

**MCQ TEST SERIES****S12-BZ-C4-PRINCIPLES OF INHERITANCE AND VARIATION****4.6. KARYOTYPING 4.7. PEDIGREE ANALYSIS**

1. The term "karyotype" refers to:
  - A. Genetic makeup of the mitochondria
  - B. Enzyme profile of the cell
  - C. Photographic arrangement of chromosomes in homologous pairs
  - D. Mapping of alleles in a gene
2. The condensed and diagrammatically arranged representation of chromosomes is called:
  - A. Idiogram
  - B. Chromatogram
  - C. Cytogram
  - D. Codon chart
3. In karyotyping, cells are typically arrested at which phase of mitosis?
  - A. Prophase
  - B. Anaphase
  - C. Telophase
  - D. Metaphase
4. The chemical used to arrest cells at metaphase during karyotype preparation is:
  - A. Ethanol
  - B. Acetic acid
  - C. Colchicine
  - D. Iodine
5. The technique of karyotyping was first developed by:
  - A. Watson and Crick
  - B. Barr and Lyon
  - C. Tjio and Levan
  - D. Landsteiner and Wiener
6. Which of the following is not a direct application of karyotyping?
  - A. Sex determination
  - B. Detection of chromosomal aberrations
  - C. Mapping gene loci
  - D. Identifying aneuploidy
7. In human karyotyping, chromosomes are arranged in groups labeled:
  - A. A to H
  - B. 1 to 23
  - C. A to G
  - D. A to Z
8. A pedigree is used to:
  - A. Determine DNA sequences
  - B. Determine the structure of proteins
  - C. Trace inheritance of traits across generations
  - D. Sequence whole genomes
9. A circle in a pedigree chart represents:
  - A. A male
  - B. A carrier individual
  - C. A female
  - D. A dominant individual
10. A square shaded completely in a pedigree indicates:
  - A. Normal male
  - B. Affected male
  - C. Carrier female
  - D. Heterozygous individual
11. In a pedigree, a horizontal line connecting a male and a female indicates:
  - A. Sibling relationship
  - B. Mating
  - C. Cousins
  - D. Genetic linkage
12. What pattern is suggested when a trait appears in every generation in both sexes equally?
  - A. Autosomal dominant
  - B. Autosomal recessive
  - C. X-linked recessive
  - D. Y-linked
13. A trait that skips generations and reappears more in males than females is likely:
  - A. Autosomal dominant
  - B. X-linked recessive
  - C. Y-linked
  - D. Autosomal codominant
14. When only males in a pedigree show a trait passed from father to son, the trait is:
  - A. X-linked dominant
  - B. Autosomal recessive
  - C. Y-linked (holandric)
  - D. Mitochondrial
15. Carrier status in females for an X-linked recessive condition is indicated by:
  - A. Half-shaded circle
  - B. Fully shaded circle
  - C. Open square
  - D. Half-shaded square

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**ANSWER KEY**

1. C
2. A
3. D
4. C
5. C
6. C
7. C
8. C
9. C
10. B
11. B
12. A
13. B
14. C
15. A

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