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Biology Grade 11 — Chapter 7

Protista and Fungi

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Independent practice MCQs from the supplied Class 11 Biology notes pack. Total: 50 questions.

A. Important / Main Topics

1. The term "polyphyletic" refers to organisms that:

(A) Do not share a common evolutionary ancestor and evolved independently
(B) Share a single common ancestor
(C) Belong to the same species
(D) Have identical genetic material

Correct Answer: A

Explanation: Polyphyletic refers to a grouping of organisms that do not share a common evolutionary ancestor and may have evolved independently from different ancestral sources.

2. Which of the following is a heterotrophic protist?

(A) Algae
(B) Protozoa
(C) Diatoms
(D) Euglena

Correct Answer: B

Explanation: Protozoa and slime molds are heterotrophic protists, while algae are autotrophic.

3. The term "protozoa" is derived from Greek words meaning:

(A) Tiny plants
(B) Simple cells
(C) First animals
(D) Ancient life

Correct Answer: C

Explanation: The term "protozoa" comes from "proto" (first) and "zoo" (animals), describing microscopic, single-celled organisms with animal-like behaviors.

4. Which organelle helps freshwater protozoa pump excess water out of the cell?

(A) Food vacuole
(B) Nucleus
(C) Mitochondrion
(D) Contractile vacuole

Correct Answer: D

Explanation: Contractile vacuole — this correctly answers the question.

5. Which of the following algae is responsible for producing about 50-60% of photosynthesis on Earth?

(A) Algae in general
(B) Green algae
(C) Brown algae
(D) Red algae

Correct Answer: A

Explanation: Algae, collectively, play a vital role in ecosystems as they are responsible for about 50 to 60% of photosynthesis on our planet.

6. Which protozoan uses pseudopodia for movement and feeding?

(A) Paramecium
(B) Amoeba

(C) Trypanosoma
(D) Plasmodium

Correct Answer: B

Explanation: Amoebas use pseudopodia for both movement and feeding.

7. What is a defining feature of dinoflagellates?

(A) They are always green.
(B) They lack a nucleus.
(C) Many are bounded by protective cellulose plates and have two flagella.
(D) They are multicellular.

Correct Answer: C

Explanation: Many dinoflagellates are bounded by protective cellulose plates impregnated with silica and most have two flagella.

8. The body of most fungi is called:

(A) Thallus
(B) Hyphae
(C) Lichen
(D) Mycelium

Correct Answer: D

Explanation: The thallus or the body of most fungi is a multicellular structure known as mycelium, a network of filaments called hyphae.

9. What is the cell wall of fungi primarily made of?

(A) Chitin
(B) Cellulose
(C) Peptidoglycan
(D) Lignin

Correct Answer: A

Explanation: Chitin — this correctly answers the question.

10. Which of the following is a key characteristic of fungi that distinguishes them from plants?

(A) They have a cell wall.
(B) They are heterotrophic and lack chlorophyll.
(C) They are non-motile.
(D) They produce spores.

Correct Answer: B

Explanation: They are heterotrophic and lack chlorophyll. — this correctly answers the question.

11. In fungi, the filaments that make up the mycelium are called:

(A) Sporangia
(B) Conidia
(C) Hyphae
(D) Rhizoids

Correct Answer: C

Explanation: The mycelium is a network of filaments called hyphae.

12. What type of hyphae lack cross walls and are multinucleate?

(A) Septate
(B) Branched
(C) Vegetative
(D) Coenocytic

Correct Answer: D

*Explanation: Nonseptate (aseptate) hyphae are multinucleate and are called coenocytic hyphae, e.g., in *Rhizopus*.*

13. How do fungi reproduce asexually by forming small outgrowths?

(A) Budding
(B) Fragmentation
(C) Spore formation
(D) Binary fission

Correct Answer: A

Explanation: Budding — this correctly answers the question.

14. Which type of fungi are known as "sac fungi"?

(A) Zygomycota
(B) Ascomycota
(C) Basidiomycota
(D) Deuteromycota

Correct Answer: B

Explanation: Ascomycota are commonly referred to as sac fungi, named after their characteristic reproductive structures called asci.

15. What is the main characteristic of Deuteromycota?

(A) They reproduce sexually.
(B) They are all aquatic.
(C) They are called "imperfect fungi" because they lack a sexual stage.
(D) They lack a cell wall.

Correct Answer: C

Explanation: Deuteromycota are called "imperfect fungi" owing to the absence of a sexual stage in their life cycle.

16. Amoeba proteus and Entamoeba histolytica are both:

(A) Ciliates
(B) Zooflagellates
(C) Dinoflagellates
(D) Amoebas

Correct Answer: D

Explanation: Both are examples of amoebas, which use pseudopodia for movement and feeding.

17. Which protist causes malaria?

(A) Plasmodium
(B) Entamoeba histolytica
(C) Giardia intestinalis
(D) Trypanosoma

Correct Answer: A

Explanation: Plasmodium species are responsible for malaria, a deadly disease affecting millions worldwide.

18. What is the first stable product of the Calvin cycle?

(A) Glucose
(B) 3-phosphoglycerate (3-PGA)
(C) Glyceraldehyde-3-phosphate (G3P)
(D) Ribulose bisphosphate (RuBP)

Correct Answer: B

Explanation: The first stable compound in the Calvin cycle is a three-carbon compound (3-PGA), which is why the Calvin cycle is also known as the C3 pathway.

19. Which part of the mushroom is considered the fruiting body?

(A) Mycelium
(B) Hyphae
(C) Basidiocarp
(D) Rhizoid

Correct Answer: C

Explanation: A mushroom which consists of a stalk and a cap is more formally referred to as a basidiocarp.

20. How does a lysogenic phage differ from a lytic phage?

(A) The lysogenic phage immediately lyses the host cell.
(B) The lytic phage can enter a dormant state.
(C) The lysogenic phage cannot replicate its DNA.
(D) The lysogenic phage integrates its DNA into the host chromosome as a prophage.

Correct Answer: D

Explanation: In the lysogenic cycle, the phage DNA integrates into the host chromosome as a prophage, and the host cell survives.

21. Which of the following is a beneficial role of fungi?

(A) Producing antibiotics like penicillin
(B) Causing athlete's foot
(C) Spoiling food
(D) Causing plant diseases

Correct Answer: A

Explanation: Producing antibiotics like penicillin — this correctly answers the question.

22. How do fungi digest their food?

(A) They ingest food particles and digest them internally.
(B) They secrete enzymes to break down organic matter externally and then absorb the nutrients.
(C) They use photosynthesis to make food.
(D) They rely on a host organism for pre-digested food.

Correct Answer: B

Explanation: They secrete enzymes to break down organic matter externally and then absorb the nutrients. — this correctly answers the question.

23. In a basidiomycete life cycle, where are basidiospores produced?

(A) In the ascocarp
(B) In the sporangium
(C) In the gills of the mushroom
(D) In the mycelium

Correct Answer: C

Explanation: In the gills of the mushroom — this correctly answers the question.

24. What type of symbiotic relationship is a lichen?

(A) Parasitic
(B) Commensal
(C) Predatory
(D) Mutualistic

Correct Answer: D

Explanation: Lichens are an association between a fungus and a cyanobacterium or green alga. Traditionally, they were thought to have mutualistic relationships.

25. Why are some protozoans considered "polyphyletic"?

(A) They have many different origins and do not share a common ancestor.
(B) They share a single common ancestor.
(C) They are all parasites.
(D) They are all autotrophic.

Correct Answer: A

Explanation: Protozoa are a polyphyletic group, meaning they have many different origins and do not share a common evolutionary ancestor.

B. Less Important / Secondary Topics

26. Which of the following is a key feature of the phylum Oomycota?

(A) They have cell walls made of cellulose and are commonly called water molds.
(B) They have cell walls made of chitin.
(C) They are all parasitic.
(D) They lack a cell wall.

Correct Answer: A

Explanation: Oomycetes include water molds, white rusts, and downy mildews. The cell wall in oomycetes contains cellulose, unlike fungi which have chitin.

27. In what form do slime molds (Myxomycota) typically exist?

(A) As a multicellular fruiting body
(B) As a diploid multinucleated cytoplasmic mass called a plasmodium
(C) As a single-celled flagellated organism
(D) As a spore

Correct Answer: B

Explanation: Slime molds, specifically plasmodial slime molds, typically exist as plasmodium, a diploid multinucleated cytoplasmic mass wrapped in slime sheath.

28. What is the main function of rhizoids in bryophytes?

(A) Photosynthesis
(B) Reproduction
(C) Anchoring the plant to the substrate
(D) Transport of water

Correct Answer: C

Explanation: Bryophytes have rhizoids instead of roots, which anchor the plant to the substrate.

29. Why are fungi not classified as plants?

(A) They have a cell wall.
(B) They are non-motile.
(C) They produce spores.
(D) They lack chlorophyll and are heterotrophic.

Correct Answer: D

Explanation: They lack chlorophyll and are heterotrophic. — this correctly answers the question.

30. Which type of fungi is *Rhizopus nigricans* (black bread mold)?

(A) Zygomycota
(B) Ascomycota
(C) Basidiomycota
(D) Deuteromycota

Correct Answer: A

*Explanation: *Rhizopus nigricans* is a zygomycete, known as black bread mold.*

31. Which structure in a fungus produces spores by meiosis?

(A) Sporangium
(B) All of the above
(C) Ascus
(D) Basidium

Correct Answer: B

Explanation: Sporangia, asci, and basidia are all reproductive structures that produce spores by meiosis.

32. Which of the following is a function of mycorrhizae?

(A) Causing plant diseases
(B) Producing antibiotics
(C) Enhancing nutrient uptake, especially phosphorus, in plants
(D) Breaking down pollutants

Correct Answer: C

Explanation: Mycorrhizal fungi form mutually beneficial partnerships with plants, helping them absorb nutrients like phosphorus.

33. What is the primary role of the enzyme reverse transcriptase in HIV?

(A) It synthesizes viral proteins.
(B) It degrades the viral genome.
(C) It helps in viral assembly.
(D) It converts viral RNA into DNA.

Correct Answer: D

Explanation: It converts viral RNA into DNA. — this correctly answers the question.

34. Which of the following is a sexually transmitted viral disease?

(A) Hepatitis B
(B) Hepatitis A
(C) Polio
(D) Common cold

Correct Answer: A

Explanation: Hepatitis B is transmitted through blood, sexual contact, and prenatally from mother to newborn.

35. What is the main difference between viroids and prions?

(A) Viroids contain DNA and no protein coat; prions contain RNA.
(B) Viroids contain RNA and no protein coat; prions contain protein and no nucleic acid.
(C) Viroids cause animal diseases; prions cause plant diseases.
(D) Viroids are larger than viruses; prions are smaller.

Correct Answer: B

Explanation: Viroids consist of a short, circular, single-stranded RNA without a protein coat. Prions are infectious protein particles containing no nucleic acids.

36. What would be the consequence of a mutation in a flowering plant that prevents the formation of the Casparian strip in the root endodermis?

(A) The plant would be unable to absorb water.
(B) The plant would be unable to perform photosynthesis.
(C) The plant would be unable to regulate the entry of water and dissolved substances into the vascular cylinder.
(D) The plant would be unable to reproduce.

Correct Answer: C

Explanation: The Casparian strip is a waxy layer in the endodermis that forces water and dissolved substances to pass through cell membranes, regulating their entry into the vascular cylinder.

37. A researcher finds a new organism that is unicellular, has a nucleus, and is photosynthetic. It is not a plant. Which group does it belong to?

(A) Fungi
(B) Protozoa
(C) Bacteria
(D) Algae

Correct Answer: D

Explanation: Algae are plant-like protists that are photosynthetic, can be unicellular or multicellular, and have a nucleus.

38. Which of the following is a key difference between the lytic and lysogenic cycles of a bacteriophage?

(A) In the lysogenic cycle, the viral DNA integrates into the host chromosome and is passed to daughter cells.
(B) In the lysogenic cycle, the host cell is immediately lysed.
(C) In the lytic cycle, the host cell survives and reproduces with the viral DNA.
(D) In the lytic cycle, the viral DNA becomes a prophage.

Correct Answer: A

Explanation: In the lysogenic cycle, the phage DNA integrates into the host chromosome as a prophage and is replicated along with the host chromosome.

39. A patient is diagnosed with a fungal infection of the lungs. Which of the following fungi is the most likely causative agent?

(A) *Penicillium*
(B) *Aspergillus fumigatus*
(C) *Saccharomyces cerevisiae*
(D) *Rhizopus nigricans*

Correct Answer: B

*Explanation: *Aspergillus fumigatus* is a respiratory fungal pathogen that causes aspergillosis.*

40. Why are fungi considered to have a closer evolutionary relationship to animals than to plants?

(A) Fungi have a cell wall, while animals do not.
(B) Fungi are motile, while plants are not.
(C) Fungi are heterotrophic and store glycogen, while plants are autotrophic and store starch.
(D) Fungi are photosynthetic, while animals are not.

Correct Answer: C

Explanation: Fungi are heterotrophic and store glycogen, while plants are autotrophic and store starch. — this correctly answers the question.

41. Which of the following is a unique feature of the sexual reproduction of Ascomycota?

(A) Production of basidiospores
(B) Production of zygospores
(C) Production of motile spores
(D) Production of ascospores inside an ascus

Correct Answer: D

Explanation: Ascomycota produce ascospores within sac-like cells called asci. Typically, eight haploid ascospores are formed within each ascus.

42. Which of the following correctly describes the role of the Calvin cycle in photosynthesis?

(A) It fixes carbon dioxide into organic molecules.
(B) It generates ATP and NADPH.
(C) It splits water into hydrogen and oxygen.
(D) It produces oxygen directly.

Correct Answer: A

Explanation: The Calvin cycle (light-independent reaction) fixes carbon dioxide into organic molecules, producing G3P, which is used to make glucose.

43. Which of the following is a major difference between the cell walls of fungi and plants?

(A) Fungi have cellulose; plants have chitin.
(B) Fungi have chitin; plants have cellulose.
(C) Both have the same composition.
(D) Fungi have no cell wall.

Correct Answer: B

Explanation: Fungi have chitin; plants have cellulose. — this correctly answers the question.

44. What would be the most likely effect of a drug that inhibits the formation of the mitotic spindle in a eukaryotic cell?

(A) The cell would be unable to replicate its DNA.
(B) The cell would be unable to synthesize proteins.
(C) The cell would be unable to separate its chromosomes during cell division.
(D) The cell would be unable to produce ATP.

Correct Answer: C

Explanation: The mitotic spindle is essential for chromosome separation during mitosis. Inhibiting its formation would prevent chromosome segregation.

45. Which of the following statements about HIV is correct?

(A) HIV is a DNA virus that infects red blood cells.
(B) HIV is a bacterium that causes AIDS.
(C) HIV is a viroid that infects liver cells.
(D) HIV is a retrovirus that infects helper T cells.

Correct Answer: D

Explanation: HIV is a retrovirus that attacks the immune system, specifically the CD4 cells (helper T cells).

46. A cell is placed in a solution that is hypertonic to the cell's cytoplasm. What will happen to the cell?

(A) It will shrink due to water loss.
(B) It will swell and burst.
(C) It will remain unchanged.
(D) It will actively pump in water.

Correct Answer: A

Explanation: In a hypertonic solution, the concentration of solutes outside the cell is higher than inside, causing water to move out of the cell by osmosis, leading to shrinkage.

47. Which of the following is a characteristic feature of the phylum Basidiomycota?

(A) Production of ascospores
(B) Production of basidiospores on a club-shaped basidium
(C) Absence of a sexual stage
(D) Presence of non-septate hyphae

Correct Answer: B

Explanation: Basidiomycota are named for their unique spore-forming structures called basidia. Each basidium typically generates four basidiospores on its tip.

48. Which of the following organisms is an example of a ciliate?

(A) Amoeba
(B) Trypanosoma
(C) Paramecium
(D) Plasmodium

Correct Answer: C

Explanation: Paramecium is a ciliate, named after the tiny hair-like structures called cilia that cover its cell.

49. What is the primary role of the enzyme lysozyme in bacteriophage infection?

(A) It synthesizes viral DNA.
(B) It degrades the viral genome.
(C) It helps in the assembly of new phages.
(D) It digests a portion of the bacterial cell wall to allow core tube penetration.

Correct Answer: D

Explanation: Lysozyme is released upon contraction of the tail and digests the host cell wall so that the core tube can penetrate into the host cell.

50. Which of the following is a key difference between prokaryotic and eukaryotic cells?

(A) Eukaryotic cells have membrane-bound organelles; prokaryotic cells do not.
(B) Prokaryotic cells have a nucleus; eukaryotic cells do not.
(C) Prokaryotic cells are always multicellular; eukaryotic cells are always unicellular.
(D) Prokaryotic cells have 80S ribosomes; eukaryotic cells have 70S ribosomes.

Correct Answer: A

Explanation: Eukaryotic cells have membrane-bound organelles; prokaryotic cells do not. — this correctly answers the question.