

Unit 1: Biodiversity & Classification

Multiple Choice Questions

MULTIPLE CHOICE QUESTIONS (EXERCISE)

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
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.
3. Which of the following kingdoms includes organisms that are mostly unicellular, eukaryotic, and can be autotrophic or heterotrophic?
(a) Fungi (b) Animalia
(c) Plantae (d) Protocista
4. In which kingdom are organisms predominantly multicellular, autotrophic, and have cell walls made of cellulose?
(a) Animalia (b) Fungi
(c) Plantae (d) Protocista
5. Which of the following criteria 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

6. Which virus group includes viruses such as Coronaviruses and influenza viruses?
- Double-stranded DNA viruses
 - Single-stranded DNA viruses
 - Double-stranded RNA viruses
 - Single-stranded RNA viruses
7. At which level of biodiversity assessment do we evaluate the variety of different species within a particular habitat or ecosystem?
- Genetic diversity
 - Ecosystem diversity
 - Species diversity
 - Functional diversity
8. Which method is best suited for assessing the distribution of species across a gradient of environmental conditions within a single geographical area?
- Quadrat Sampling
 - Point Counts
 - Transect Sampling
 - Remote Sensing
9. Which of the following statements is true regarding the concept of a species?
- A species is always defined by its physical characteristics alone.
 - Different species can interbreed and produce fertile offspring.
 - Members of the same species are reproductively isolated from members of other species.
 - The concept of a species can be defined solely based on genetic similarity.
10. What type of speciation occurs when populations are geographically separated by a physical barrier?
- Sympatric Speciation
 - Parapatric Speciation
 - Allopatric Speciation
 - Peripatric Speciation

SLO BASED MULTIPLE CHOICE QUESTIONS

Three-Domain System of Classification

11. Who suggested that there are the separate groups of prokaryotes?
- Robert Whittaker
 - Carl Woese
 - F. Sanger
 - Frederich Meischer
12. Domains suggested by Carl Woese in a 1990 includes.
- Domain Archaea
 - Domain Bacteria
 - Domain Eukarya
 - All of above
13. Individual archaeans range from $0.1\mu\text{m}$ to over In diameter.
- $10\mu\text{m}$
 - $15\mu\text{m}$
 - $20\mu\text{m}$
 - $25\mu\text{m}$
14. The archaeans which form aggregates or filaments in length.
- $-100\mu\text{m}$
 - $125\mu\text{m}$
 - $150\mu\text{m}$
 - $200\mu\text{m}$
15. The cell membranes of archaea contain lipids with between glycerol and fatty acid chains.
- Glycosidic linkage
 - Peptide bond
 - Ether linkage
 - Ester linkage
16. The lipids in the cell membranes of bacteria and eukarya have fatty acids attached to glycerol by
- Ester linkage
 - Glycosidic linkage
 - Phospho-diester linkage
 - Ether linkage

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)
18. The archaeans which are vital part of sewage treatment are:
 (a) Methanogens
 (b) Halobacteria
 (c) Thermococci
 (d) Thaumarchaeota
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
20. Which one of the following does not belong to archaea?
 (a) Firmicutes (b) Methanogens
 (c) Thermococci (d) Halobacteria
21. The structure in bacteria that helps in genetic diversity and adaptation is:
 (a) Flagella (b) Pili
 (c) Fimbriae (d) Plasmids
22. The extremophiles which can thrive in low pH are called:
 (a) Thermophiles (b) Halophiles
 (c) Acidophiles (d) All of these
23. *E.coli* and *Helicobacter pylori* belongs to which group of domain bacteria:
 (a) Proteobacteria
 (b) Firmicutes
 (c) Cyanobacteria
 (d) Acidobacteria
24. Which one of the following belongs to Aquificae group of bacteria?
 (a) *Treponema pallidum*
 (b) *Acidobacterium*
 (c) *Streptomyces*
 (d) *Aquifex pyrophilus*
25. The structure that facilitates intracellular transport in eukaryans is:
 (a) Cytoskeleton (b) ER
 (c) Golgi apparatus (d) Peroxisomes
26. The organelles of symbiotic origin are:
 (a) Mitochondria & chloroplast
 (b) Nucleus and mitochondria
 (c) Chloroplast and RER
 (d) Lysosomes and mitochondria
- Taxonomic Hierarchy**
27. The highest level of classification among all living organisms is:
 (a) Kingdom (b) Phylum
 (c) Class (d) Domain
28. The rank of taxonomic hierarchy in which organisms share a basic body plane and significant structural features is:
 (a) Domain (b) Phylum
 (c) Class (d) Order
29. In taxonomic hierarchy, the most specific level of classification is:
 (a) Species (b) Genus
 (c) Family (d) Order
30. Sparrow belongs to class:
 (a) Mammalia (b) Aves
 (c) Reptilia (d) Amphibia
- Salient features of kingdoms of domain Eukarya**
31. Amoebic dysentery is caused by a parasite:
 (a) Plasmodium
 (b) *Entamoeba histolytica*
 (c) Trypanosoma
 (d) Giant amoeba
32. Select the organism on the basis of features given heterotrophic (does not ingest food) cell wall made of a polysaccharide, unicellular or multicellular:
 (a) Mushroom (b) Fern
 (c) Lion (d) Euglena

33. Which of the following lacks conducting (xylem and phloem), no seed production and no flowers?
- (a) Hornwort (b) Cedrus
(c) Capsicum (d) Mustard
- Kingdom Animalia**
34. Venus flower basket is the common name for:
- (a) Leucosolenia (b) Spongilla
(c) Euplectella (d) Sycon
35. The layer of sponges which contains ameoboid cells and is jelly-like is called:
- (a) Pinacoderm (b) Choanoderm
(c) Mesohyle (d) Epidermis
36. Identify the cnidarian which can move freely:
- (a) Hydra (b) Coral
(c) Obelia (d) Jelly fish
37. Nematocysts are the structures of defence and nutrition in:
- (a) Cnidarians (b) Sponges
(c) Annelids (d) Nematodes
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
39. Recognize the animal on the basis of information given below:
Lack respiratory and circulatory systems, tubular protonephridia cerebral ganglia in head and reproduce asexually by fission
- (a) Sea anemone
(b) Tapeworm
(c) Roundworm
(d) Segmented worm
40. Which one of the following animal is pseudocoelomate?
- (a) Planaria (b) Ascaris
(c) Liver fluke (d) Tapeworm
41. Select the class which does not belongs to Mollusca:
- (a) Class arachnida
(b) Class gastropoda
(c) Class bivalvia
(d) Class cephalopoda
42. All molluscs have a rasping tongue-like organ called radula except:
- (a) Gastropods (b) Bivalvia
(c) Cephalopoda (d) Both (a) and (c)
43. The segmented worm found in marine waters is:
- (a) Nereis (b) Leech
(c) Earthworm (d) Lumbricus
44. The excretory system of annelids consists of ciliated, funnel shaped tubular structure called:
- (a) Protonephridia
(b) Nephridia
(c) Nephron
(d) Metanephridia
45. Pulsating blood vessels (pseudo-hearts) closed type circulatory system, respiratory pigment hemoglobin are the characteristics of:
- (a) Sponges
(b) Round worms
(c) Segmented worms
(d) Flat worms
46. The arthropods have an exoskeleton or cuticle which is secreted by the _____ of body wall:
- (a) Exocuticle (b) Epidermis
(c) Gastrodermis (d) Endocuticle
47. Tagmata is the characteristic feature of:
- (a) Echinoderms (b) Annelids
(c) Arthropods (d) Molluscs
48. Which one of the following is a crustacean?
- (a) Crayfish (b) Spider
(c) Wasp (d) Centipede

49. Following are the classes of arthropods except:
 (a) Myriapoda (b) Arachnida
 (c) Crustacea (d) Gastropoda
50. Following animals are exclusively marine:
 (a) Echinoderms (b) Arthropods
 (c) Molluscs (d) Annelids
51. In echinoderms the calcareous endoskeleton in the form of plates called ossicles are derived from:
 (a) Ectoderm (b) Mesoderm
 (c) Endoderm (d) Pinacoderm
52. Which of the following is NOT a characteristics of nematodes?
 (a) Unsegmented body
 (b) Closed circulatory system
 (c) Complete digestive system
 (d) Pseudocoelom
53. Which of the following is a free living nematode?
 (a) Ascaris (b) Hookworm
 (c) Caenorhabditis (d) Pin worm
54. Nematodes possess a nervous system that includes:
 (a) Ganglia in each segment
 (b) A well developed brain
 (c) a dorsal nerve cord
 (d) A nerve ring and four longitudinal nerve cords
55. Nematodes are pseudocoelomates because they:
 (a) Lack a body cavity
 (b) Have a false-body cavity not-lined by mesoderm
 (c) Have a true coelom
 (d) Exhibit radial symmetry
56. The excretory system of nematodes is made up of:
 (a) Malpighian tubules
 (b) Nephridia
 (c) Renette cells
 (d) Flame cells
57. Annelids have circulatory system:
 (a) Open (b) Closed
 (c) Absent (d) Reduced
58. Which of the following is a hermaphroditic annelid?
 (a) Nereis (b) Earthworm
 (c) Leech (d) both (b) and (c)
59. The annelids which lack setae is:
 (a) Earthworm (b) Leech
 (c) Polychaete (d) Nereis
60. Metameric segmentation in annelids refers to:
 (a) Ability to regenerate its lost parts
 (b) Presence of jointed appendages
 (c) Presence of notochord
 (d) Division of body into similar segments
61. The mantle in molluscs secrete the following structure:
 (a) Radula (b) Gills
 (c) Foot (d) Shell
62. Squids and octopuses belong to which class of molluscs?
 (a) Gastropoda (b) Cephalopoda
 (c) Bivalvia (d) Polychaetaea
63. Excretion in molluscs is carried out by:
 (a) Malpighian tubules
 (b) Protonephridia
 (c) Flame cells
 (d) Nephridia
64. Radula or rasping-tongue in molluscs is primarily used for:
 (a) Locomotion (b) Filtering
 (c) Feeding (d) Excretion
65. Which of the following echinoderm is known for its ability to regenerate its lost / cut arms?
 (a) Brittle star (b) Sea cucumber
 (c) Cake urchin (d) Sea-urchin

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
67. The madreporite in echinoderms is the part of system:
(a) Excretory
(b) Nervous
(c) Reproductive
(d) Water vascular system
68. The adults of Echinodermata exhibit symmetry:
(a) Radial (b) Bilateral
(c) Spherical (d) Both (a) and (b)
69. The water vascular system in echinoderms is basically used for:
(a) Locomotion (b) Reproduction
(c) Excretion (d) Respiration
70. Which one of the following arthropod respire through tracheal tubes?
(a) Prawn (b) Crab
(c) Spider (d) Lobster
71. The excretory structures in arthropods is:
(a) Crop
(b) Gizzard
(c) Mesenteron
(d) Malpighian tubules
72. The process of shedding old exoskeleton and forming new exoskeleton of large size in arthropods is termed as:
(a) Metamorphosis (b) Regeneration
(c) Ecdysis (d) Reproduction
73. The exoskeleton of arthropods is primarily composed by:
(a) Silica (b) Calcium carbonate
(c) Chitin (d) Cellulose
74. The unique and distinguishing characteristics of arthropods is:
(a) Closed type of circulatory system
(b) Flame cells
(c) Radial symmetry
(d) Jointed appendages
75. Which of the following is a common derived characteristic of all chordates at some stage of their life cycle?
(a) Amniotic egg
(b) Vertebral column
(c) Radial symmetry
(d) Post-anal tail
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
77. In urochordates the notochord is present:
(a) In adult stage
(b) Only in larval stage
(c) Throughout life
(d) Lack in all stages
78. Which class of fishes do not have jaws and possess cartilaginous endoskeleton?
(a) Cyclostomata (b) Chondrichthyes
(c) Osteichthyes (d) Both (b) and (c)
79. Sharks are different from other class of fishes because they:
(a) Possess internal fertilization
(b) Possess external fertilization
(c) Possess swim bladder
(d) Lack placoid scales
80. The swim bladder in bony fishes (osteichthyes) is used for:
(a) Digestion (b) Excretion
(c) Predation (d) Buoyancy
81. Which of the following is not a bony fish?
(a) Rohu (b) Trout
(c) Seahorse (d) Ray fish

- 82. The evolution of amniotic eggs was important for vertebrates because it:**
- Allowed for external fertilization
 - Enabled colonization of terrestrial habitats
 - Reduced dependence on gills for respiration
 - Is required for predation
- 83. Which of the following does not belongs to amphibians?**
- Four-chambered heart
 - External fertilization
 - Moist skin
 - Metamorphosis
- 84. The evolution of three chambered heart in amphibians resulted in:**
- Complete separation of oxygenated and deoxygenated blood
 - Double circuit circulation
 - Reduced efficacy of gaseous exchange
 - Both (a) and (c)
- 85. The feature absent in chondrichthyes but present in osteichthyes is:**
- Cartilaginous endoskeleton
 - Paired fins
 - Dermal scales
 - Swim bladder
- 86. Reptiles are different from amphibians in that reptiles:**
- Have gills throughout their life
 - Lay anamniotic eggs
 - Lay amniotic eggs
 - Have four limbs
- 87. Which of the following is not a present day reptile?**
- Crocodiles
 - Tuatra
 - Snakes
 - Salamander
- 88. In many birds there is a storage structure that allows birds to quickly ingest large quantities of food, it is:**
- Gizzard
 - Crop
 - Syrinx
 - Air sac
- 89. The birds which have secondarily lost their power of flight are called:**
- Running birds
 - Flying birds
 - Diving birds
 - Predatory birds
- 90. Which one of the following is a running bird?**
- Parrot
 - Crow
 - Robin
 - Emu
- 91. The adaptation in birds is a large bone, which allows attachment of major flight muscles, it is called:**
- Keel
 - Scapula
 - Suprascapular
 - Humans
- 92. If a vertebrate animal has a dry, scaly skin and lays leathery shelled eggs it most likely belongs to class:**
- Amphibia
 - Reptilia
 - Aves
 - Mammalia
- 93. The characteristics feature shared by amphibians and reptiles, but not by the birds is:**
- Amniotic eggs
 - Feathers
 - Ectothermy
 - Two chambered heart
- 94. Mammals include group of vertebrates which are nourished by milk from glands of mother:**
- Endocrine
 - Mammary
 - Memory
 - Prostate
- 95. Which one of the following mammal is a marsupial?**
- Duck bill platypus
 - Quoll
 - Spiny ant-eater
 - Horse
- 96. The mammals which lay eggs in which whole development of the embryo proceeds are called:**
- Marsupials
 - Placental
 - Metatherians
 - Egg-laying mammals

97. Which gland secretes sweat in mammals?

- (a) Sebaceous gland
- (b) Prostate gland
- (c) Pineal gland
- (d) Sudoriferous gland

Classification of viruses

98. Viruses are not considered organisms because they:

- (a) Are acellular
- (b) Cause disease
- (c) Cannot be seen with naked eye
- (d) Live in water

99. A Plant virus with a helical capsid is:

- (a) Tobacco mosaic virus
- (b) Adenovirus
- (c) Herpes virus
- (d) HIV

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

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

- (a) Non-enveloped viruses
- (b) Enveloped viruses
- (c) Naked viruses
- (d) Both (a) and (c)

102. Gastroenteritis is caused by:

- (a) Parvoviruses
- (b) Adenoviruses
- (c) Rotaviruses
- (d) Both (a) and (c)

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

- (a) Positive sense RNA viruses
- (b) Negative sense RNA viruses
- (c) Reverse transcribing viruses
- (d) All of them

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

Biodiversity

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

- (a) Niche
- (b) Alcove
- (c) Slot
- (d) Recess

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

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

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

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

110. The remote sensing method uses:

- (a) Satellite or drone imagery
(b) Quadrates to count

- (c) Observations and recording from a fixed point
(d) Marking and recapturing

ANSWER KEY

1.	b	2.	b	3.	d	4.	c	5.	b	6.	d	7.	c	8.	c	9.	c	10.	c
11.	b	12.	d	13.	b	14.	d	15.	c	16.	a	17.	c	18.	a	19.	b	20.	a
21.	d	22.	c	23.	a	24.	d	25.	a	26.	a	27.	d	28.	b	29.	a	30.	b
31.	b	32.	a	33.	a	34.	c	35.	c	36.	d	37.	a	38.	b	39.	b	40.	b
41.	a	42.	b	43.	a	44.	d	45.	c	46.	b	47.	c	48.	a	49.	d	50.	a
51.	b	52.	b	53.	c	54.	d	55.	b	56.	c	57.	b	58.	d	59.	b	60.	d
61.	d	62.	b	63.	d	64.	c	65.	a	66.	c	67.	d	68.	a	69.	a	70.	c
71.	d	72.	c	73.	c	74.	d	75.	d	76.	c	77.	b	78.	a	79.	a	80.	d
81.	d	82.	b	83.	a	84.	b	85.	d	86.	c	87.	d	88.	b	89.	a	90.	d
91.	a	92.	b	93.	c	94.	b	95.	b	96.	d	97.	d	98.	a	99.	a	100.	a
101.	d	102.	d	103.	a	104.	c	105.	a	106.	c	107.	a	108.	d	109.	d	110.	a



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