Exam

Name_____

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

1) A protein's shape and chemical behavior are determined by _____. 1) _____
   A) the cell's age
   B) the type of cell in which it resides
   C) the environment of an organism
   D) its linear sequence of amino acids
   E) the cholesterol makeup of the lipid membrane

2) Which of the following is the subdiscipline of biology concerned with the study of heredity and variation at the molecular, cellular, developmental, organismal, and populational levels? 2) _____
   A) molecular biology
   B) genetics
   C) cytogenetics
   D) biochemistry
   E) cell biology

3) _____ is a discipline involved in the development of both hardware and software for processing, storing, and retrieving nucleotide and protein data. 3) _____
   A) Genomics
   B) Proteomics
   C) Bioinformatics
   D) Cloning
   E) Recombinant DNA technology

4) Alternative forms of a gene are called _____. 4) _____
   A) phenotypes
   B) genotypes
   C) meiotic products
   D) alleles
   E) mutants

5) What is a mutation? 5) _____
   A) a change in DNA that leads to death
   B) an inherited changed in DNA sequence that is always bad for an organism
   C) an inherited change in a DNA sequence
   D) an inherited change in DNA sequences that is the source of all genetic variation
   E) the source of all genetic variation

6) What is a homunculus? 6) _____
   A) a sperm or egg containing a miniature adult, perfect in size and proportion
   B) when the mitochondrion grows in size before splitting into two via fission
   C) a large cyst or growth on a plant due to viral infection
   D) the intermediate stage of the DNA after CRISPR-Cas treatment
   E) during development sometimes a growing individual's cell can become mutated and one part of the child has different characteristics than the other

7) What is another term for a biological catalyst? 7) _____
A) protein B) enzyme C) lipid D) ribosome E) codon

8) Organisms that are well understood from a scientific standpoint and are often used in basic biological research are often called _____. 8) _____
A) model organisms
B) clones
C) recombinant DNA technology
D) restriction enzymes
E) vectors

9) The various characteristics of organisms that result from their genetic makeup are collectively referred to as an organism's _____. 9) _____
A) genome
B) proteome
C) alleles
D) genotype
E) phenotype

10) Which of the following molecules serves the function to express the genetic material by being translated to protein? 10) _____
A) lipid
B) DNA
C) cholesterol
D) RNA
E) carbohydrate

11) Given that DNA is the genetic material in prokaryotes and eukaryotes, what other general structures (macromolecules) and substances made by the cell are associated with the expression of that genetic material? 11) _____
A) lipids and carbohydrates
B) chromosomes
C) DNA and RNA
D) RNA (messenger, ribosomal, and transfer), ribosomes, enzymes, and proteins
E) DNA and protein

12) Which of the following processes describes the formation of a complementary RNA molecule? 12) _____
A) transcription
B) replication
C) mutation
D) mosaicism
E) translation

13) What is the term given to the theory that states that the fertilized egg contains a complete miniature adult? 13) _____
A) cell theory
B) preformation
C) conjugation
D) transformation
E) transduction

14) Which of the following is TRUE about alleles? 14) _____
A) An allele is a variant form of a gene.
B) Alleles come in two forms, the good form and the bad form.
C) An individual will only carry one version of an allele.
D) Individuals carry both forms of each allele.
E) The phenotype of the individual will always indicate with certainty the alleles of the individual.

15) A _____ is an organism produced by biotechnology that involves the transfer of hereditary traits across species. 15) _____
A) mutant
B) vector
C) transgenic organism
D) clone
E) frankenfood

16) What represents an organism's genome? 16) _____
A) the nuclear and mitochondrial DNAs
B) all the protein in a cell
C) a catalog of mutations in a cell
D) all the RNA in a cell
E) an organism's genome can be defined as the complete haploid nuclear DNA content of an organism.

17) Name the individual who, while working with the garden pea in the mid-1850s, demonstrated quantitative patterns of heredity and developed a theory involving the behavior of hereditary factors. 17) _____
A) Barbara McClintock
B) Theodor Boveri
C) George Wallace
D) Walter Sutton
E) Gregor Mendel

18) The _____ consists of a linear series of three adjacent nucleotides present in mRNA molecules. 18) _____
A) chromosomal theory of inheritance
B) messenger RNA
C) Watson—Crick base pairing
D) genetic code
E) law of segregation

19) Who, along with Alfred Wallace, formulated the theory of natural selection? 19) _____
A) James Watson
B) Gregor Mendel
C) William Harvey
D) Louis Pasteur
E) Charles Darwin

20) Which of the following are true about codons? 20) _____
A) They are a circular series of nucleotide triplets.
B) They are placed at random in the RNA.
C) They are complementary to RNA and specify amino acids at the ribosome.
D) They are complementary to DNA and specify amino acids at the ribosome.
E) They are complementary to DNA and are a two-nucleotide code for an amino acid.

21) Which of the following is an example of natural selection? 21) _____
A) sometime during human's life they break a bone and it heals
B) human beings develop freckles from being out in the sun
C) depending on the food a turtle eats, it shell may grow faster or slower
D) a bird's beak is able to effectively crack the seeds it encounters
E) bacteria can be effectively killed by treatment with bleach

22) Name the bases in DNA and their pairing specificities. 22) _____
A) adenine:guanine, thymine:cytosine
B) adenine:thymine, guanine:cytosine
C) adenine:uracil, guanine:cytosine
D) adenine:cytosine, guanine:uracil
E) adenine:guanine, guanine:uracil

23) What would happen if, during meiosis, the chromosome number was not halved before egg and sperm formation? 23) _____
A) n would become halved
B) nothing
C) each offspring would have different phenotypes than their parents
D) the spindle would be compromised
E) in each successive generation, the offspring would double their chromosome number

24) Which of the following is the function of DNA? 24) _____
A) DNA serves to hold the information for protein, lipid, and carbohydrate storage.
B) DNA is required when cells are using their ribosomes to translate a protein.
C) DNA is involved in the expression of stored genetic information.
D) DNA is used structurally to hold the nucleus together.
E) DNA is responsible for the storage and replication of genetic information.

25) A fundamental property of DNA's nitrogenous bases that is necessary for the double-stranded nature of its structure is _____. 25) _____
A) complementarity
B) anti-parallel
C) sugar phosphate backbone
D) deoxyribose versus ribose
E) ring structure

26) Once a protein is made, its biochemical or structural properties play a role in producing _____. 26) _____
A) mutant
B) DNA
C) phenotype
D) chromosome
E) genotype

27) Early in the twentieth century, Walter Sutton and Theodor Boveri noted that the behavior of chromosomes during meiosis is identical to the behavior of genes during gamete formation. They proposed that genes are carried on chromosomes, which led to the basis of the _____. 27) _____
A) First Law of Thermodynamics
B) Chromosomal Maintenance Theory
C) Law of Segregation
D) Law of Independent Assortment
E) Chromosome Theory of Inheritance

28) What term is applied to a variety of projects whereby genome sequences are deposited in databases for research purposes? 28) _____
A) genomics
B) genetics
C) proteomics
D) cloning
E) bioinformatics

29) Which of the following contains all the others? 29) _____
A) sugar
B) hydrogen bond
C) DNA strand
D) double helix
E) nucleotide

30) Genetics is the study of _____. 30) _____
A) mutation and recession
B) inheritance and variation
C) replication and recombination
D) transcription and translation
E) diploid and haploid

31) Which of the following is NOT an example of variation? 31) _____
A) cats can have long or short fur
B) a child does not have her mother's hair color
C) giraffes have not been seen in an albino form
D) both monocotyledons and dicotyledons perform the dark reaction
E) lobsters can come in many colors including blue, read, and brown

32) Reference is often made to *adapter molecules* when describing protein synthesis in that they allow amino acids to associate with nucleic acids. To what class of molecules does this term refer? 32) _____
A) DNA
B) amino acids
C) mRNA
D) protein
E) tRNA

33) What is the term given to the theory that put forth the idea that living organisms could arise by incubating nonliving components? 33) _____
A) preformation
B) natural selection
C) evolution
D) spontaneous generation
E) collective combination

34) In many species, there are two representatives of each chromosome. In such species, the characteristic number of chromosomes is called the _____ number. It is usually symbolized as _____. 34) _____
A) haploid; n
B) haploid; 2n
C) diploid; n
D) diploid; 2n
E) monoploid; n

35) In the 1600s, William Harvey studied reproduction and development. What is the term given to the theory that states that an organism develops from the fertilized egg by a succession of developmental events that lead to an adult? 35) _____
A) sequential pattern formation
B) epigenesis
C) preformation
D) equational transformation
E) transduction

36) Recombinant DNA technology is dependent on a particular class of enzymes, known as _____ that cuts DNA at specific nucleotide sequences. 36) _____
A) recombinant DNA technology
B) vectors
C) restriction enzymes
D) clones
E) genomes

37) When mutation alters a gene, it may modify or even eliminate the encoded protein's usual _____ and cause an altered _____. 37) _____
A) ribosome; phenotype
B) function; phenotype
C) cell type; genotype
D) function; genotype
E) structure; genotype

38) If a scientist changed a cell's ionic composition and complementarity between DNA strands could no longer occur, what would the scientist first detect? 38) _____
A) DNA strands become shorter
B) ribosomes would move into the nucleus
C) cell membranes would become less permeable
D) RNA would start binding to DNA
E) DNA becomes single stranded

39) Who was the Augustinian monk that conducted a decade of experiments on the garden pea, eventually showing that traits are passed from parents to offspring in predictable ways? 39) _____
A) Francis Crick
B) Aristotle
C) Alfred Wallace
D) Gregor Mendel
E) Hippocrates

40) Until the mid-1940s, many scientists considered proteins to be the likely candidates for the genetic material. Which of the following characteristics led scientist to believe DNA was NOT the genetic material? 40) _____
A) DNA has less variation than protein.
B) DNA is less abundant than protein.
C) Protein can fold into may shapes.
D) DNA is more stable than protein.
E) DNA is less abundant than protein and DNA has less variation than protein.

41) Which of the following is an example of heredity? 41) _____
A) Flies and molluscs both have eyes.
B) Dalmation dogs all have spots.
C) Flying squirrels have a different mechanism of flight than mosquitos.
D) Doberman pinschers and boxers have similar body shapes.
E) Both moths and birds have wings and can fly.

42) What term is used to describe the fact that different genes in an organism often provide differences in observable features? 42) _____
A) phenotype
B) natural selection
C) inheritance
D) genotype
E) alleles

43) Name the substance that serves as the hereditary material in eukaryotes and prokaryotes. 43) _____
A) protein
B) carbohydrate
C) DNA or deoxyribonucleic acid
D) RNA or ribonucleic acid
E) lipid

Answer Key
Testname: CH1

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