

Student name: \_\_\_\_\_

1) The basic unit of heredity is the \_\_\_\_\_.

- A) individual
- B) gene
- C) macromolecule

D) trait  
E) none of the  
answers are correct

2) A variation of a gene is called a(n) \_\_\_\_\_.

- A) species
- B) morph

- C) genome
- D) allele
- E) proteome

3) Which of the following acts to accelerate chemical reactions in a cell?

- A) Nucleic acids
- B) Lipids

- C) Carbohydrates
- D) Enzymes
- E) DNA

4) The building blocks of DNA are \_\_\_\_\_.

- A) amino acids
- B) carbohydrates

- C) enzymes
- D) nucleotides
- E) lipids

5) If a carbohydrate is going to be broken down for energy, which of the following molecules would be directly

involved in the  
breakdown?

- A) Catabolic enzymes
- B) Nucleotides
- C) Anabolic enzymes

- D) Lipids
- E) Chromosomes

6) RNA is formed by the process of \_\_\_\_\_.

- A) transcription
- B) translation

- C) both transcription and translation
- D) Replication

7) A characteristic that an organism displays is called \_\_\_\_\_.

- A) a gene
- B) a chromosome

- C) DNA
- D) gene expression
- E) a trait

8) The level of study of genetics where the prevalence of a trait in a species is investigated is known as \_\_\_\_\_.

- A) population genetics
- B) organismal genetics
- C) cellular genetics

- D) molecular genetics

9) The study of the processes of transcription and translation is at what level of biological organization?

- A) Population
- B) Organismal

- C) Cellular
- D) Molecular

10) Alternate versions of a specific gene are called \_\_\_\_\_.

- A) nucleotides
- B) chromosomes

- C) alleles
- D) traits

**11)** Genetic variation is ultimately based upon which of the following?

- A) Morphological differences
- B) Small variations in nucleotide sequence of the DNA

- C) Carbohydrate content of the cell
- D) Translation

**12)** An organism whose cells contains two copies of each chromosome is called \_\_\_\_\_.

- A) a genetic mutation
- B) a morph

- C) haploid
- D) diploid
- E) alleles

**13)** A cell that makes up the body structure of an organism and is diploid is \_\_\_\_\_.

- A) a gamete
- B) a somatic cell

- C) an allele
- D) rare
- E) a sperm cell

**14)** In many organisms, one set of chromosomes comes from the maternal parent, while the other set comes from the paternal parent. Similar chromosomes in these sets are said to be \_\_\_\_\_.

- A) morphs
- B) alleles

- C) haploid
- D) homologs
- E)

physiologicaltraits

15) In humans, gametes are different than other cells of the body in that they are \_\_\_\_\_.

- A) diploid
- B) haploid

- C) genetic mutations
- D) morphs

16) Which of the following is correct regarding natural selection?

- A) It is not based on competition for resources
- B) Beneficial traits are not passed on to the next generation
- C) It does not enable a species to become better

- adapted to its environment
- D) It may drastically change a species over time

17) The use of a gene sequence to synthesize a functional protein is known as \_\_\_\_\_.

- A) loss-of-function mutation
- B) gene expression

- C) the human genome project
- D) proteomics

18) The differences in inherited traits among individuals in a population are called \_\_\_\_\_.

- A) species variation
- B) genetic mutations
- C) genetic variation

- D) natural selection

- A) homologs
- B) mutants

- C) communities
- D) alleles
- E) morphs

**20)** The changes in the genetic makeup of a population over time is called \_\_\_\_\_.

- A) homologous recombination
- B) model organisms studies
- C) genetic crosses

- D) biological evolution
- E) hypothesis testing

**21)** Which of the following level of genetics studies the effects of loss-of-function mutations?

- A) Population genetics
- B) Transmission genetics

- C) Molecular genetics

**22)** Which of the following level of genetics would use a genetic cross to determine patterns of inheritance?

- A) Population genetics
- B) Transmission genetics

- C) Molecular genetics

**23)** Which of the following level of genetics studies the relationship between genetic variation and the environment?

- A) Population genetics
- B) Transmission genetics

- C) Molecular genetics

**24)** Which of the

following level of genetics began with the work of Gregor Mendel in the 19th century?

- A) Population genetics
- B) Transmission genetics

C) Molecular genetics

25) Which of the following level of genetics how the forces of nature have influenced the spread of traits?

- A) Population genetics
- B) Transmission genetics

C) Molecular genetics

26) What is the difference between hypothesis testing and discovery-based research?

A) Hypotheses can be validated or invalidated while discovery-based research relies more on collection and analysis of data without a hypothesis.

B) Discovery-based science can be validated or invalidated while hypothesis based research relies more on collection and analysis of data.

C) There is only one type of experimental approach,

both terms describe the same approach.

D) Hypothesis-based research results in believable science while discovery-based research results in unreliable conclusions.

27) A scientist observes two populations of birds that differ slightly in their morphology. In order to explain these observations, which strategy should the scientist employ as a first step?

- A) Propose a hypothesis
- B) Relate structure and function

C) Analyze data  
D) Use statistics

**28)** The cloned sheep Dolly was born to an ewe that had a black face yet Dolly had a white face. What is the explanation for this?

A) Dolly was a mutant black faced sheep and should have had a black face.

B) The ewe that gave birth to Dolly was a mutant white faced sheep.

C) Dolly's genome was originally from an ewe that was a white faced breed of sheep.

D) Dolly was the result of mating a white faced ram and the black faced ewe when that occurs all the progeny will have a white face.

**29)** Fish from lakes that are stained with the plant pigment tannin are more darkly colored than fish from lakes that have less tannin. If the offspring from the fish from a lake with high tannin levels are raised in a low tannin lake they turn out to be lightly pigmented. This would most likely be an example of \_\_\_\_\_.

A) the pigmentation only being controlled by genetic factors

B) the male fish only producing sperm that resulted in the lightly pigmented morph

C) the environment controlling the pigmentation of

the fish

D) the female fish only producing eggs with the lightly pigmented gene

**30)** Mendel is frequently credited with the discovery of transmission genetics and his major contribution relied on the breeding of peas to see what types and ratios of different offspring the plants could produce. This is an example of what kind of experiment?

A) Discovery-based

B) Hypothesis testing

C) A mixture of discovery-based and hypothesis

testing

D) Neither discovery-based nor hypothesis testing



**31)** What would be the anticipated result if a gene produced less RNA for an essential enzyme?

- A) There would be no change in the cell or the organism.
- B) The cell or organism would die.
- C) The cell or organism could experience difficulty

possibly leading to death.

D) The cell or organism would not be any different than one that did not carry the mutation.

**32)** When rats are controlled by pesticides a specific allele for the oxygen carrying protein hemoglobin becomes more prevalent in the population and rats carrying the allele are more resistant to the poison. However, this allele is also less efficient at carrying oxygen. When the pesticide is no longer used then the frequency of the mutant allele drops in the

- A) natural selection
- B) gene regulation

population and the more efficient oxygen carrying allele increases. This can be considered an example of \_\_\_\_\_.

C) DNA being the informational molecule

**33)** The blood types of the ABO typing system are inheritable even though they result from different forms of a carbohydrate on the cell surface. The explanation for why this

- A) a protein controls the formation of the carbohydrate
- B) this is an exception of DNA being the inheritable molecule
- C) the carbohydrate is synthesized from the mRNA

in an inheritable trait is \_\_\_\_\_.

D) the carbohydrate is synthesized directly from the DNA

**34)** A mutation in a codon will result in \_\_\_\_\_.

- A) a new gene
- B) a new allele

C) a new lipid

D) a new carbohydrate

**35)** If two separate species have genes with nearly identical DNA sequences it most likely means that \_\_\_\_\_.

- A) they evolved from a common ancestor
- B) they are really the same species and not two different species
- C) they share no real relationship

D) the proteins that one of the genes makes is non-functional

**36)** Why would a mouse be more useful than a bacterium as a model organism?

- A) Bacteria divide/replicate more slowly.
- B) Mouse physiology is more closely related to humans.
- C) Mice have simpler genetics and inheritance

patterns.

D) Bacterial genes are more closely related to human genes.

## **Answer Key**

of Genetics

Test name: Chapter 01 Test Bank: Overview

- 1) B
- 2) D
- 3) D
- 4) D
- 5) A
- 6) A
- 7) E
- 8) A
- 9) D
- 10) C
- 11) B
- 12) D
- 13) B
- 14) D
- 15) B
- 16) D
- 17) B
- 18) C
- 19) E

20) D

21) C

22) B

23) A

24) B

25) A

26) A

27) A

28) C

29) C

30) A

31) C

32) A

33) A

34) B

35) A

36) B