Unit 1: Biodiversity & Classification

Multiple Choice Questions | Questions 1–110

Part 1 (Questions 1–10)

1. Which domain of life is characterized by organisms that often inhabit extreme environments and have cell membranes with ether-linked lipids?

(a) Bacteria

✓ **(b) Archaea**

(c) Eukarya

(d) Protista

Why: *Archaea possess ether-linked membrane lipids, enabling survival in extreme environments.*

2. What is a key difference between the domains Bacteria and Archaea?

(a) Bacteria have membrane-bound organelles, while Archaea do not.

✓ **(b) Bacterial cell walls have peptidoglycan, while Archaeal cell walls do not have it.**

(c) Archaea are only found in extreme environments, while Bacteria are not.

(d) Bacteria are all unicellular, while Archaea include multicellular organisms.

Why: *Bacterial cell walls contain peptidoglycan, but archaeal cell walls do not.*

3. Which kingdom includes organisms that are mostly unicellular, eukaryotic, and can be autotrophic or heterotrophic?

(a) Fungi

(b) Animalia

(c) Plantae

✓ **(d) Protoctista (Protista)**

Why: *Protists are mostly unicellular eukaryotes with diverse nutrition.*

4. In which kingdom are organisms predominantly multicellular, autotrophic, and have cell walls made of cellulose?

(a) Animalia

(b) Fungi

✓ **(c) Plantae**

(d) Protoctista

Why: *Plants are multicellular autotrophs with cellulose cell walls.*

5. Which criterion is commonly used to classify viruses?

(a) Their ability to cause specific diseases

✓ **(b) The type of nucleic acid they contain**

(c) The colour of the virus particles

(d) Their mode of transmission

Why: *Viruses are mainly classified by their DNA or RNA.*

6. Which virus group includes viruses such as Coronaviruses and influenza viruses?

(a) Double-stranded DNA viruses

(b) Single-stranded DNA viruses

(c) Double-stranded RNA viruses

✓ (d) Single-stranded RNA viruses

Why: *Both coronavirus and influenza viruses are single-stranded RNA (ssRNA) viruses.*

7. At which level of biodiversity assessment do we evaluate the variety of different species within a particular habitat or ecosystem?

(a) Genetic diversity

(b) Ecosystem diversity

✓ (c) Species diversity

(d) Functional diversity

Why: *Species diversity measures the number and variety of species in an area.*

8. Which method is best suited for assessing the distribution of species across a gradient of environmental conditions within a single geographical area?

(a) Quadrat Sampling

(b) Point Counts

✓ (c) Transect Sampling

(d) Remote Sensing

Why: *Transects are ideal for studying changes in species along environmental gradients.*

9. Which of the following statements is true regarding the concept of a species?

(a) A species is always defined by its physical characteristics alone.

(b) Different species can interbreed and produce fertile offspring.

✓ (c) Members of the same species are reproductively isolated from members of other species.

(d) The concept of a species can be defined solely based on genetic similarity.

Why: *Members of the same species can interbreed, while they are reproductively isolated from other species.*

10. What type of speciation occurs when populations are geographically separated by a physical barrier?

(a) Sympatric Speciation

(b) Parapatric Speciation

✓ (c) Allopatric Speciation

(d) Peripatric Speciation

Why: *Allopatric speciation occurs due to geographical isolation.*

Part 2 (Questions 11–20)

11. Who suggested that there are three separate groups (domains) of prokaryotes?

(a) Robert Whittaker

✓ (b) Carl Woese

(c) F. Sanger

(d) Friedrich Miescher

Why: *Carl Woese proposed the Three-Domain System based on rRNA studies.*

12. Domains suggested by Carl Woese in 1990 include:

(a) Domain Archaea
(b) Domain Bacteria
(c) Domain Eukarya
✓ (d) All of the above
Why: *The three domains are Bacteria, Archaea, and Eukarya.*

13. Individual archaeans range from 0.1 μm to over _____in diameter.

(a) 10 μm
(b) 15 μm
✓ (c) 20 μm
(d) 25 μm
Why: *Some archaeal cells can grow to over 20 μm in diameter.*

14. The archaeans which form aggregates or filaments _____in length.

(a) 100 μm
✓ (b) 125 μm
(c) 150 μm
(d) 200 μm
Why: *Archaeal filaments or aggregates may reach about 125 μm in length.*

15. The cell membranes of archaea contain lipids with _____between glycerol and fatty acid chains.

(a) Glycosidic linkage
(b) Peptide bond
✓ (c) Ether linkage
(d) Ester linkage
Why: *Archaeal membrane lipids are joined by ether linkages.*

16. The lipids in the cell membranes of bacteria and eukarya have fatty acids attached to glycerol by _____.

✓ (a) Ester linkage
(b) Glycosidic linkage
(c) Phosphodiester linkage
(d) Ether linkage
Why: *Bacteria and eukaryotes have ester-linked membrane lipids.*

17. Which of the following is not present in the cell walls of archaea?

(a) Polysaccharides
(b) Proteins
✓ (c) Peptidoglycan
(d) Both (a) and (b)
Why: *Archaea lack peptidoglycan in their cell walls.*

18. The archaeans which are a vital part of sewage treatment are:

✓ (a) Methanogens

(b) Halobacteria
(c) Thermococci
(d) Thaumarchaeota

Why: *Methanogens produce methane during sewage treatment.*

19. Which process is the sole property of archaeans that bacteria and eukarya do not have?

(a) Photosynthesis
✓ (b) Methanogenesis
(c) Cellular respiration
(d) Nitrogen fixation

Why: *Methanogenesis is unique to certain archaea.*

20. Which one of the following does not belong to Archaea?

✓ (a) Firmicutes
(b) Methanogens
(c) Thermococci
(d) Halobacteria

Why: *Firmicutes are a phylum of bacteria, not archaea.*

Part 3 (Questions 21–30)

21. The structure in bacteria that helps in genetic diversity and adaptation is:

(a) Flagella
(b) Pili
(c) Fimbriae
✓ (d) Plasmids

Why: *Plasmids carry extra genes, such as antibiotic resistance genes, that increase genetic diversity.*

22. The extremophiles which can thrive in low pH are called:

(a) Thermophiles
(b) Halophiles
✓ (c) Acidophiles
(d) All of these

Why: *Acidophiles are adapted to live in highly acidic environments.*

23. E. coli and Helicobacter pylori belong to which group of domain Bacteria?

✓ (a) Proteobacteria
(b) Firmicutes
(c) Cyanobacteria
(d) Acidobacteria

Why: *Both E. coli and H. pylori are classified under Proteobacteria.*

24. Which one of the following belongs to Aquificae group of bacteria?

(a) Treponema pallidum
(b) Acidobacterium
(c) Streptomyces

✓ **(d) Aquifex pyrophilus**

Why: *Aquifex pyrophilus is a thermophilic bacterium of the Aquificae group.*

25. The structure that facilitates intracellular transport in eukaryans is:

(a) Cytoskeleton

✓ **(b) Endoplasmic Reticulum (ER)**

(c) Golgi apparatus

(d) Peroxisomes

Why: *The ER transports proteins and lipids within the cell.*

26. The organelles of symbiotic origin are:

✓ **(a) Mitochondria & Chloroplast**

(b) Nucleus and mitochondria

(c) Chloroplast and RER

(d) Lysosomes and mitochondria

Why: *Both mitochondria and chloroplasts evolved through endosymbiosis.*

27. The highest level of classification among all living organisms is:

(a) Kingdom

(b) Phylum

(c) Class

✓ **(d) Domain**

Why: *Domain is the highest taxonomic rank.*

28. The rank of taxonomic hierarchy in which organisms share a basic body plan and significant structural features is:

(a) Domain

✓ **(b) Phylum**

(c) Class

(d) Order

Why: *Members of the same phylum share the same basic body plan.*

29. In taxonomic hierarchy, the most specific level of classification is:

✓ **(a) Species**

(b) Genus

(c) Family

(d) Order

Why: *Species is the smallest and most specific taxonomic category.*

30. Sparrow belongs to class:

(a) Mammalia

✓ **(b) Aves**

(c) Reptilia

(d) Amphibia

Why: *Sparrows are birds and belong to class Aves.*

Part 4 (Questions 31–40)

31. Amoebic dysentery is caused by a parasite:

(a) Plasmodium

✓ **(b) Entamoeba histolytica**

(c) Trypanosoma

(d) Giant amoeba

Why: *Entamoeba histolytica is the protozoan parasite that causes amoebic dysentery.*

32. Select the organism on the basis of the features given: heterotrophic (does not ingest food), cell wall made of a polysaccharide, unicellular or multicellular.

✓ **(a) Mushroom**

(b) Fern

(c) Lion

(d) Euglena

Why: *Mushrooms are fungi, which are heterotrophic and have chitin cell walls.*

33. Which of the following lacks conducting tissues (xylem and phloem), no seed production and no flowers?

✓ **(a) Hornwort**

(b) Cedrus

(c) Capsicum

(d) Mustard

Why: *Hornworts are non-vascular plants without seeds or flowers.*

34. Venus flower basket is the common name for:

(a) Leucosolenia

(b) Spongilla

✓ **(c) Euplectella**

(d) Sycon

Why: *Euplectella is commonly known as the Venus flower basket.*

35. The layer of sponges which contains amoeboid cells and is jelly-like is called:

(a) Pinacoderm

(b) Choanoderm

✓ **(c) Mesohyl**

(d) Epidermis

Why: *Mesohyl is the jelly-like middle layer containing amoebocytes.*

36. Identify the cnidarian which can move freely:

(a) Hydra

(b) Coral

(c) Obelia

✓ **(d) Jellyfish**

Why: *Jellyfish is the free-swimming medusa stage of cnidarians.*

37. Nematocysts are the structures of defence and nutrition in:

✓ **(a) Cnidarians**

(b) Sponges

(c) Annelids

(d) Nematodes

Why: *Cnidarians use nematocysts to capture prey and for protection.*

38. Polyps are cylindrical, have functions in nutrition and are attached to the substrate at the:

(a) Oral end

✓ **(b) Aboral end**

(c) Lateral end

(d) Cephalic end

Why: *Polyps attach to the surface by their aboral end.*

39. Recognize the animal on the basis of the information given: lacks respiratory and circulatory systems, has tubular protonephridia, cerebral ganglia in the head, and reproduces asexually by fission.

(a) Sea anemone

✓ **(b) Tapeworm**

(c) Roundworm

(d) Segmented worm

Why: *Tapeworms (flatworms) possess protonephridia and lack circulatory and respiratory systems.*

40. Which one of the following animals is a pseudocoelomate?

(a) Planaria

✓ **(b) Ascaris**

(c) Liver fluke

(d) Tapeworm

Why: *Ascaris (a nematode) has a pseudocoelom.*

Part 5 (Questions 41–50)

41. Which phylum is characterized by a segmented body, true coelom, and a closed circulatory system?

(a) Nematoda

✓ **(b) Annelida**

(c) Arthropoda

(d) Mollusca

Why: *Annelids have a segmented body, a true coelom, and a closed circulatory system.*

42. Which of the following is an example of an arthropod?

(a) Earthworm

(b) Snail

✓ **(c) Cockroach**

(d) Starfish

Why: *Cockroach belongs to phylum Arthropoda and has jointed legs and an exoskeleton.*

43. The body of molluscs is generally covered by:

(a) Cuticle

✓ **(b) Mantle**

(c) Epidermis

(d) Mesoglea

Why: *The mantle covers the body and secretes the shell in most molluscs.*

44. Which phylum includes animals with a water vascular system?

(a) Arthropoda

(b) Mollusca

(c) Annelida

✓ **(d) Echinodermata**

Why: *The water vascular system is a unique feature of echinoderms.*

45. Starfish belongs to the phylum:

(a) Mollusca

(b) Cnidaria

✓ **(c) Echinodermata**

(d) Arthropoda

Why: *Starfish are echinoderms with radial symmetry and tube feet.*

46. Which of the following is a characteristic feature of chordates?

(a) Jointed appendages

(b) Exoskeleton

✓ **(c) Notochord**

(d) Water vascular system

Why: *All chordates possess a notochord at least during embryonic development.*

47. Fish belong to the class:

(a) Amphibia

✓ **(b) Pisces**

(c) Reptilia

(d) Mammalia

Why: *Pisces is the class that includes all fishes.*

48. Which vertebrate class has moist skin and lives both on land and in water?

(a) Reptilia

✓ **(b) Amphibia**

(c) Aves

(d) Mammalia

Why: *Amphibians have moist skin and lead a dual life in water and on land.*

49. Which class of vertebrates is characterized by feathers and wings?

(a) Reptilia

✓ **(b) Aves**

(c) Mammalia

(d) Amphibia

Why: *Feathers are the defining characteristic of birds (Aves).*

50. Humans belong to the class:

(a) Reptilia

(b) Aves

(c) Amphibia

✓ (d) Mammalia

Why: *Humans are mammals because they have mammary glands, hair, and are warm-blooded.*

Part 6 (Questions 51–65)

51. Which vertebrate class is characterized by dry, scaly skin and laying amniotic eggs?

(a) Amphibia

✓ (b) Reptilia

(c) Aves

(d) Mammalia

Why: *Reptiles have dry, scaly skin and lay amniotic eggs.*

52. Which group of mammals lays eggs instead of giving birth to live young?

(a) Marsupials

✓ (b) Monotremes

(c) Primates

(d) Rodents

Why: *Monotremes (e.g., platypus) are egg-laying mammals.*

53. The scientific name of humans is:

(a) Homo erectus

✓ (b) Homo sapiens

(c) Pan troglodytes

(d) Australopithecus afarensis

Why: *Modern humans belong to the species Homo sapiens.*

54. The branch of biology concerned with naming and classifying organisms is called:

(a) Ecology

(b) Genetics

✓ (c) Taxonomy

(d) Physiology

Why: *Taxonomy deals with identification, naming, and classification.*

55. The correct sequence of taxonomic hierarchy is:

(a) Kingdom → Class → Phylum → Order → Family → Genus → Species

✓ (b) Domain → Kingdom → Phylum → Class → Order → Family → Genus → Species

(c) Kingdom → Phylum → Order → Class → Family → Species → Genus

(d) Domain → Phylum → Kingdom → Class → Family → Order → Species

Why: *This is the standard order from the highest to the lowest taxonomic rank.*

56. Biodiversity refers to:

(a) Only the number of species in an area

(b) Only genetic variation

✓ **(c) The variety of life at genetic, species, and ecosystem levels**

(d) Only plants and animals

Why: *Biodiversity includes genetic, species, and ecosystem diversity.*

57. Which level of biodiversity refers to variations within the same species?

✓ **(a) Genetic diversity**

(b) Species diversity

(c) Ecosystem diversity

(d) Community diversity

Why: *Genetic diversity is the variation of genes within a species.*

58. Which sampling method uses square frames to estimate the abundance of organisms?

✓ **(a) Quadrat sampling**

(b) Transect sampling

(c) Capture–recapture

(d) Point count

Why: *Quadrats are used to estimate the number of organisms in a fixed area.*

59. Which type of speciation occurs without geographical isolation?

✓ **(a) Sympatric speciation**

(b) Allopatric speciation

(c) Peripatric speciation

(d) Parapatric speciation

Why: *Sympatric speciation occurs within the same geographical area.*

60. Which of the following is not a kingdom in Whittaker's five-kingdom classification?

(a) Monera

(b) Fungi

✓ **(c) Archaea**

(d) Plantae

Why: *Archaea is a domain, not one of Whittaker's five kingdoms.*

61. Which scientist proposed the Five-Kingdom Classification?

(a) Carl Woese

✓ **(b) Robert H. Whittaker**

(c) Carolus Linnaeus

(d) Charles Darwin

Why: *Robert H. Whittaker proposed the five-kingdom system in 1969.*

62. Binomial nomenclature was introduced by:

(a) Aristotle

✓ **(b) Carolus Linnaeus**

(c) Robert Hooke

(d) Charles Darwin

Why: *Linnaeus introduced the two-name scientific naming system.*

63. In binomial nomenclature, the first word represents the:

✓ (a) Genus

(b) Species

(c) Family

(d) Order

Why: *The first part of a scientific name is the genus.*

64. In a scientific name, the second word represents the:

(a) Family

✓ (b) Specific epithet (species)

(c) Genus

(d) Class

Why: *The second word identifies the species (specific epithet).*

65. Which taxonomic rank contains closely related species?

(a) Family

✓ (b) Genus

(c) Order

(d) Class

Why: *A genus is made up of one or more closely related species.*

Part 7 (Questions 66–80)

66. Which of the following is not a characteristic feature of echinoderms?

(a) Deuterostome development

(b) Tube feet

✓ (c) Open circulatory system

(d) Calcareous endoskeleton

Why: *Echinoderms have a water vascular system, not a true open circulatory system.*

67. The madreporite in echinoderms is part of the:

(a) Excretory system

(b) Nervous system

(c) Reproductive system

✓ (d) Water vascular system

Why: *The madreporite is the opening of the water vascular system.*

68. The adults of Echinodermata exhibit _____symmetry.

✓ (a) Radial

(b) Bilateral

(c) Spherical

(d) Both (a) and (b)

Why: *Adult echinoderms have radial (usually pentaradial) symmetry.*

69. The water vascular system in echinoderms is basically used for:

✓ **(a) Locomotion**

(b) Reproduction

(c) Excretion

(d) Respiration

Why: *It mainly helps in movement using tube feet.*

70. Which one of the following arthropods respires through tracheal tubes?

(a) Prawn

(b) Crab

✓ **(c) Spider**

(d) Lobster

Why: *Spiders breathe through tracheae (and/or book lungs).*

71. The excretory structures in arthropods are:

(a) Crop

(b) Gizzard

(c) Mesenteron

✓ **(d) Malpighian tubules**

Why: *Malpighian tubules remove nitrogenous wastes.*

72. The process of shedding the old exoskeleton and forming a new one is called:

(a) Metamorphosis

(b) Regeneration

✓ **(c) Ecdysis**

(d) Reproduction

Why: *Ecdysis is the moulting process in arthropods.*

73. The exoskeleton of arthropods is primarily composed of:

(a) Silica

(b) Calcium carbonate

✓ **(c) Chitin**

(d) Cellulose

Why: *Chitin forms the hard protective exoskeleton.*

74. The unique and distinguishing characteristic of arthropods is:

(a) Closed circulatory system

(b) Flame cells

(c) Radial symmetry

✓ **(d) Jointed appendages**

Why: *Arthropods are defined by their jointed legs and appendages.*

75. Which of the following is a common derived characteristic of all chordates at some stage of life?

(a) Amniotic egg

(b) Vertebral column

(c) Radial symmetry

✓ **(d) Post-anal tail**

Why: *All chordates possess a post-anal tail during some stage of development.*

76. The tubular nerve cord in chordates is present:

(a) Lateral walls of pharynx

(b) Near the throat

✓ **(c) Dorsal to notochord**

(d) Ventral to reproductive system

Why: *The dorsal hollow nerve cord lies above the notochord.*

77. In urochordates the notochord is present:

(a) In adult stage

✓ **(b) Only in larval stage**

(c) Throughout life

(d) Lacking in all stages

Why: *Adult urochordates lose the notochord after metamorphosis.*

78. Which class of fishes do not have jaws and possess cartilaginous endoskeleton?

✓ **(a) Cyclostomata**

(b) Chondrichthyes

(c) Osteichthyes

(d) Both (b) and (c)

Why: *Cyclostomes are jawless fishes with a cartilaginous skeleton.*

79. Sharks are different from other classes of fishes because they:

✓ **(a) Possess internal fertilization**

(b) Possess external fertilization

(c) Possess swim bladder

(d) Lack placoid scales

Why: *Sharks have internal fertilization and placoid scales.*

80. The swim bladder in bony fishes (Osteichthyes) is used for:

(a) Digestion

(b) Excretion

(c) Predation

✓ **(d) Buoyancy**

Why: *The swim bladder helps fishes maintain buoyancy in water.*

Part 8 (Questions 81–95)

81. Which of the following is not a bony fish?

(a) Rohu

(b) Trout

(c) Seahorse

✓ **(d) Ray fish**

Why: *Ray fish is a cartilaginous fish (Chondrichthyes), not a bony fish.*

82. The evolution of amniotic eggs was important for vertebrates because it:

(a) Allowed for external fertilization

✓ **(b) Enabled colonization of terrestrial habitats**

(c) Reduced dependence on gills for respiration

(d) Is required for predation

Why: *Amniotic eggs allowed vertebrates to reproduce successfully on land.*

83. Which of the following does not belong to amphibians?

✓ **(a) Four-chambered heart**

(b) External fertilization

(c) Moist skin

(d) Metamorphosis

Why: *Amphibians usually have a three-chambered heart, not four.*

84. The evolution of a three-chambered heart in amphibians resulted in:

(a) Complete separation of oxygenated and deoxygenated blood

✓ **(b) Double circuit circulation**

(c) Reduced efficiency of gaseous exchange

(d) Both (a) and (c)

Why: *A three-chambered heart introduced double circulation, though blood is not completely separated.*

85. The feature absent in Chondrichthyes but present in Osteichthyes is:

(a) Cartilaginous endoskeleton

(b) Paired fins

(c) Dermal scales

✓ **(d) Swim bladder**

Why: *Bony fishes possess a swim bladder, while cartilaginous fishes do not.*

86. Reptiles are different from amphibians in that reptiles:

(a) Have gills throughout life

(b) Lay anamniotic eggs

✓ **(c) Lay amniotic eggs**

(d) Have four limbs

Why: *Reptiles lay amniotic eggs, allowing reproduction on land.*

87. Which of the following is not a present-day reptile?

(a) Crocodiles

(b) Tuatra

(c) Snakes

✓ **(d) Salamander**

Why: *Salamander is an amphibian, not a reptile.*

88. In many birds there is a storage structure that allows birds to quickly ingest large quantities of food. It is:

(a) Gizzard

✓ **(b) Crop**
(c) Syrinx
(d) Air sac
Why: *The crop stores food temporarily before digestion.*

89. The birds which have secondarily lost their power of flight are called:

✓ **(a) Running birds**
(b) Flying birds
(c) Diving birds
(d) Predatory birds
Why: *Running birds (ratites) such as ostrich and emu are flightless.*

90. Which one of the following is a running bird?

(a) Parrot
(b) Crow
(c) Robin
✓ **(d) Emu**
Why: *Emu is a large flightless running bird.*

91. The adaptation in birds is a large bone that allows attachment of major flight muscles; it is called:

✓ **(a) Keel**
(b) Scapula
(c) Suprascapular
(d) Humerus
Why: *The keel of the sternum provides attachment for flight muscles.*

92. If a vertebrate animal has dry, scaly skin and lays leathery-shelled eggs, it most likely belongs to class:

(a) Amphibia
✓ **(b) Reptilia**
(c) Aves
(d) Mammalia
Why: *These are characteristic features of reptiles.*

93. The characteristic feature shared by amphibians and reptiles, but not by birds, is:

(a) Amniotic eggs
(b) Feathers
✓ **(c) Ectothermy**
(d) Two-chambered heart
Why: *Amphibians and reptiles are ectothermic (cold-blooded), whereas birds are endothermic.*

94. Mammals include a group of vertebrates which are nourished by milk from _____glands of the mother:

(a) Endocrine
✓ **(b) Mammary**

(c) Memory

(d) Prostate

Why: *Mammary glands produce milk to nourish the young.*

95. Which one of the following mammals is a marsupial?

(a) Duck-billed platypus

✓ (b) Quoll

(c) Spiny anteater

(d) Horse

Why: *Quoll is a marsupial; platypus and spiny anteater are monotremes.*

Part 9 (Questions 96–110)

96. The mammals which lay eggs in which the whole development of the embryo proceeds are called:

(a) Marsupials

(b) Placental mammals

(c) Metatherians

✓ (d) Egg-laying mammals (Monotremes)

Why: *Monotremes (e.g., platypus) lay eggs and complete embryonic development in the egg.*

97. Which gland secretes sweat in mammals?

(a) Sebaceous gland

(b) Prostate gland

(c) Pineal gland

✓ (d) Sudoriferous gland

Why: *Sudoriferous glands are sweat glands.*

98. Viruses are not considered organisms because they:

✓ (a) Are acellular

(b) Cause disease

(c) Cannot be seen with the naked eye

(d) Live in water

Why: *Viruses are acellular and lack cellular organization.*

99. A plant virus with a helical capsid is:

✓ (a) Tobacco mosaic virus

(b) Adenovirus

(c) Herpes virus

(d) HIV

Why: *Tobacco mosaic virus (TMV) has a helical capsid.*

100. A researcher studying COVID-19 virus would classify it as a:

✓ (a) ss RNA virus

(b) ss DNA virus

(c) ds DNA virus

(d) ds RNA virus

Why: *SARS-CoV-2 is a positive-sense single-stranded RNA virus.*

101. The viruses which lack an outer lipid envelope and consist only of a capsid enclosing nucleic acid are called:

(a) Non-enveloped viruses

(b) Enveloped viruses

(c) Naked viruses

✓ (d) Both (a) and (c)

Why: *Naked viruses are also called non-enveloped viruses.*

102. Gastroenteritis is caused by:

(a) Parvoviruses

(b) Adenoviruses

(c) Rotaviruses

✓ (d) Both (a) and (c)

Why: *Rotaviruses are a major cause, and some parvoviruses can also cause gastroenteritis.*

103. The viruses in which the RNA genome is directly translated into proteins by the host cell's ribosomes are called:

✓ (a) Positive-sense RNA viruses

(b) Negative-sense RNA viruses

(c) Reverse transcribing viruses

(d) All of them

Why: *Positive-sense RNA acts directly as mRNA.*

104. Reverse transcribing viruses like HIV are unique because they:

(a) Lack a protein capsid

(b) Infect bacteria

✓ (c) Convert RNA into DNA

(d) Convert DNA into RNA

Why: *HIV uses reverse transcriptase to make DNA from RNA.*

105. Role or function of an organism or species within an ecosystem refers to:

✓ (a) Niche

(b) Alcove

(c) Slot

(d) Recess

Why: *An ecological niche is an organism's role in an ecosystem.*

106. Mark–recapture method is particularly used for:

(a) Estimating abundance of easily observable species

(b) Counting species in quadrats

✓ (c) Studying animals that are difficult to count directly

(d) Mapping large-scale distributions

Why: *Mark–recapture estimates populations of mobile animals.*

107. Ernst Mayr's definition of species emphasizes:

✓ **(a) Reproductive isolation in natural populations**

(b) Shared habitat preferences

(c) Identical DNA sequences

(d) Morphological similarities

Why: *Ernst Mayr's Biological Species Concept is based on reproductive isolation.*

108. Sympatric speciation differs from allopatric speciation because it:

(a) Requires geographical isolation

(b) Is driven only by mutation rates

(c) Involves only small populations

✓ **(d) Occurs through niche differentiation or polyploidy without physical barriers**

Why: *Sympatric speciation occurs without geographical isolation.*

109. Which of the following is an example of peripatric speciation?

(a) Grasses adapting to soil gradients

(b) Reproductive isolation of grasses

(c) Undergoing polyploidy isolation

✓ **(d) Island species that evolve from a small founding population**

Why: *Peripatric speciation occurs in small isolated founder populations.*

110. The remote sensing method uses:

✓ **(a) Satellite or drone imagery**

(b) Quadrats to count

(c) Observations and recording from a fixed point

(d) Marking and recapturing

Why: *Remote sensing collects ecological data using satellites or drones.*
