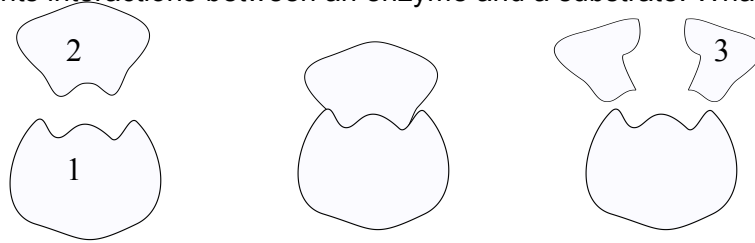


Unit 9 Test Pre/Post EOC

**This test represents topics and scenarios you may encounter on the NC Biology EOC
This is an 80-question multiple choice practice EOC.
Choose the best answer for each question.**

1. The following represents interactions between an enzyme and a substrate. What is structure # 2?



- A. reactant B. enzyme C. substrate D. active site

2. Which may be biochemical (molecular) evidence for evolution?

- A. vestigial structures
- B. homologous structures
- C. relationships evident through cladograms
- D. similarities in DNA base sequences

3. Which factor would least likely contribute to human diseases?

- A. Toxin B. Genetics C. Parasitism D. Work ethic

4. Some tulips show co-dominance, which results in the presence of both white and red phenotypes appearing in true form (spotted pattern). If two spotted tulips crossed and produced 40 offspring, how many would be solid red?

- A. 0 B. 1 C. 2 D. 4

5. Some bacteria can thrive in deep wounds and closed-off regions. Which process do they use to survive?

- A. photosynthesis B. aerobic respiration C. parasitism D. anaerobic respiration

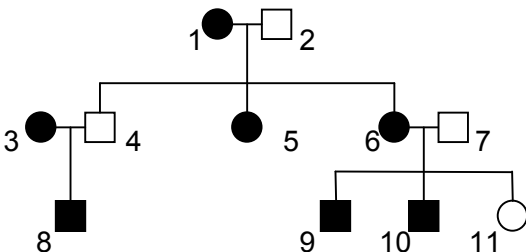
6. What genetic abnormality can a karyotype reveal?

- A. crossing over B. nondisjunction C. polygenic D. dominance

7. One parent of a child has attached earlobes, which are caused by a recessive allele. The other parent carries the recessive allele but does not express it. What is the chance that they would have a child with attached earlobes?

- A. 0% B. 50% C. 75% D. 100%

8. The diagram represents which of the following genetic studies?

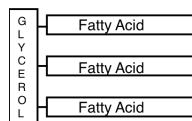


- A. pedigree B. karyotype C. punnett square D. cladogram

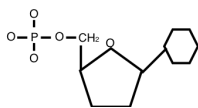
9. If the diagram is referring to a recessive condition, what may represent the genotype of individual # 5?
 A. AA B. Aa C. aa D. aA
10. Which term may describe someone who is heterozygous for a recessive trait?
 A. genotype B. phenotype C. carrier D. allele
11. Male-patterned baldness is a sex-linked recessive trait. A woman with a full head of hair, but whose father is balding reproduces with a man who is balding. If a son is born to this couple, what is the probability that he will inherit male-patterned baldness?
 A. 0% B. 25 % C. 50 % D. 100%
12. Which of the following describes a nucleotide found in DNA?
 A. ribose + phosphate group + guanine
 B. ribose + phosphate group + uracil
 C. deoxyribose + phosphate group + uracil
 D. deoxyribose + phosphate group + thymine
13. What can be determined about the organisms *Rana catesbeiana* and *Rana clamitans* by examining their scientific names?
 A. They are the same species.
 B. They are not related at all.
 C. They are very closely related.
 D. They may have once been related.
14. Amino acids link up to form a final end product called _____.
 A. RNA B. Proteins C. Nucleic Acids D. New DNA
15. A strand of RNA has the bases UACUACUUC. What is the sequence of bases in the original DNA molecule?
 A. UACUACUUC B. TACTACAAG C. AUGAUGAAG D. ATGATGAAG
16. Which gas has the greatest effect on respiration?
 A. oxygen B. methane C. ethylene D. carbon dioxide
17. Structures in different organisms that are derived from the same tissues are known as which of the following?
 A. Homologous structures
 B. Vestigial structures
 C. Heterozygous structures
 D. Evolutionary structures
18. Which best describes the process of translation?
 A. RNA codons code for amino acids that make up proteins
 B. DNA codons code for amino acids that make up proteins
 C. RNA bases provide one codon, which codes for amino acids that make up proteins
 D. DNA bases code directly for amino acids that make up proteins
19. Which is NOT evidence for evolution?
 A. Fossil record B. DNA similarities C. Climate changes D. Karyotype comparisons
20. An orchid growing on high branches to get more sunlight is an example of which type of symbiosis?
 A. Mutualism B. Commensalism C. Parasitism D. Predation

21. Which of the following represents a nucleotide?

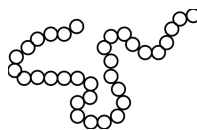
A.



B.



C.



D.



22. Why are sex-linked conditions more often found in males?

- A. Males inherit the recessive allele from both their mother and father
- B. Males inherit the recessive allele on the X-chromosome, which means they only need one copy of the allele
- C. Males inherit the recessive allele on the Y-chromosome, which means they only need one copy of the allele
- D. Males must have two recessive alleles to inherit the condition

23. What is the main function of a lipid?

- A. To store energy for long-term use
- B. To store and release energy rapidly
- C. To transport nutrients through the blood stream
- D. To protect from invading bacteria and viruses

24. Which of the following can be attributed to rapid evolution in response to chemical overuse?

- A. Sterility
- B. Survival
- C. Resistance
- D. Reproductive success

25. The cell membrane is composed of _____.

- A. Carbohydrates
- B. Nucleic acids
- C. Lipids and Proteins
- D. Carbohydrates and Protein

26. What is the number one reason a species goes extinct?

- A. Lack of competition
- B. Increase in competition
- C. Loss of habitat
- D. Disease

27. How much energy is transferred to each successive level in a trophic pyramid?

- A. 1%
- B. 10%
- C. 50%
- D. 90%

28. Mitosis begins with 1 parent cell and ends up with _____ daughter cells.

- A. 2 identical
- B. 4 identical
- C. 2 genetically different
- D. 4 genetically different

29. Meiosis begins with 1 parent cell and ends up with _____ daughter cells.

- A. 2 identical
- B. 4 identical
- C. 2 genetically different
- D. 4 genetically different

30. Which is an application of genetic information?

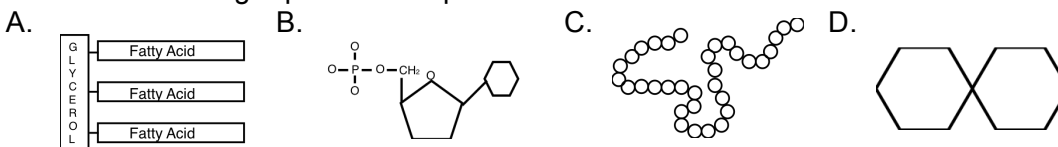
- A. Gel electrophoresis
- B. Use of biological vectors
- C. Growing tissues for transplant with the use of transgenic organisms
- D. All are applications of genetic engineering

31. A scientist is testing a new supplement to help athletes efficiently build muscle. Group A is given the experimental supplement and Group B is asked to continue with their original routine. Which of the following describes Group A?

- A. control group
- B. experimental group
- C. independent group
- D. dependent variable

32. How does an enzyme speed up chemical reactions?
- by absorbing energy for the reaction
 - by releasing energy for the reaction
 - by decreasing the energy needed for the reaction
 - by increasing the energy needed for the reaction
33. Which organism in an energy pyramid has the most energy available to them?
- heterotrophs
 - producers
 - consumers
 - omnivores
34. Which of the following characteristics is not common to all vertebrates?
- hair
 - vertebral column
 - gill slits
 - endoskeleton
35. Osmosis is _____.
- Diffusion of water through a membrane
 - Diffusion of solutes through a membrane
 - Active transport of water through a membrane
 - Active transport of solutes through a membrane

36. Which of the following represents a lipid?



37. As a population's growth rate begins to level off, which of the following is happening?
- The population is experiencing logistic growth
 - The population is experiencing exponential growth
 - The population is nearing extinction
 - The population is in rapid decline
38. A 22% saline cell is placed into a solution of 50% saline. Which is an accurate description of what may occur?
- Water will flow out of the cell by osmosis
 - Water will flow into the cell by osmosis
 - Salt will flow out of the cell by osmosis
 - Salt will flow into the cell by osmosis
39. Which of the following is an advantage of sexual reproduction?
- Increased number of offspring
 - Genetic variation
 - Increased life expectancy
 - Decreased number of offspring
40. Some flowering plants display incomplete dominance in their flowers. Which is an accurate description of incomplete dominance?
- Only the dominant allele will appear
 - The trait is always carried on the X chromosome
 - Neither allele is truly dominant, so the phenotypes blend
 - Both alleles show dominance, so a spotted mix of alleles will appear
41. A color-blind woman reproduces with a normal man. They have 4 sons. What percentage of their sons are likely to inherit color-blindness?
- 0%
 - 25%
 - 50%
 - 100%

42. How are animal-like protists classified?
 A. by movement B. by size C. by shape D. by function
43. Which best describes a biological vector?
 A. A living mechanism of transporting fragments of DNA
 B. A gene gun transferring fragments of DNA
 C. A non-living mechanisms of transporting fragments of DNA
 D. DNA fingerprinting
44. Which of the following organisms carry out external fertilization?
 A. reptiles B. mammals C. amphibians D. birds
45. What is the purpose of vascular tissue in plants?
 A. allow for respiration
 B. allow for photosynthesis
 C. transport carbon dioxide
 D. transport sugar and water
46. A vaccine gives a person which type of immunity?
 A. natural B. active C. passive D. T-cell
47. What materials do phloem conduct throughout a plant?
 A. enzymes B. water C. salts D. sugars
48. Chlorophyll is a pigment that is responsible for capturing sunlight needed for photosynthesis. Which organelle contains chlorophyll?
 A. chloroplast B. cytoplasm C. cell wall D. nucleus
49. During long periods of heightened activity, animals lack oxygen so they must carry out lactic acid fermentation in order to produce energy. Lactic acid fermentation is a form of which of the following?
 A. Anaerobic respiration B. ADP respiration C. ATP respiration D. Aerobic respiration
50. A single deletion mutation occurs in the first codon of the following sequence of DNA: ATG CCA GGC TAC. Which describes the effect of this mutation
 A. It would only potentially change one amino acid
 B. It would only potentially change two amino acids
 C. It would potentially change each of the amino acids to the end of the sequence
 D. It would not cause a change
51. Which of the following may result in excessive mitosis?
 A. UV rays
 B. Vitamin C
 C. Omega 3 Fatty Acids
 D. Cholesterol
52. Enzymes belong to which class of organic compounds?
 A. Carbohydrates B. Proteins C. Nucleic Acids D. Lipids
53. Which is a function of proteins?
 A. Long-term energy storage
 B. Quick energy storage and release
 C. Growth and repair
 D. Store and transmit genetic information

54. In which situation would a color-blind (sex-linked recessive allele) daughter be born to a couple?
- A colorblind father and a carrier mother
 - A colorblind father and a normal, non-carrier mother
 - A normal father and a colorblind mother
 - A normal father and a carrier mother
55. What is another name for a seed contained in an ovary?
- fruit
 - flower
 - stamen
 - anther
56. A mother passes antibodies through her breast milk to her child. What type of immunity is this?
- natural
 - active
 - passive
 - T-cell
57. In which situation may a cell shrink?
- When placed into a hypotonic environment
 - When placed into an isotonic environment
 - When placed into a hypertonic environment
 - All of these will cause a cell to shrink
58. Which of the following is not a domain?
- Eukarya
 - Archaea
 - Animalia
 - Eubacteria
59. In which part of a plant does photosynthesis most often occur?
- leaves
 - roots
 - stem
 - xylem
60. Which of the following is the site of translation?
- mitochondrion
 - chloroplast
 - ribosome
 - nucleus
61. Each sequence of 3 nitrogen bases that code for different amino acids are known as which of the following?
- a codon
 - an amino acid
 - DNA
 - RNA
62. A segment of DNA with the base sequence ACCTGA makes a complimentary strand of RNA with the following base sequence:
- UGGACU
 - TGGACT
 - ACCTGA
 - CAAGUC
63. If the frequency of the alleles in a population doesn't change over time, the population is in _____.
- Equilibrium
 - Stasis
 - Growth
 - Exponential Stability
64. Bacteria thrive in the intestines of cows, helping to break down the cellulose in their diet. They obtain essential nutrients and the cows are able to fully digest their food. What is occurring?
- Mutualism
 - Commensalism
 - Parasitism
 - Predation
65. Which structure makes a plant cell different from an animal cell?
- nucleus
 - cell wall
 - mitochondria
 - cell membrane
66. Sodium ions are pumped into a cell against the concentration gradient. What is occurring?
- passive transport
 - diffusion
 - osmosis
 - active transport
67. Which organelle in an animal cell is responsible for regulating homeostasis?
- nucleus
 - cytoplasm
 - cell membrane
 - cell wall
68. A multi-step tool used to determine the scientific identity of an organism is known as which of the following?
- Dichotomous Key
 - Cladogram
 - Phylogenic Tree
 - Binomial Nomenclature

69. What describes a role of an enzyme?
- Speed up chemical reactions
 - Produce ATP in a cell
 - Manufacture gametes
 - Synthesize proteins
70. What is the chemical formula for cellular respiration?
- $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
 - $6\text{O}_2 + \text{C}_6\text{H}_{12}\text{O}_6 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{Energy}$
 - $\text{C}_6\text{H}_{12}\text{O}_6 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$
 - $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6$
71. What is the form of cellular energy that is the final end product of cellular respiration?
- ADP
 - ATP
 - light energy
 - glucose
72. Gymnosperms produce _____.
- flowers
 - cones
 - spores only
 - fruit
73. Which kind of cell has the greatest division rate due to the lack of a nucleus?
- brain cell
 - blood cell
 - muscle cell
 - skin cell
74. The total amount of living tissue in a trophic level is _____.
- density
 - trophic mass
 - biomass
 - biofuel
75. Which of the following is the site of transcription?
- cytoplasm
 - nucleus
 - mitochondrion
 - ribosome
76. Why do plant cells contain chloroplasts?
- Need sunlight for respiration.
 - Need sunlight for transpiration.
 - Need sunlight for photosynthesis.
 - Need sunlight for protein synthesis.
77. Which creates a byproduct that causes muscle fatigue?
- glycolysis
 - cellular respiration
 - alcoholic fermentation
 - lactic acid fermentation
78. Which organism would most likely carry out anaerobic respiration?
- bird
 - yeast
 - fungus
 - amphibian
79. Which is an example of learned behavior?
- A chimpanzee uses tools to eat its food
 - A baby chick hatches and knows its mother immediately
 - Birds of Paradise carry out mating dances
 - Salmon return to their place of birth to reproduce
80. A cell makes 36 molecules of ATP from one molecule of glucose. Which type of reaction is this cell undergoing?
- aerobic respiration
 - anaerobic respiration
 - alcoholic fermentation
 - lactic acid fermentation