

NBCE
Mock Board Questions
Biochemistry

1. "Fluid mosaic" describes ____.
 - A. Tertiary structure of proteins
 - B. Ribosomal subunits
 - C. DNA structure
 - D. Plasma membrane structure

2. Where in the cell does beta oxidation of fats occur?
 - A. Cytoplasm
 - B. Matrix of the mitochondrion
 - C. Inner mitochondrial membrane
 - D. Outer mitochondrial membrane

3. How much energy is produced from electrons carried by NADH to the Electron Transport System:
 - A. 1 ATP
 - B. 2 ATP
 - C. 3 ATP
 - D. 4 ATP

4. Which of the following is not an essential amino acid?
 - A. Alanine
 - B. Methionine
 - C. Phenylalanine
 - D. Valine

5. The starting material for ketone body synthesis is ____.
 - A. Pyruvate
 - B. Acetyl Co A
 - C. Glucose
 - D. Cholesterol

6. "Semi conservative" describes ____.
 - A. DNA replication
 - B. Translation
 - C. Transcription
 - D. Protein synthesis

7. Which of the following vitamins is part of the Co A radical?
 - A. Vitamin B 2
 - B. Vitamin B 3
 - C. Vitamin B 5
 - D. Vitamin B 8

8. What is the function of pyruvate dehydrogenase?
- A. Converts pyruvate into lactate
 - B. Converts pyruvate into glucose
 - C. Converts pyruvate into alcohol and carbon dioxide
 - D. Converts pyruvate into acetyl Co A
9. Where in an ATP molecule is energy stored?
- A. Hydrogen bonds
 - B. Purine bonds
 - C. Phosphate bonds
 - D. Sugar bonds
10. A piece of DNA contains 15 % cytosine. How much adenine does it contain?
- A. 15 %
 - B. 25 %
 - C. 35 %
 - D. 40 %
11. Which of the following is not a monosaccharide?
- A. Lactose
 - B. Galactose
 - C. Mannose
 - D. Glucose
12. Which of the following metabolic cycles is not anabolic?
- A. Pentose shunt
 - B. Gluconeogenesis
 - C. Fatty acid synthesis
 - D. Glycolysis
13. A prokaryotic cell lacks _____.
- A. A plasma membrane
 - B. Ribosomes
 - C. A nuclear membrane
 - D. Cytoplasm
14. Which of the following bonds would be found in proteins?
- A. Glycosidic
 - B. Peptide
 - C. Ester
 - D. Phosphodiester
15. Which of the following is made from nucleotides?
- A. Amino acids
 - B. Nucleic acids
 - C. Carbohydrates
 - D. Triacylglycerides

16. Okazaki fragments are produced during _____.
A. Protein synthesis
B. Transcription
C. Semi conservative replication
D. Translation
17. An enzyme known as a decarboxylase would _____.
A. Remove a phosphate
B. Remove water
C. Remove a Carbon
D. Remove electrons
18. A saturated fatty acid is saturated with _____.
A. Carbons
B. Electrons
C. Double bonds
D. Hydrogens
19. What is the function of the Urea Cycle?
A. To make energy
B. Functions as an antioxidant
C. Makes bicarbonate
D. Removes toxic amino groups
20. Endosymbiotic explains _____.
A. Energy production through Hydrogen ion pumping
B. How eukaryotic cells got their organelles
C. How diffusion gradients work in cells
D. Production of electrons in the Krebs cycle
21. The condition known as scurvy results from inadequate amounts of _____.
A. Vitamin A
B. Vitamin B 12
C. Vitamin C
D. Vitamin D
22. How many Carbons does ribose have?
A. 3
B. 4
C. 5
D. 6
23. Steroid hormones are typically made from _____.
A. Arachidonic acid
B. Tyrosine
C. Cholesterol
D. Second messengers

24. Plasma membranes are found in which type of cell?
- A. Animal cells only
 - B. Plant cells only
 - C. Both plant and animal cells
 - D. Neither plant nor animal cells
25. Where in a eukaryotic cell does transcription occur?
- A. Cytoplasm
 - B. Golgi complex
 - C. Peroxisome
 - D. Nucleus
26. Below is a sequence of bases found on one strand of a DNA molecule. What would be the sequence of bases found on the other strand of the helix?
- A C T T A C G
- A. A C T T A C G
 - B. T G A A T G C
 - C. G C A T T C A
 - D. U G A A U G C
27. What would a DNA dependent RNA polymerase make?
- A. DNA from DNA
 - B. DNA from RNA
 - C. RNA from DNA
 - D. RNA from RNA
28. Ribosomes are found in which type of cell?
- A. Eukaryotic cells only
 - B. Prokaryotic cells only
 - C. Both eukaryotic and prokaryotic cells
 - D. Neither eukaryotic or prokaryotic cells
29. How many molecules of ATP are produced from one molecule of glucose broken all the way to carbon dioxide and water in aerobic respiration?
- A. 12 molecules
 - B. 24 molecules
 - C. 38 molecules
 - D. 50 molecules
30. Which of the following metabolic cycles does not start with acetyl Co-A?
- A. Cholesterol synthesis
 - B. Fatty acid synthesis
 - C. Krebs Cycle
 - D. Beta oxidation

31. Which of the following metabolic cycles is not found in the cytoplasm?
- A. Ketone body synthesis
 - B. Glycolysis
 - C. Gluconeogenesis
 - D. Fatty acid synthesis
32. What is the function of phosphofructokinase?
- A. Glucose 6 phosphate \rightarrow fructose 6 phosphate
 - B. Glucose \rightarrow glucose 6 phosphate
 - C. Fructose 6 phosphate \rightarrow fructose 1,6 bis phosphate
 - D. Glyceraldehyde 3 phosphate \rightarrow dihydroxyacetone phosphate
33. An enzyme known as an isomerase would be able to perform ____.
- A. A condensation reaction
 - B. A hydrolysis reaction
 - C. An intramolecular rearrangement
 - D. An intermolecular rearrangement
34. What is the function of carbonic anhydrase?
- A. Produces carbon dioxide and water
 - B. Produces bicarbonate
 - C. Produces glucose from pyruvate
 - D. Transports Oxygen in the blood
35. An active site is found ____.
- A. On an enzyme
 - B. On a substrate
 - C. On ATP
 - D. On NAD
36. What is the function of an enzyme?
- A. To decrease active sites
 - B. To increase active sites
 - C. To decrease activation energy
 - D. To increase activation energy
37. Watson and Crick are credited with discovering ____.
- A. Protein structure
 - B. Amino acid structure
 - C. Nucleotide structure
 - D. DNA structure
38. Which of the following would not be found in a nucleotide?
- A. Phosphate
 - B. Pyrimidine
 - C. Glucose
 - D. Purine

39. A kinase reaction typically involves ____.
- A. ATP
 - B. Electrons
 - C. CO-A radicals
 - D. Water
40. The condition known as rickets occurs from a deficiency in ____.
- A. Vitamin A
 - B. Vitamin B 12
 - C. Vitamin C
 - D. Vitamin D
41. Which of the following is the universal RBC donor?
- A. Type A
 - B. Type B
 - C. Type AB
 - D. Type O
42. Where in the cell does the Krebs Cycle occur?
- A. Cytoplasm
 - B. Matrix of the mitochondria
 - C. Inner mitochondrial membrane
 - D. Outer mitochondrial membrane
43. What is the function of a chylomicron?
- A. To carry electrons
 - B. To carry ATP
 - C. To carry dietary fatty acids
 - D. To carry dietary proteins
44. Which of the following would not contain a glycosidic bond?
- A. Starch
 - B. Glycogen
 - C. Cholesterol
 - D. Sucrose
45. Vitamin B 3 is necessary for ____.
- A. NADPH
 - B. FADH₂
 - C. ATP
 - D. cAMP
46. An organic molecule is based on ____.
- A. Oxygen
 - B. Hydrogen
 - C. Carbon
 - D. Nitrogen

47. Which of the following vitamins is not considered to be a major antioxidant?
- A. Vitamin E
 - B. Vitamin K
 - C. Vitamin A
 - D. Vitamin C
48. Carboxyl group transfers within a cell are most often handled by ____.
- A. Biotin
 - B. Niacin
 - C. Thiamin
 - D. Riboflavin
49. The interaction between peptide bond carbonyloxygen and peptide bond amino groups is characteristic of ____.
- A. Primary protein structure
 - B. Secondary protein structure
 - C. Tertiary protein structure
 - D. Quaternary protein structure
50. Which of the following is not part of aerobic respiration?
- A. Cytochrome oxidase system
 - B. Tricarboxylic acid cycle
 - C. Emden Myerhof pathway
 - D. Hexose monophosphate shunt

**NBCE
MOCK BOARD
QUESTIONS
BIOCHEMISTRY ANSWER KEY**

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|-----|---|-----|---|
| 1. | D | 45. | A |
| 2. | B | 46. | C |
| 3. | C | 47. | B |
| 4. | A | 48. | A |
| 5. | B | 49. | B |
| 6. | A | 50. | D |
| 7. | C | | |
| 8. | D | | |
| 9. | C | | |
| 10. | C | | |
| 11. | A | | |
| 12. | D | | |
| 13. | C | | |
| 14. | B | | |
| 15. | B | | |
| 16. | C | | |
| 17. | C | | |
| 18. | D | | |
| 19. | D | | |
| 20. | B | | |
| 21. | C | | |
| 22. | C | | |
| 23. | C | | |
| 24. | C | | |
| 25. | D | | |
| 26. | B | | |
| 27. | C | | |
| 28. | C | | |
| 29. | C | | |
| 30. | D | | |
| 31. | A | | |
| 32. | C | | |
| 33. | C | | |
| 34. | B | | |
| 35. | A | | |
| 36. | C | | |
| 37. | D | | |
| 38. | C | | |
| 39. | A | | |
| 40. | D | | |
| 41. | D | | |
| 42. | B | | |
| 43. | C | | |
| 44. | C | | |