1. The formation of new DNA strands from an existing DNA molecule is called:
   A. Translation B. Transcription
   C. Replication D. Mutation (C)

Explanation : DNA replication is the process of formation of new DNA strands using an existing DNA molecule as a template.

2. DNA replication follows which type of mechanism?
   A. Conservative B. Semiconservative
   C. Dispersive D. Random (B)

Explanation : After replication, each DNA molecule contains one parental strand and one newly synthesized strand.

3. The Meselson and Stahl experiment (1958) proved:
   A. DNA transcription
   B. DNA translation
   C. Semiconservative replication
   D. Protein synthesis (C)

Explanation : Meselson and Stahl demonstrated that DNA replication occurs by a semiconservative method.

4. The enzyme responsible for unwinding the DNA helix is:
   A. DNA ligase B. Helicase
   C. Primase D. Topoisomerase (B)

Explanation : Helicase helps in uncoiling and separating the two DNA strands during replication.

5. Primase synthesizes:
   A. DNA fragments
   B. Protein molecules
   C. RNA primer
   D. Okazaki fragments (C)

Explanation : Primase forms a short RNA primer at the origin of replication.

6. DNA polymerase synthesizes new DNA strands in which direction?
   A. 3′ → 5′
   B. 5′ → 3′
   C. Both directions
   D. No fixed direction (B)

Explanation : DNA polymerase can add nucleotides only in the 5′ → 3′ direction.

7. Discontinuous DNA synthesis occurs on the:
   A. Leading strand
   B. Lagging strand
   C. Parent strand
   D. Template strand only (B)

Explanation : The lagging strand is synthesized discontinuously, producing Okazaki fragments.

8. Okazaki fragments are joined together by:
   A. Helicase
   B. Primase
   C. DNA ligase
   D. Topoisomerase (C)

Explanation : DNA ligase connects discontinuously synthesized DNA fragments.

9. The function of topoisomerase is to:
   A. Synthesize RNA primer
   B. Reduce tension in DNA helix
   C. Join DNA fragments
   D. Add nucleotides (B)

Explanation : Topoisomerase helps in further loosening the tension created during DNA unwinding.

10. DNA replication in eukaryotes occurs during:
    A. G_1 phase
    B. S phase
    C. G_2 phase
    D. M phase (B)

Explanation : In eukaryotic cells, DNA replication takes place during the S-phase of the cell cycle.