Practice Test 03 Answer Key

Part A: Multiple Choice

1. **B** (S phase)
2. **A** (Mitosis produces somatic cells; meiosis produces gametes)
3. **B** (Metaphase)
4. **A** (Prophase I of Meiosis)
5. **C** (23)
6. **A** (Failure of chromosomes to separate correctly)
7. **C** (Cytoplasm)
8. **A** (G1)
9. **B** (Dominant)
10. **C** (Heterozygous)
11. **B** (3:1)
12. **B** (Genes on different chromosomes segregate independently)
13. **C** (50%) - Son gets X from mom. Mom is carrier (X^C X^c). 50% chance of X^c.
14. **B** (Codominance)
15. **B** (Autosomal dominant)
16. **B** (1 Red : 2 Pink : 1 White)
17. **D** (Epithelial)
18. **B** (Rapid diffusion)
19. **D** (Blood)
20. **B** (Fibers and ground substance)
21. **C** (Striated and voluntary)
22. **A** (Glial cells)
23. **C** (Cardiac muscle)
24. **B** (Epidermis of the skin)
25. **C** (Heat production is primarily muscle)
26. **B** (Diaphysis)
27. **B** (Forming new bone)
28. **A** (Osteon)

29. **C** (Blood cells)
30. **B** (A fluid-filled cavity consisting of a capsule)
31. **C** (Cervical spine)
32. **B** (Parathyroid hormone / PTH)

Part B: Fill in the Blank

1. Cytokinesis
2. Homozygous
3. Phenotype
4. Adipose
5. Smooth
6. Osteocytes
7. Axial
8. Pedigree
9. Incomplete
10. Autosomes

Part C: Short Answer

1. **Mitosis vs Meiosis**: Mitosis involves one division producing two GMO-identical diploid somatic cells for growth/repair. Meiosis involves two divisions producing four unique haploid gametes for sexual reproduction.

2. **Test Cross**: Cross the dominant individual (A?) with a homozygous recessive (aa). If any offspring show the recessive trait, the unknown parent must be heterozygous (Aa). If all are dominant, the parent is likely homozygous (AA).

3. **Epithelium**: Simple epithelium has one layer and is for diffusion/absorption (e.g., alveoli). Stratified has multiple layers and is for protection (e.g., skin).

4. **Bone Remodeling**: Osteoblasts build new bone matrix, storing calcium. Osteoclasts break down bone matrix, releasing calcium. They work together to reshape bone and maintain calcium levels.

5. **Homeostasis**: Homeostasis is the maintenance of stable internal conditions. The skeleton stores calcium; when blood calcium is low, osteoclasts release it from bone to restore the balance (negative feedback).