Kyoto Protocol
- B. Montreal Protocol
- C. Cartagena Protocol

D. Basel Convention

Answer: C

Solution: The Cartagena Protocol on Biosafety regulates the safe handling and transport of genetically modified organisms worldwide.

41. Which of the following contributes most to plastic pollution in oceans?

- A. Agricultural runoff
- B. Industrial spills
- C. Improper disposal of single-use plastics
- D. Overfishing

Answer: C

Solution: Single-use plastics like bags and straws are a major source of plastic pollution, often ending up in oceans due to improper disposal.

42. Green energy sources include:

- A. Coal and natural gas
- B. Solar and wind energy
- C. Nuclear power
- D. Geothermal and fossil fuels

Answer: B

Solution: Solar and wind energy are renewable, eco-friendly green energy sources that produce little to no pollution during operation.

43. A primary pollutant released by vehicles is:

- A. Methane
- B. Carbon monoxide
- C. Ozone
- D. Nitric acid

Answer: B

Solution: Carbon monoxide (CO) is a harmful gas emitted from vehicle exhaust, posing health risks when inhaled.

44. Excessive phosphates in water bodies primarily lead to:

- A. Eutrophication
- B. Thermal pollution
- C. Water scarcity
- D. Biodiversity gain

Answer: A

Solution: Phosphates from fertilizers accelerate eutrophication in water bodies, causing algal blooms and oxygen depletion.

45. Waste-to-energy technology involves:

- A. Incinerating waste to generate power
- B. Composting biodegradable waste
- C. Recycling plastic waste
- D. Producing biofuels from algae

Answer: A

Solution: Waste-to-energy plants convert non-recyclable waste into electricity or heat through incineration, reducing landfill usage.

46. A sustainable alternative to chemical pesticides is:

- A. Organic farming using biopesticides
- B. Increasing pesticide application rates
- C. Landfilling excess pesticides
- D. Replacing fertilizers with synthetic chemicals

Answer: A

Solution: Biopesticides are eco-friendly alternatives derived from natural sources, promoting sustainable agriculture and reducing environmental harm.

47. Pollination is an example of:

- A. Air pollution control
- B. An ecological service
- C. Solid waste management
- D. Thermal pollution reduction

Answer: B

Solution: Pollination by insects and animals is a vital ecological service essential for plant reproduction and food production.

48. Carbon sequestration refers to:

- A. Increasing carbon emissions
- B. Capturing and storing atmospheric carbon dioxide
- C. Removing carbon from fossil fuels
- D. None of the above

Answer: B

Solution: Carbon sequestration involves capturing and storing CO₂ to mitigate climate change, often in forests or underground reservoirs.

49. Which of the following is a waterborne disease caused by pollution?

- A. Malaria
- B. Cholera
- C. Tuberculosis
- D. Typhoid

Answer: B

Solution: Cholera is caused by contaminated water, often due to poor sanitation and water pollution.

50. A key challenge in recycling plastics is:

- A. High energy requirements
- B. Limited availability of plastics
- C. High biodegradability of plastics
- D. Lack of demand for recycled products

Answer: A

Solution: Recycling plastics often requires significant energy and specialized processes, making it less efficient compared to other materials.