

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) The phase of mitosis during which the nuclear envelope fragments and the nucleoli disappear is called
 - A) interphase.
 - B) telophase.
 - C) prophase.
 - D) metaphase.
 - E) anaphase.

- 2) You are the director of research for a drug company. A list of candidate drugs is brought to you. Which of the following shows the greatest promise as a cancer chemotherapy agent? A drug that
 - A) interferes with cellular respiration.
 - B) prevents crossing over.
 - C) prevents sister chromatids from separating at anaphase.
 - D) causes cells to divide at a right angle from their usual orientation.
 - E) prevents tetrad formation.

- 3) A benign tumor differs from a malignant tumor in that a benign tumor
 - A) never causes health problems.
 - B) spreads from the original site.
 - C) is cancerous.
 - D) can only arise in the brain, whereas a malignant tumor can arise anywhere in the body.
 - E) does not metastasize.

- 4) Cancer is not usually inherited because
 - A) the causes of cancer are not usually genetic.
 - B) cancer typically causes disruptions of meiosis.
 - C) people with cancer usually die before reproducing.
 - D) the chromosomal changes in cancer are usually confined to somatic cells.
 - E) the cancerous cells usually interfere with the ability to produce gametes.

- 5) During which stage of meiosis do synapsis and the formation of tetrads occur?
 - A) prophase II
 - B) interphase I
 - C) interphase II
 - D) prophase I
 - E) None of the choices are correct.

- 6) Two chromosomes in a nucleus that carry loci for the same traits in the same positions on the chromosome but specify different versions of some traits constitute a pair of
- A) complementary chromosomes.
 - B) polyploid chromosomes.
 - C) heterologous chromosomes.
 - D) homologous chromosomes.
 - E) None of the choices are correct.
- 7) Which of the following is a feature of plant cell division that distinguishes it from animal cell division?
- A) Cytokinesis does not occur.
 - B) The nucleolus disappears and then reappears.
 - C) Four new cells (rather than two) are produced per mitotic division.
 - D) A cleavage furrow forms.
 - E) A cell plate forms.
- 8) The creation of offspring carrying genetic information from just a single parent is called
- A) sexual reproduction.
 - B) asexual reproduction.
 - C) a life cycle.
 - D) regeneration.
 - E) None of the choices are correct.
- 9) The process by which the cytoplasm of a eukaryotic cell divides to produce two cells is called
- A) mitosis.
 - B) spindle formation.
 - C) binary fission.
 - D) telophase.
 - E) cytokinesis.
- 10) Eukaryotic cells spend most of their cell cycle in which phase?
- A) metaphase
 - B) interphase
 - C) telophase
 - D) anaphase
 - E) prophase

11) Which of the following help maintain the structure of chromosomes and control the activity of genes?

- A) the nuclear membrane
- B) proteins
- C) lipids
- D) centromeres
- E) ribosomes

12) Sister chromatids are

- A) tightly linked together at a centromere.
- B) unique to prokaryotes.
- C) formed when chromatids separate during cell division.
- D) made only of DNA.
- E) found right after a cell divides.

13) Which one of the following is *false*? Cell division

- A) is the basis of both sexual and asexual reproduction.
- B) can reproduce an entire organism.
- C) is common in eukaryotes but rare in prokaryotes.
- D) is necessary for development to occur.
- E) ensures the continuity of life from generation to generation.

14) With the exception of identical twins, siblings who have the same two biological parents are likely to look similar, but not identical, to each other because they have

- A) only a 20% chance of sharing the same combination of genes.
- B) the same combination of traits but different genes.
- C) a similar but not identical combination of genes.
- D) identical genes but different chromosomes.
- E) identical chromosomes but not identical genes.

MYP Biology

MITOSIS & MEIOSIS EXAM

Multiple Choice

Identify the choice that best completes the statement or answers the question.

15. The chromosomes and genes are actually replicated during
- a. anaphase.
 - b. metaphase.
 - c. interphase.
 - d. prophase.
 - e. telophase.

16. The chromosomes are aligned at the spindle equator during
- a. anaphase.
 - b. metaphase.
 - c. interphase.
 - d. prophase.
 - e. telophase.

17. When a cell undergoes mitosis, the daughter cells must inherit
- a. DNA.
 - b. organelles.
 - c. cytoplasm.
 - d. DNA and cytoplasm.
 - e. DNA, organelles, and cytoplasm.

18. Crossing over is one of the most important events in meiosis because
- a. it produces new arrays of alleles on chromosomes.
 - b. homologous chromosomes must be separated into different daughter cells.
 - c. the number of chromosomes allotted to each daughter cell must be halved.
 - d. homologous chromatids must be separated into different daughter cells.
 - e. all of these

19. Crossing over usually occurs in which of the following stages of meiosis?
- a. prophase I.
 - b. interphase.
 - c. anaphase II.
 - d. metaphase I.
 - e. telophase II.

20. Asexually produced daughter cells are
- a. identical to each other.
 - b. identical to the mother cell.
 - c. different from the mother cell.
 - d. different from each other.
 - e. identical to each other and identical to the mother cell.

21. Checkpoint genes that stimulate mitosis are called
- a. carcinogens.
 - b. oncogenes.
 - c. mitogens.
 - d. tumor suppressor genes.
 - e. growth inhibitor genes.

22. If a parent cell has 16 chromosomes and undergoes meiosis, the resulting cells will have how many chromosomes?
- 64
 - 32
 - 16
 - 8
 - 4
23. Sexual reproduction
- leads to uniform characteristics in a population.
 - results in new combinations of genetic traits.
 - produces genetic clones.
 - requires less tissue differentiation than asexual reproduction.
 - produces genetic clones and requires less tissue differentiation than asexual reproduction.
24. Each of the cells formed during telophase I is
- diploid.
 - tetraploid.
 - in synapsis.
 - ready to be fertilized.
 - haploid.
25. Chromosomes are duplicated during which period?
- M
 - D
 - G₁
 - G₂
 - S
26. The sister chromatids become separated during ____ of meiosis.
- metaphase I
 - anaphase I
 - telophase I
 - anaphase II
 - prophase II
27. The nuclear membrane reforms during
- anaphase.
 - metaphase.
 - interphase.
 - prophase.
 - telophase.
28. Cells with two sets of genetic information are described by the term
- polyploid.
 - diploid.
 - triploid.
 - haploid.
 - tetraploid.

29. Crossing over
- generally results in binary fission.
 - involves nucleoli.
 - involves breakages and exchanges being made between sister chromatids.
 - alters the composition of chromosomes and results in new combinations of alleles being channeled into the daughter cells.
 - all of these

30. During meiosis II
- cytokinesis results in the formation of a total of two cells.
 - sister chromatids of each chromosome are separated from each other.
 - homologous chromosomes pair up.
 - homologous chromosomes separate.
 - sister chromatids exchange parts.

31. Which of the following is most probable at a metaphase I alignment?
- All maternal chromosomes are on the same side.
 - All paternal chromosomes are on the same side.
 - Each side has a mixture of maternal and paternal chromosomes.
 - All maternal chromosomes are on one side, all paternal on the other.
 - All of these are equally probable.

32. The spindle apparatus is made of
- Golgi bodies.
 - microtubules.
 - endoplasmic reticulum.
 - nucleoprotein.
 - chromatids.

33. Which does NOT produce variation?
- crossing over
 - random alignment of chromosomes during meiosis
 - asexual reproduction
 - genetic recombination of alleles
 - sexual reproduction

34. Meiosis typically results in the production of
- 2 diploid cells.
 - 4 diploid cells.
 - 4 haploid cells.
 - 2 haploid cells.
 - 1 triploid cell.
- X X
X X

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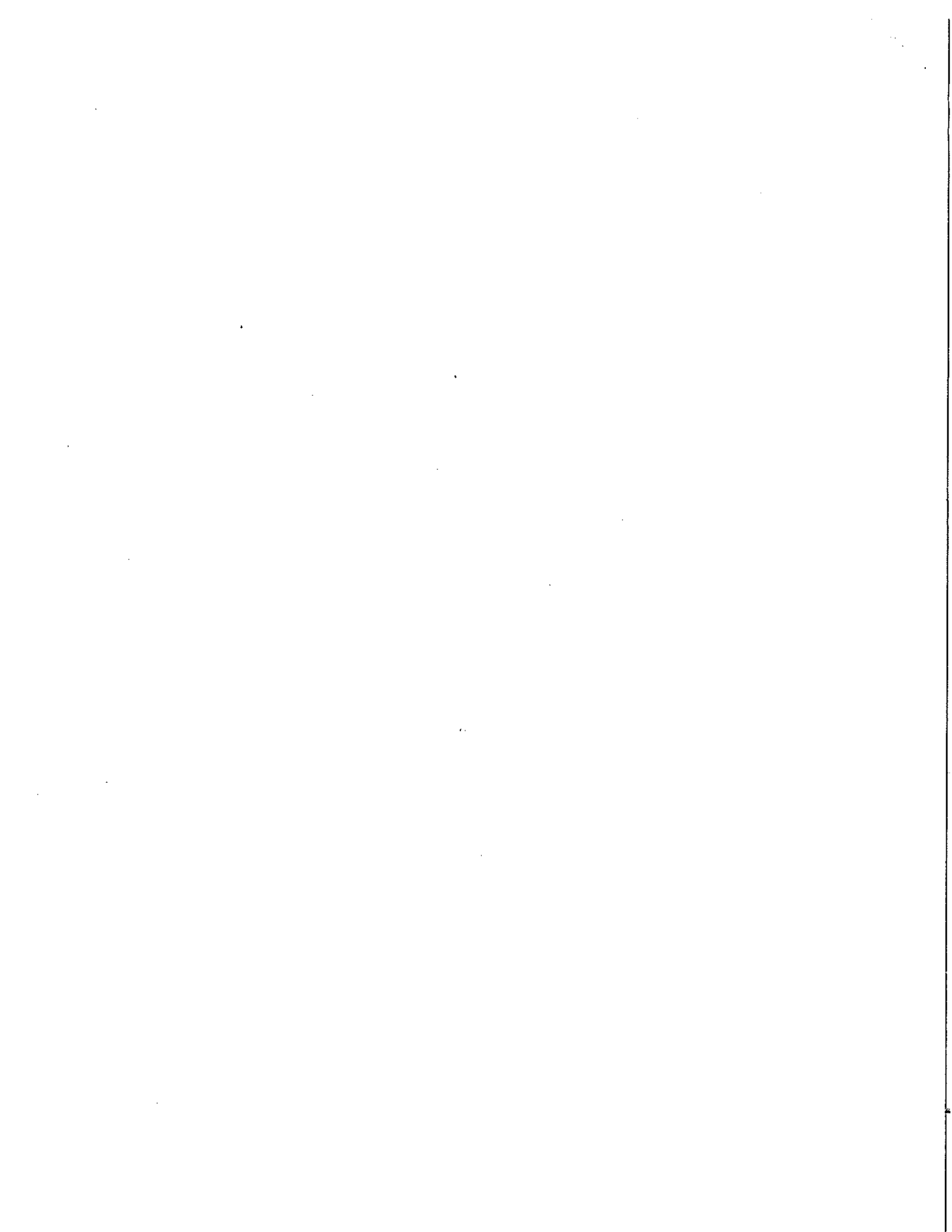
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Which of the following is the proper sequence for mitosis?

- I. metaphase
- II. telophase
- III. prophase
- IV. anaphase

- a. I, III, IV, II
- b. I, II, III, IV
- c. III, I, IV, II
- d. IV, I, III, II
- e. III, IV, I, II



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