

## NCERT Exemplar Solutions of Class 11 Biology – Chapter: 2 Biological Classification.

### Multiple Type Questions

#### 1. All eukaryotic unicellular organisms belong to

- a. Monera
- b. Protista
- c. Fungi
- d. Bacteria

**Solution:** Option **(b) Protista** is the answer.

**Explanation:** According to Whittaker's five-kingdom classification system, all eukaryotic unicellular organisms are placed under the Kingdom Protista. This kingdom includes organisms like protozoa, unicellular algae, and slime molds. These organisms have a true nucleus bounded by a nuclear membrane and other membrane-bound organelles, distinguishing them from prokaryotic organisms in Monera.

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#### 2. The five-kingdom classification was proposed by

- a. R.H. Whittaker
- b. C. Linnaeus
- c. A. Roxberg
- d. Virchow

**Solution:** Option **(a) R.H. Whittaker** is the answer.

**Explanation:** Robert Harding Whittaker proposed the five-kingdom classification system in 1969. This system divides all living organisms into five kingdoms: Monera, Protista, Fungi, Plantae, and Animalia. This classification was based on cell structure, mode of nutrition, body organization, and phylogenetic relationships.

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#### 3. Organisms living in salty areas are called as

- a. Methanogens
- b. Halophiles
- c. Heliophytes
- d. Thermoacidophiles

**Solution:** Option **(b) Halophiles** is the answer.

**Explanation:** Halophiles are extremophile organisms that thrive in high salt concentration environments. The term "halophile" literally means "salt-loving." These organisms are typically found in salt lakes, salt mines, and other hypersaline environments. They belong to the domain Archaea and have special adaptations to survive in high-salinity conditions.

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#### 4. Naked cytoplasm, multinucleated and saprophytic is the characteristics of

- a. Monera
- b. Protista

- c. Fungi
- d. Slime moulds

**Solution:** Option **(d) Slime moulds** is the answer.

**Explanation:** Slime moulds are unique organisms that exhibit characteristics of both fungi and protists. They have naked cytoplasm (no cell wall), are multinucleated (coenocytic), and are saprophytic (feed on dead organic matter). During their life cycle, they form plasmodium, which is a multinucleated mass of protoplasm that moves like a giant amoeba.

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**5. An association between roots of higher plants and fungi is called**

- a. Lichen
- b. Fern
- c. Mycorrhiza
- d. BGA

**Solution:** Option **(c) Mycorrhiza** is the answer.

**Explanation:** Mycorrhiza is a symbiotic association between fungi and the roots of higher plants. This mutually beneficial relationship helps plants absorb nutrients (especially phosphorus) more efficiently, while fungi receive carbohydrates from the plant. There are two main types: ectomycorrhiza (fungi surround root surface) and endomycorrhiza (fungi penetrate root cells).

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**6. A dikaryon is formed when**

- a. Meiosis is arrested
- b. The two haploid cells do not fuse immediately
- c. Cytoplasm does not fuse
- d. None of the above

**Solution:** Option **(b) The two haploid cells do not fuse immediately** is the answer.

**Explanation:** A dikaryon is a stage in the fungal life cycle where two haploid nuclei coexist in the same cell without fusing. This occurs during plasmogamy (fusion of cytoplasm) when the nuclei from two different mating types come together but do not immediately undergo karyogamy (nuclear fusion). This dikaryotic stage is characteristic of many fungi, particularly Basidiomycetes.

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**7. Contagium vivum fluidum was proposed by**

- a. D.J. Ivanowsky
- b. M.W. Beijerinck
- c. Stanley
- d. Robert Hook

**Solution:** Option **(b) M.W. Beijerinck** is the answer.

**Explanation:** Martinus Willem Beijerinck, a Dutch microbiologist, proposed the term "contagium vivum fluidum" (contagious living fluid) in 1898 to describe the infectious agent

causing tobacco mosaic disease. This was one of the early concepts leading to the discovery of viruses, suggesting that the infectious agent was smaller than bacteria and could pass through filters.

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**8. Associations between Mycobiont and Phycobiont are found in**

- a. Mycorrhiza
- b. Root
- c. Lichens
- d. BGA

**Solution:** Option (c) **Lichens** is the answer.

**Explanation:** Lichens are composite organisms consisting of a symbiotic association between a fungus (mycobiont) and a photosynthetic partner, either an alga or cyanobacteria (phycobiont). The fungus provides structure and protection, while the photosynthetic partner provides food through photosynthesis. This mutualistic relationship allows lichens to colonize extreme environments.

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**9. Difference between Virus and Viroid is**

- a. Absence of protein coat in viroid but present in virus
- b. Presence of low molecular weight RNA in the virus but absent in viroid
- c. Both a and b
- d. None of the above

**Solution:** Option (a) **Absence of protein coat in viroid but present in virus** is the answer.

**Explanation:** The main difference between viruses and viroids is that viruses have a protein coat (capsid) surrounding their genetic material, while viroids consist only of a short strand of circular, single-stranded RNA without any protein coat. Viroids are much smaller than viruses and cause diseases primarily in plants.

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**10. With respect to fungal sexual cycle, choose the correct sequence of events**

- a. Karyogamy, Plasmogamy and Meiosis
- b. Meiosis, Plasmogamy and Karyogamy
- c. Plasmogamy, Karyogamy and Meiosis
- d. Meiosis, Karyogamy and Plasmogamy

**Solution:** Option (c) **Plasmogamy, Karyogamy and Meiosis** is the answer.

**Explanation:** The correct sequence in the fungal sexual cycle is:

1. **Plasmogamy** - Fusion of cytoplasm from two compatible mating types
2. **Karyogamy** - Fusion of nuclei to form a diploid nucleus
3. **Meiosis** - Reduction division to restore the haploid condition This sequence ensures proper genetic recombination and maintains the fungal life cycle.

**11. Viruses are non-cellular organisms but replicate themselves once they infect the host cell. To which of the following kingdom do viruses belong to?**

- a. Monera
- b. Protista
- c. Fungi
- d. None of the above

**Solution:** Option **(d) None of the above** is the answer.

**Explanation:** Viruses do not belong to any of the five kingdoms in Whittaker's classification system. They are considered biological entities rather than living organisms because they lack cellular structure, cannot carry out metabolic processes independently, and can only replicate inside host cells. They exist in a gray area between living and non-living matter.

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**12. Members of Phycomycetes are found in**

- i. Aquatic habitats
- ii. On decaying wood
- iii. Moist and damp places
- iv. As obligate parasites on plants

Choose from the following options: a. None of the above

- b. I and iv
- c. ii and iii
- d. All of the above

**Solution:** Option **(d) All of the above** is the answer.

**Explanation:** Phycomycetes (now called Zygomycetes) are found in diverse habitats:

- **Aquatic habitats:** Many species live in freshwater and marine environments
- **On decaying wood:** They act as saprophytes, decomposing organic matter
- **Moist and damp places:** They require moisture for growth and reproduction
- **As obligate parasites on plants:** Some species cause plant diseases This wide distribution makes them ecologically important decomposers and pathogens.