Bio12-Q2W8-Quarter Exam 2

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

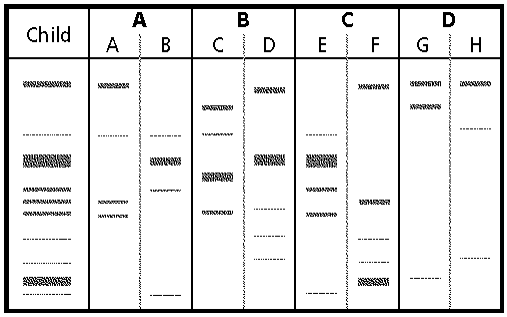


Figure 13-8

____ 1. According to Figure 13-8, which parents might give a false positive if only the longer DNA fragments were analyzed?
a. C
b. B
c. A
d. D

____ 2. According to Figure 13-8, which are the parents of the child?
a. B
b. D
c. C
d. A

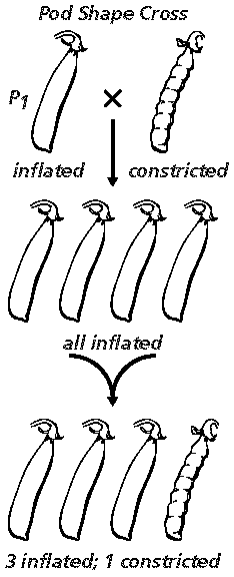


Figure 10-5

____ 3. What is the phenotype of generation 1 in Figure 10-5?
a. constricted
b. Ii
c. inflated
d. II

____ 4. What is the genotype of generation 1 in Figure 10-5?
a. Ii
b. ii
c. II
d. I

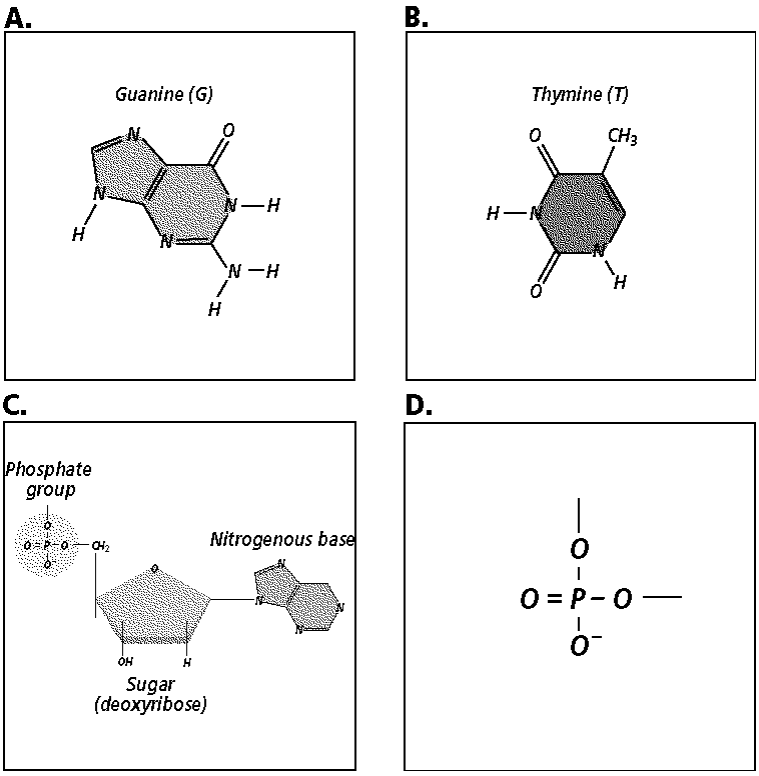


Figure 11-3

____ 5. Which structure shown in Figure 11-3 is a pyrimidine?
a. C
b. D
c. A
d. B

____ 6. Which structure shown in Figure 11-3 does not contain a nitrogenous base?
a. A
b. C
c. D
d. B

____ 7. Which structure shown in Figure 11-3 would attract a free cytosine nucleotide?
a. C
b. B
c. A
d. D

____ 8. Both hemophilia and red-green color blindness are _____.
a. caused by a dominant gene
b. sex-linked conditions
c. located on the Y chromosome
d. inherited only from the mother

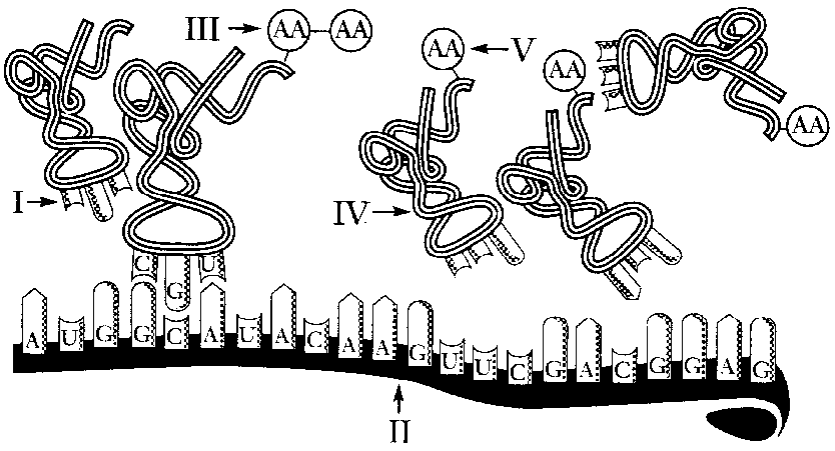


Figure 11-1

____ 9. The process illustrated in Figure 11-1 is called _____.
a. translation
b. transcription
c. replication
d. monoploidy

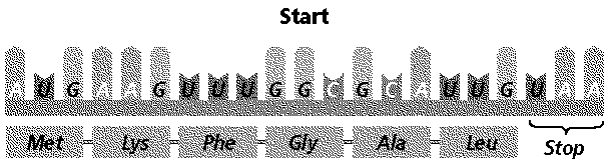
____ 10. In which part of the cell does this process shown in Figure 11-1 take place?
a. in food vacuoles
b. in the nucleus
c. at the ribosomes
d. on the chromosome

____ 11. Which of the structures in Figure 11-1 are composed of RNA?
a. III and IV
b. III and V
c. I and V
d. II and IV

____ 12. A DNA segment is changed from -AATTAGAAATAG- to -ATTAGAAATAG-. This is a ____.
a. inversion
b. translation
c. point mutation
d. frameshift mutation

____ 13. Watson and Crick were the first to suggest that DNA is _____.
a. the genetic material
b. a protein molecule
c. the shape of a double helix
d. a short molecule

____ 14. Ribosomes are made of _____.
a. rRNA and protein
b. protein and tRNA
c. tRNA and mRNA
d. rRNA and mRNA



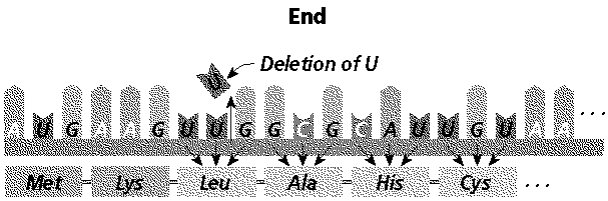


Figure 11-4

____ 15. What will be the result of the mutation in Figure 11-4?
a. only one amino acid will change
b. nearly every amino acid in the protein will be changed
c. it will have no affect on protein function
d. the organism will die

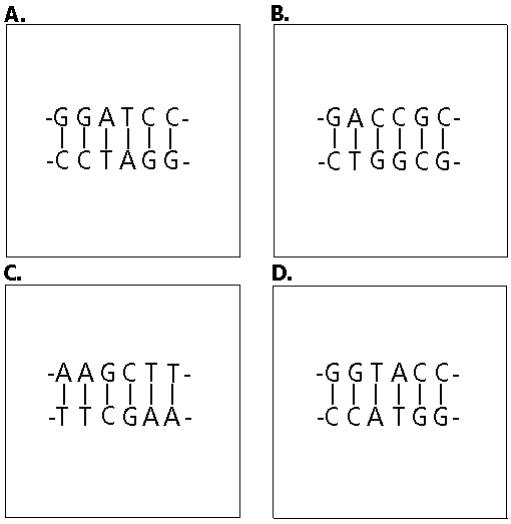


Figure 13-6

____ 16. Which segment in Figure 13-6 will attach to genetic material with the sequence TCGA?
a. C
b. D
c. A
d. B

____ 17. If the segments in Figure 13-6 are mixed with several restriction enzymes, which will not be cleaved?
a. A
b. B
c. D
d. C

____ 18. Which segment in Figure 13-6 is not a palidrome?
a. D
b. B
c. A
d. C

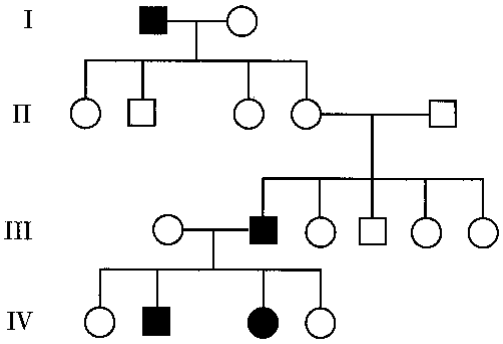


Figure 12-3

____ 19. According to the pedigree in Figure 12-3, how many of the offspring in the III generation show the normal trait?

a. 5
b. 4
c. 2
d. 1

____ 20. Based on Figure 12-3, what do you know about individual III-1's mother?

a. She was homozygous dominant.
b. She had the trait.
c. She was homozygous recessive.
d. She was a carrier.

____ 21. A cross between a white rooster and a black hen results in 100% blue Andalusian offspring. When two of these blue offspring are mated, the probable phenotypic ratio seen in their offspring would be _____.

a. 75% black, 25% white
b. 25% black, 50% blue, 25% white
c. 75% blue, 25% white
d. 100% blue

Help Wanted
Positions Available in the genetics industry. Hundreds of entry-level openings for tireless workers. No previous experience necessary. Must be able to transcribe code in a nuclear environment. The ability to work in close association with ribosomes is a must.
Accuracy and Speed vital for this job in the field of translation. Applicants must demonstrate skills in transporting and positioning amino acids. Salary commensurate with experience.
Executive Position available. Must be able to maintain genetic continuity through replication and control cellular activity by regulation of enzyme production. Limited number of openings. All benefits.
Supervisor of production of proteins—all shifts. Must be able to follow exact directions from double-stranded template. Travel from nucleus to the cytoplasm is additional job benefit.

Table 11-1

____ 22. Applicants for the second job of the Help Wanted ad in Table 11-1, "Accuracy and Speed," could qualify if they were _____.

a. rRNA
b. tRNA
c. mRNA
d. DNA

____ 23. Applicants for the fourth job of the Help Wanted ad in Table 11-1, "Supervisor," could qualify if they were _____.

a. DNA
b. tRNA
c. rRNA
d. mRNA

____ 24. A phenotype that results from a dominant allele must have at least _____ dominant allele(s) present in the parent(s).
a. one
b. four
c. three
d. two

____ 25. Mendel's law of segregation states that during meiosis, the factors that control each trait separate, and only _____ from each pair is/are passed to the offspring.
a. two factors
b. the recessive trait
c. one factor
d. the dominant trait

____ 26. In humans, red-green color blindness is _____.
a. inherited in males from their fathers
b. caused by a recessive allele
c. equally common in both sexes
d. produced in males by a heterozygous genotype

____ 27. A DNA nucleotide may be made up of a phosphate group, along with _____.
a. deoxyribose sugar and uracil
b. ribose sugar and cytosine
c. deoxyribose sugar and thymine
d. ribose sugar and adenine

____ 28. Cystic fibrosis and Tay-Sachs disease are typical of recessive disorders concentrated in _____.
a. ethnic groups
b. the United States
c. families with a single child
d. countries with hot, wet climates

____ 29. The effort to completely map and sequence the human genome will likely result in knowing the sequence of the approximately _____ genes on the 46 human chromosomes.
a. 46
b. 10 000
c. 35 000 to 40 000
d. 3 billion

____ 30. Individuals with Huntington's disease _____.
a. suffer from a form of aneuploidy
b. find breathing difficult and suffer frequent lung infections
c. undergo progressive deterioration of the nervous system
d. must have frequent transfusions because their blood lacks a clotting factor

____ 31. The reason a fetus afflicted with phenylketonuria is <u>not</u> affected until after birth is that _____.
a. the missing chromosome is compensated for by the mother prior to delivery
b. because the fetus does not breathe, the accumulation of mucus in the lungs is not dangerous
c. prior to birth, the mother's enzyme level prevents accumulation of the dangerous chemical
d. the child is not bruised or cut during development and therefore does not require a blood-clotting factor

____ 32. A phenotypic trait that results from a single dominant allele is _____.
a. cystic fibrosis
b. more frequent in its appearance
c. polydactyly
d. attached earlobes

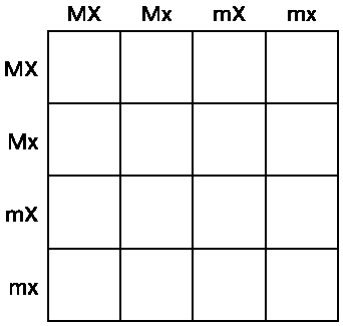


Figure 10-7

____ 33. How should the top row of Figure 10-7 read?

a. MMXX, MMXx, MmXX, MmXx
b. MMxX, MMxx, MmxX, Mmxx
c. mMxX, mMxx, mmxX, mmxx
d. mMXX, mMXx, mmXX, mmXx

____ 34. What must be on either end of any genetic material that is inserted into the cleaved DNA in Figure 13-5?

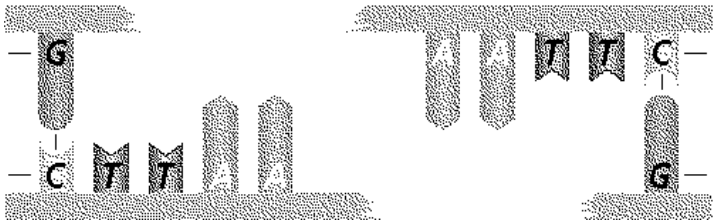


Figure 13-5

a. AATT
b. CGCG
c. ATAT
d. CCGG

____ 35. Which series is arranged in order from largest to smallest in size?

a. nucleotide, chromosome, cell, DNA, nucleus
b. cell, nucleotide, nucleus, DNA, chromosome
c. chromosome, nucleus, cell, DNA, nucleotide
d. cell, nucleus, chromosome, DNA, nucleotide

____ 36. Eye color in humans is the result of _____ inheritance.

a. polygenic
b. simple dominant
c. sex-linked
d. multiple allelic

____ 37. Pollination can best be described as _____.

a. the formation of male and female sex cells
b. the fusing of the egg nucleus with the pollen nucleus
c. the type of cell division that produces diploid gametes
d. the transfer of the male pollen grain to the female organ

____ 38. The chromosome abnormality that occurs when part of one chromosome breaks off and is added to a different chromosome is _____.

a. inversion
b. nondisjunction
c. translocation
d. deletion

____ 39. Which of the following would be an example of gene therapy technology?

a. cutting DNA into fragments with restriction enzymes
b. separation DNA fragments using gel electrophoresis
c. development of a nasal spray that contains copies of the normal gene that is defective in persons with cystic fibrosis
d. modifying E. coli to produce indigo dye for coloring denim blue jeans

____ 40. The process used to separate DNA segments of different lengths is _____.

a. gene amplification
b. gel electrophoresis
c. PCR
d. all of these

____ 41. What is the genotype in the bottom left-hand quadrant in Figure 10-6?

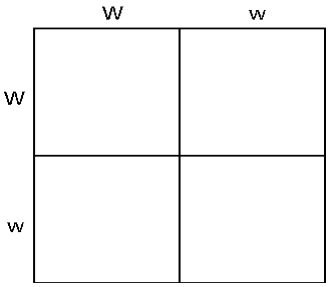


Figure 10-6

a. Ww
b. wW
c. ww
d. WW

____ 42. Most human genetic disorders are caused by the expression of _____.
a. recessive alleles
b. sex-linked heredity
c. one dominant allele
d. two dominant alleles

____ 43. A useful device for predicting the possible offspring of crosses between different genotypes is the _____.
a. law of independent assortment
b. Punnett square
c. law of dominance
d. testcross

____ 44. Which one of the following nucleotide pair bonds would be found in a DNA molecule?
a. guanine-cytosine
b. adenine-guanine
c. cytosine-uracil
d. adenine-cytosine

____ 45. Which of the following describes an organism that has the genotype Bb?
a. heterozygous
b. homozygous
c. inbreed
d. all of these

____ 46. Messenger RNA is formed in the process of _____.
a. replication
b. transcription
c. translation
d. mutation

____ 47. Because the gene for red-green color blindness is located on the X chromosome, it is normally <u>not</u> possible for a _____.
a. color blind father to pass the gene on to his daughter
b. carrier mother to pass the gene on to her son
c. color blind father to pass the gene on to his son
d. carrier mother to pass the gene on to her daughter

____ 48. Genes located on homologous chromosomes may have alternate forms that control different forms of a trait. These alternate forms of a gene are called _____.
a. alleles
b. centromeres
c. gametes
d. phenotypes

____ 49. In mink, brown fur color is dominant to silver-blue fur color. If a homozygous brown mink is mated with a silver-blue mink and 8 offspring are produced, how many would be expected to be silver-blue?
a. 6
b. 3
c. 8
d. 0

____ 50. A human genetic disorder caused by a dominant gene is _____.
a. cystic fibrosis
b. Huntington's disease
c. Tay-Sachs disease
d. phenylketonuria

____ 51. Which of the following genetic disorders can be detected by karyotyping?
a. hemophilia and cystic fibrosis
b. Tay-Sachs disease and phenylketonuria
c. Down syndrome
d. Klinefelter syndrome and sickle-cell anemia

____ 52. A white mouse whose parents are both white produces only brown offspring when mated with a brown mouse. The white mouse is most probably _____.
a. homozygous dominant
b. heterozygous
c. haploid
d. homozygous recessive

____ 53. Which of the following situations is most usual for a dominant allele that results in severe effects in the offspring?
a. Only a single offspring has the trait.
b. Both parents have the trait.
c. The trait occurs by mutation.
d. none of these

____ 54. A child is diagnosed with a rare genetic disease. Neither parent has the disease. How might the child have inherited the disorder?
a. The disorder is sex linked and inherited only from the father.
b. The disorder is dominant and was carried by a parent.
c. The disorder is recessive and carried by both parents.
d. The disorder could occur only as a mutation in the child because neither parent had the disease.

____ 55. A trait controlled by four alleles is said to have _____.
a. autosomes
b. homologous alleles
c. hybridization
d. multiple alleles

____ 56. According to Figure 13-7, which DNA sequence will be cleaved by EcoRI, which cuts AATT/TTAA?

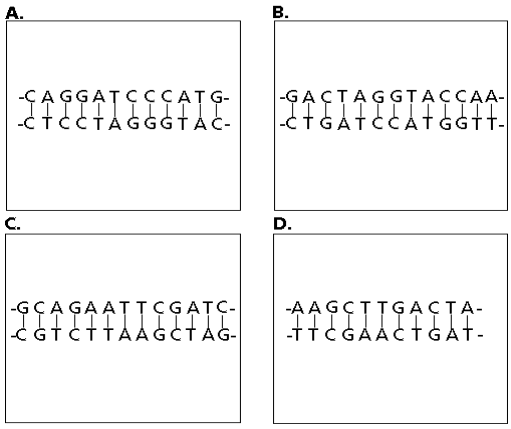


Figure 13-7

a. A
b. D
c. C
d. B

____ 57. The pairing of _____ in DNA is the key feature that allows DNA to be copied.
a. chromosomes
b. nucleotides
c. codons
d. nitrogen bases

____ 58. The passing on of traits from parents to offspring is called _____.
a. inbreeding
b. heredity
c. genetics
d. gene splicing

____ 59. Sickle-cell anemia is a genetic disease common to human populations from Africa and the Mediterranean coast. The incidence is greater in these regions than elsewhere because the heterozygous state provides protection against malaria. Individuals afflicted with sickle-cell anemia _____.
a. are two times more likely to be males than to be females
b. suffer tissue damage resulting from oxygen deprivation
c. will not exhibit the symptoms of the disease until around age 40
d. lack an enzyme that breaks down a lipid produced in the central nervous system

____ 60. The gamete that contains genes contributed only by the mother is _____.
a. an egg
b. dominant
c. the sperm
d. a zygote

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