BIOL-8 Practice Test 04

Module 8: Cell Division (Mitosis & Meiosis)

Instructions: This practice test covers material from Module 8. Answer all questions to the best of your ability.

Part A: Multiple Choice

1. During which part of the cell cycle is DNA copied? A) G1 phase B) S phase C) G2 phase D) Mitosis

2. The correct order of the stages of mitosis is: A) Metaphase → Prophase → Anaphase → Telophase B) Prophase → Anaphase → Metaphase → Telophase C) Prophase → Metaphase → Anaphase → Telophase D) Telophase → Anaphase → Metaphase → Prophase

3. During which stage of mitosis do chromosomes line up along the middle of the cell? A) Prophase B) Metaphase C) Anaphase D) Telophase

4. At the end of mitosis and cytokinesis, the result is: A) Two genetically identical diploid cells B) Four genetically unique haploid cells C) Two unique diploid cells D) Four identical haploid cells

5. What is the purpose of mitosis? A) To produce sex cells (gametes) B) Growth, repair, and replacement of body cells C) To increase genetic variation D) To reduce the chromosome number by half

6. Sister chromatids are held together at a structure called the: A) Centriole B) Spindle C) Centromere D) Telomere

7. During which stage do sister chromatids separate and move to opposite ends of the cell? A) Prophase B) Metaphase C) Anaphase D) Telophase

8. The division of the cytoplasm at the end of cell division is called: A) Karyokinesis B) Cytokinesis C) Interphase D) Binary fission

9. Meiosis occurs in: A) All body cells B) Only germ cells (to produce gametes) C) Only bacteria D) Skin cells for repair

10. How many cells are produced at the end of meiosis? A) Two diploid cells B) Two haploid cells C) Four diploid cells D) Four haploid cells

11. Crossing over, which increases genetic diversity, happens during: A) Prophase of mitosis B) Prophase I of meiosis C) Metaphase II of meiosis D) Cytokinesis

12. If a human body cell has 46 chromosomes, how many chromosomes will be in a sperm or egg cell? A) 46 B) 92 C) 23 D) 12

13. Homologous chromosomes separate during: A) Anaphase of mitosis B) Anaphase I of meiosis C) Anaphase II of meiosis D) Prophase II of meiosis

14. A cell with two complete sets of chromosomes is called: A) Haploid (n) B) Diploid (2n) C) Triploid (3n) D) Polyploid

15. Independent assortment — the random lineup of homologous pairs — occurs during: A) Metaphase of mitosis B) Metaphase I of meiosis C) Anaphase II of meiosis D) Prophase of mitosis

16. Nondisjunction (failure of chromosomes to separate properly) can lead to: A) Identical twins B) Down syndrome (Trisomy 21) C) Faster cell division D) DNA replication errors

17. Uncontrolled cell division is known as: A) Apoptosis B) Cancer C) Meiosis D) Differentiation

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Part B: Fill in the Blank

18. Interphase consists of three sub-phases: _, _, and ____.

19. Mitosis produces cells for growth and repair, while meiosis produces ___.

20. The pairing of homologous chromosomes during Prophase I is called ___.

21. A cell with only one set of chromosomes (like a gamete) is described as ___.

22. After DNA replication, the two identical copies of a chromosome are called ___ and they are joined at the ___.

Part C: Short Answer

23. List four key differences between mitosis and meiosis (consider: purpose, number of divisions, number of resulting cells, and ploidy of those cells).

24. Describe what happens during each stage of mitosis: Prophase, Metaphase, Anaphase, and Telophase.

25. Explain what crossing over and independent assortment are. Why are they important for genetic variation?

26. What is nondisjunction? Name one specific condition caused by it and describe the chromosome error involved.

End of Practice Test 04