1. Biosynthetic phase of photosynthesis uses —
   A. ATP and NADPH
   B. Oxygen only
   C. Nitrogen only
   D. Chlorophyll-b only (A)

Explanation : ATP and NADPH from light reaction are used to reduce CO_2 into carbohydrates.

2. Light-independent reactions occur in the —
   A. Stroma
   B. Thylakoid lumen only
   C. Cell wall
   D. Nucleus (A)

Explanation : Dark reactions or carbon reactions occur in chloroplast stroma.

3. Melvin Calvin used which radioactive isotope in photosynthesis studies?
   A. C^{14} B. O^{18}
   C. H^3 D. N^{15} (A)

Explanation : Calvin used radioactive carbon to trace CO_2 fixation.

4. First stable product of CO_2 fixation in C3 cycle is —
   A. Oxaloacetic acid
   B. 3-phosphoglyceric acid
   C. Pyruvic acid
   D. Malic acid (B)

Explanation : PGA is a three-carbon first stable product.

5. Primary CO_2 acceptor in the Calvin cycle is —
   A. PEP
   B. RuBP
   C. OAA
   D. NADP (B)

Explanation : Ribulose-1,5-bisphosphate is the 5-carbon CO_2 acceptor.

6. RuBisCO catalyses the carboxylation of —
   A. RuBP
   B. OAA
   C. NADPH
   D. ATP (A)

Explanation : RuBisCO fixes CO_2 with RuBP to form PGA.

7. The three stages of Calvin cycle are —
   A. Absorption, oxidation, diffusion
   B. Carboxylation, reduction, regeneration
   C. Photolysis, diffusion, respiration
   D. Glycolysis, fermentation, excretion (B)

Explanation : These are the three major stages of the Calvin cycle.

8. For each CO_2 molecule fixed in Calvin cycle, required energy molecules are —
   A. 1 ATP and 1 NADPH
   B. 3 ATP and 2 NADPH
   C. 2 ATP and 3 NADPH
   D. 6 ATP and 6 NADPH (B)

Explanation : Each CO_2 fixation needs 3 ATP and 2 NADPH.

9. How many turns of Calvin cycle are needed to synthesize one glucose molecule?
   A. Two B. Four
   C. Six D. Eight (C)

Explanation : Six CO_2 molecules are fixed through six turns to form one glucose.

10. One glucose molecule synthesis requires —
    A. 6 ATP and 6 NADPH
    B. 12 ATP and 6 NADPH
    C. 18 ATP and 12 NADPH
    D. 24 ATP and 18 NADPH (C)

Explanation : 18 ATP and 12 NADPH for one glucose molecule.