Exam

Name_____

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

1) 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?
   A) preformation
   B) transduction
   C) epigenesis
   D) equational transformation
   E) sequential pattern formation

   Answer: C

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

   Answer: B

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

   Answer: B

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

   Answer: E

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

   Answer: C

6) 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?
   A) Francis Crick
   B) Gregor Mendel
   C) Hippocrates
   D) Aristotle
   E) Alfred Wallace

   Answer: B

7) 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 _____.
   A) haploid; n
   B) monoploid; n
   C) diploid; n
   D) haploid; 2n
   E) diploid; 2n

   Answer: E

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

   Answer: E

9) 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 _____.
   A) First Law of Thermodynamics
   B) Chromosome Theory of Inheritance
   C) Law of Segregation
   D) Chromosomal Maintenance Theory
   E) Law of Independent Assortment

   Answer: B

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

   Answer: B

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

   Answer: D

12) 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?
A) DNA has less variation than protein.
B) Protein can fold into may shapes.
C) DNA is less abundant than protein and DNA has less variation than protein.
D) DNA is less abundant than protein.
E) DNA is more stable than protein.

Answer: C

13) 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.
A) George Wallace
B) Barbara McClintock
C) Walter Sutton
D) Theodor Boveri
E) Gregor Mendel

Answer: E

14) 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?
A) cytogenetics
B) genetics
C) molecular biology
D) cell biology
E) biochemistry

Answer: B

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

Answer: D

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

Answer: C

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

Answer: E

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

Answer: A

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

Answer: C

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

Answer: D

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

Answer: A

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

Answer: B

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

Answer: D

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

Answer: D

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

Answer: C

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

Answer: D

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

Answer: D

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

Answer: A

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

Answer: B

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

Answer: D

31) 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?
A) DNA B) tRNA C) protein D) amino acids E) mRNA

Answer: B

32) 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?
A) DNA and RNA
B) chromosomes
C) lipids and carbohydrates
D) RNA (messenger, ribosomal, and transfer), ribosomes, enzymes, and proteins
E) DNA and protein

Answer: D

33) Which of the following are true about codons?
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 are a two-nucleotide code for an amino acid.
E) They are complementary to DNA and specify amino acids at the ribosome.

Answer: E

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

Answer: E

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

Answer: B

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

Answer: D

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

Answer: B

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

Answer: C

39) What represents an organism's genome?
A) all the protein in a cell
B) the nuclear and mitochondrial DNAs
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.

Answer: E

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

Answer: C

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

Answer: E

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

Answer: D

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

Answer: B