Human Genetics 14th edition Lewis Test Bank

SKU: 9781266110177-TEST-BANK

Chapter 01 Test Bank

CORRECT ANSWERS ARE LOCATED IN THE 2ND HALF OF THIS DOC.

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

1) Genetics is the study of
   A) inherited traits.
   B) how organisms reproduce.
   C) how life originated.
   D) how the environment causes disease.

2) In which choice are the entries listed from smallest to largest?
   A) DNA building block - gene - chromosome - genome
   B) DNA building block - RNA building block - protein
   C) Gene - cell - DNA - genome
   D) Chromosome - genome - cell - DNA building block

3) The complete genetic material of an organism is its
   A) genome.
   B) chromosome.
   C) phenotype.
   D) genotype.

4) The number of sets of our genome in most of our cells is _____.
   A) 1
   B) 2
   C) 3
   D) 4

5) An estimated_____ DNA base pairs comprise the human genome.
   A) 32,000
   B) 320,000
   C) 3.2 million
   D) 3.2 billion

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6) The field of_____ addresses concerns arising from the use of new genetic technologies, including tests, treatments, privacy, and discrimination.
   A) metaethics
   B) bioethics
   C) biotechnology
   D) genetics

7) Variants of a gene are called
   A) genotypes.
   B) phenotypes.
   C) alleles.
   D) single nucleotide polymorphisms.

8) Humans have _____ pairs of chromosomes.
   A) 23
   B) 38
   C) 46
   D) 32

9) A change in a gene's DNA sequence is a
   A) genotype.
   B) nucleotide.
   C) mutation.
   D) genome.

10) In general, RNA molecules
   A) comprise the chromosomes.
   B) serve as messengers to allow the information in DNA to be used to construct proteins.
   C) entwine with DNA molecules to encode proteins.
   D) form double helices that encode DNA sequences.

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Chapter 01 Test Bank

11) A genotype refers to
- A) the alleles present in an individual.
- B) expression patterns of certain genes.
- C) the environmental components of a trait.
- D) the number of chromosomes that a person has.

12) A chart that displays paired chromosomes in order of size is a
- A) phenotype.
- B) genotype.
- C) karyotype.
- D) genome.

13) A human cell has
- A) 22 pairs of sex chromosomes and one pair of autosomes.
- B) 22 pairs of autosomes and one pair of sex chromosomes.
- C) 23 pairs of autosomes.
- D) 23 pairs of autosomes and a pair of Y chromosomes.

14) The Y chromosome
- A) forms the somatic cells.
- B) is a sex chromosome.
- C) contains discontinuous DNA sequence.
- D) is present in all humans.

15) Polydactyly is considered a Mendelian trait because
- A) it is caused by linked genes.
- B) it is caused by a single gene.
- C) it is caused due to environmental factors.
- D) it affects the stem cells.

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16) Which of the following traits is considered Mendelian?
- A) A trait which is caused by linked genes
- B) A trait which is caused by a single gene
- C) A trait which is caused by environmental factors
- D) A trait which is multifactorial

17) One way to study the human genome is to
- A) determine the twisting patterns of the two sides of the double helix.
- B) determine the sequence of sugars and phosphates.
- C) determine the DNA sequence.
- D) conduct a phenotype-wide association study.

18) During transcription, the sequence of one strand of a DNA molecule is copied into a related molecule, known as a
- A) gene.
- B) messenger RNA.
- C) protein.
- D) genome.

19) A human body has about _____ cells.
- A) 3.2 billion
- B) 20,600
- C) 30 trillion
- D) 10 to 100 million

20) Cells differentiate by
- A) expressing different subsets of genes.
- B) expressing the entire genome, then silencing some genes.
- C) activating all of the DNA that encodes protein.
- D) becoming stem cells.

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21) The difference between phenotype and genotype is that
A) phenotype refers to the genetic instructions and genotype to their expression.
B) genotype refers to the genetic instructions and phenotype to their expression.
C) the phenotype is RNA and the genotype is DNA.
D) the phenotype is DNA and the genotype is RNA.

22) Shawn's mother and Heather's mother are sisters. Shawn and Heather have_____ of their genes in common.
A) 1/2
B) 1/4
C) 1/8
D) 1/16

23) A gene pool consists of all the alleles in a
A) population.
B) individual.
C) family.
D) neighborhood.

24) A trait or disorder that is complex is
A) present in more than one family member.
B) found only in one part of the world.
C) caused by one or more genes and environmental influences.
D) caused by a single gene, with no environmental input.

25) Body weight must be a complex trait because
A) it is obviously inherited.
B) it responds to lifestyle changes.
C) it is within a certain range.
D) it is inherited to an extent, but can be altered by diet and/or exercise.

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26) Identifying individual drug reactions based on genetics is a growing field called
A) genome editing.
B) pharmacogenetics.
C) metagenomics.
D) applied pharmacology.

27) A piece of fabric left at a crime scene has hairs on it.
What technique would best be used on these hairs to implicate an apprehended suspect?
A) Pharmacogenetics
B) Pedigree analysis
C) DNA profiling
D) Metagenomics

28) Students who suffer from terrible migraine headaches enter a clinical trial. The trial is to test whether certain single nucleotide polymorphisms (SNPs), or small changes in their DNA, are associated with response to one drug but not another. This is an approach called
A) metagenomics.
B) pharmacogenetics.
C) genome editing.
D) applied pharmacology.

29) DNA profiling has been used to
A) identify victims of terrorist attacks and natural disasters.
B) cure metabolic diseases caused by mutations in single genes.
C) treat male infertility.
D) predict how children will do in school.

30) DNA profiling is helpful in
A) curing cancer.
B) analyzing food.
C) treating male infertility.
D) preventing male pattern baldness.

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31) What is the name of the field that is revealing and describing much of the invisible living world by sequencing all of the DNA in a particular habitat?
A) Stem cell science
B) Bioethics
C) Metagenomics
D) Biochemistry

32) Sequencing all the DNA in the fluid that leaks from the bottom of a garbage can is an example of
A) stem cell science.
B) gene expression profiling.
C) metagenomics.
D) DNA profiling.

33) How do researchers in the metagenomics sector operate?
A) They study Mendelian traits in children.
B) They link diseases by shared gene expression.
C) They detect mutations in the protein-encoding part of an individual's genome by using powerful algorithms.
D) They collect and sequence DNA, then consult databases of known genomes to imagine what the organisms to which the DNA belongs might be like.

34) Select the example of genetics.
A) Studying how various members of a royal family are related
B) Studying the shape and size of dinosaur fossils
C) Studying how a disease gene is transmitted within a royal family
D) Studying how the different organelles in a cell work

35) A group of scientists meet to discuss the legal implications of genome editing in humans. This is an example of
A) genealogy.
B) bioethics.
C) metagenomics.
D) DNA profiling.

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36) Sickle-cell anemia results from a beta-globin protein containing the amino acid valine in the place of the amino acid glutamic acid. This is an example of a_____ causing a disease.

A) microbiome
B) gene pool
C) complex trait
D) mutation

37) What is the exome?

A) Sequences in between protein-encoding genes
B) Protein-encoding genes
C) All the DNA in a genome
D) All of the proteins in a cell

38) Based on your knowledge of genetics and evolution, to which listed organism are humans most closely related at the genome level?

A) Dogs
B) Bacteria
C) Slugs
D) Roses

39) Select the example of traditional breeding.

A) Mating dogs with other dogs based on traits such as size, fur color, and temperament
B) Placing human genes into bacteria for production of drugs
C) Placing genes into wheat to aid in disease resistance
D) Adding genes to tomatoes to help them taste better

40) The CRISPR-Cas9 system is a tool to perform

A) exome sequencing.
B) DNA profiling.
C) pharmacogenetics.
D) genome editing.

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41) What type of disease would**NOT** be identified by exome sequencing?

A) A disorder caused by a deletion of a large part of a gene
B) A disorder that is caused by a mutation in a non-coding region of DNA found far away from the gene it affects
C) A disorder caused by a mutation that causes one amino acid to be switched for another amino acid
D) A disorder caused by a mutation that causes amino acids to be added to a protein

42) What is sequenced in exome sequencing?

A) The entire genome
B) The parts of the genome that encode proteins
C) The parts of the DNA that are mutated
D) The parts of the genome that do not encode proteins

43) Approximately how many genes comprise the human exome?

A) 20 million
B) 200,000
C) 2,000
D) 20,000

44) What type of genetic information is represented by the following sequence?
5'-AUCCAGGCAUGG-3'

A) DNA
B) RNA
C) Protein
D) Chromosome

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45) Some human disorders are caused by the presence of an entire extra chromosome. In these cases, instead of having 2 of a certain chromosome in each cell, the individual may have 3 of that chromosome in each cell.
What genetic test would be most useful in determining if an individual has extra copies of a chromosome?

A) Karyotyping
B) Exome sequencing
C) Genome sequencing
D) DNA profiling

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Chapter 01 Test Bank

Answer Key

Test name: Chapter 01 Test Bank

1) A
2) A
3) A
4) B
5) D
6) B
7) C
8) A
9) C
10) B
11) A
12) C
13) B
14) B
15) B
16) B
17) C
18) B
19) C
20) A
21) B
22) C
23) A
24) C
25) D
26) B
27) C
28) B
29) A
30) B
31) C
32) C
33) D
34) C
35) B
36) D
37) B

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38) A
39) A
40) D
41) B
42) B
43) D
44) B
45) A

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