

Solutions – Practice Test – BIOL 110 Exam 4

Problem #1: D

Mycorrhizae is mutualistic association between plant roots and fungal hyphae. Lichen is between a fungus and a photosynthetic partner such as green algae or cyanobacteria.

Problem #2: C

Plasmogamy is the fusion of the cytoplasm of two or more cells, producing a dikaryon (N + N, a mycelium with two genetically distinct nuclei in the same cytoplasm). Remember, this is NOT diploid.

Problem #3: A

Chytridiomycota have flagellated spores, they are the only motile cells in the kingdom.

Problem #4: C

The zygosporangium forms when 2 hyphae meet and fuse, and the dikaryon forms growing into the dikaryotic zygosporangium, which has a thick cell wall to aid against harsh conditions.

Problem #5: D

Chytridiomycotes often cause deformities in frogs.

Problem #6: C

Cellular Respiration is the process of breaking down glucose for energy, this process is exergonic ($-\Delta G$) since it releases energy which can then be used by the cell to do work. Photosynthesis is the process in which plants create sugars from CO_2 and water, this process is endergonic ($+\Delta G$) since it requires energy from the sun.

Problem #7: A

What goes in: 1 glucose molecule, 2 ATP, 4 ADP, 2 NAD⁺

What comes out: 2 pyruvate molecules, 4 ATP, 2 NADH

Net gain: 2 pyruvate molecules, 2 ATP, 2 NADH

Problem #8: A

A reduction is a GAIN of electrons. So a molecule which is reduced will accept an electron from another molecule.

Problem #9: C

In cellular respiration, the terminal electron acceptor is O₂.

Problem #10: B

The terminal electron acceptor for fermentation is pyruvate, as there is no oxygen present. The terminal electron acceptor for Krebs cycle and ETC is oxygen.

Problem #11: A

True, an altricial young is born less developed, usually hairless, with eyes closed, and less mobile. A Precocial young is born more developed (hairy, eyes opened, more mobile).

Problem #12: A

Chlorophyll is the pigment found in plants, which are green, meaning they absorb every wavelength but green, and reflect green light.

Problem #13: B

During the light reactions of photosynthesis, water is required and broken to release the oxygens and hydrogens used in the reaction.

Problem #14: C

The light reactions produce ATP and NADPH, which are then used in the dark reactions.

Problem #15: B

NADP⁺ is the oxidized form, meaning it has no electrons, while NADPH is the reduced form, meaning it's full of electrons. In photosynthesis, NADP⁺ is reduced (gain of electrons) to NADPH. This happens during photosystem I. Remember that photosystem I occurs after photosystem II.

Problem #16: D

The dark reactions of photosynthesis are located in the stroma. It requires ATP and NADPH (products of light reactions), and CO₂ (from the atmosphere), and generates sugars.

Problem #17: B

The terminal electron acceptor for fermentation is pyruvate, as there is no oxygen present. The terminal electron acceptor for Krebs cycle and ETC is oxygen.

Problem #18: D

NADH and FADH₂ are the reduced forms of NAD⁺ and FAD, respectively.

NAD⁺ and FAD are the oxidized forms of NADH and FADH₂, respectively.

Thus statements ii, iii, and iv are true.