Take-Home Quiz II

General Instructions and Information: Obtain an answer sheet from the instructor and legibly write your name in the appropriate space. After placing your name and quiz version on the answer sheet, you must enter your student number (social security number) in the appropriate space and darken the corresponding bubbled numbers. Should you not enter your student number or should you incorrectly darken the bubbles, five (5.0) points will be deducted from your final score for this quiz. In addition, be sure to place the instructor’s last name on the lines provided. This Take-Home Quiz consists of fifty (50) multiple-choice questions each worth one point (1) point. Please note that your answer sheet is due NO LATER than 10:00 AM, Monday, March 7th. Answer sheets returned later than this deadline will not be accepted and a score of “0” will be recorded.

Note the following restrictions: You are permitted to collaborate on this quiz with other students who are currently enrolled in this course. However, you are not permitted to just copy answers from one another. You must make an honest effort to actively gather the answers by yourself or within a study group. The lack of a good faith effort on your part will be considered academic dishonesty. Also, receiving help from students not enrolled in this course or from sources other than those specifically associated with this course will be considered an act of academic dishonesty. Such incidents will not be tolerated and will be handled according to course and University policy.

Instructions For Answering Multiple Choice Questions: Read each question very carefully. Determine the BEST answer for a particular question from among the four different choices listed below it. Darken the appropriate bubble on the answer sheet corresponding to the question you are answering. In doing so, be sure to follow the instructions on the back of the answer sheet. Mismarked answer sheets (i.e., answers placed out of order) will not be rescored. Hence, you are strongly encouraged to review your answer sheet before returning it.

1. A mutagen that inserts between the stacked bases of a DNA double helix, distorting the DNA to induce single-pair insertions or deletions is called a(n) _________ agent.
   A) insertional
   B) interspersing
   C) intercalating
   D) distortional
2. Photosynthetic electron transport in blue-green algae takes place
   A) on the thylakoid membranes only.
   B) in the granal membranes only.
   C) in the stroma.
   D) on the thylakoid and granal membranes.

3. In a branched pathway with many end products, an abundance of one of the end products will usually inhibit
   A) the first step in the set of pathways.
   B) the first committed step in the branch of the pathway leading to the production of that particular product.
   C) the last step before the branch leading to the production of that particular end product.
   D) the last step in the production of that particular product.

4. The genetic code is said to be __________ because more than one codon will specify a particular amino acid.
   A) ambiguous
   B) degenerate
   C) multiplicative
   D) repetitious

5. In which of the following types of procaryotes have split genes been found?
   A) bacteria
   B) cyanobacteria
   C) Archaea
   D) None of these

6. The pentose phosphate pathway provides
   A) ATP.
   B) NADPH.
   C) four- and five-carbon sugars for amino acid and nucleic acid synthesis.
   D) all of the above

7. Which of the following is not true about enzymes?
   A) Enzymes are catalysts that speed up reactions by shifting equilibrium to favor products.
   B) Enzymes are proteins that can be denatured by changes in pH or temperature.
   C) Enzymes are highly specific for the substrates they react with and catalyze only one or a limited set of possible reactions with those substrates.
   D) all of the above
8. The _________ is the electron donor in a redox reaction.
   A) reductant
   B) oxidant
   C) enzyme
   D) product

9. The reduction of sulfate as a terminal electron acceptor during anaerobic respiration is called ________ sulfate reduction.
   A) assimilatory
   B) dissimilatory
   C) amodulatory
   D) demodulatory

10. Which of the following is not considered the final product of the expression of a gene?
    A) a polypeptide chain
    B) an mRNA molecule
    C) a tRNA molecule
    D) an rRNA molecule

11. Which of the following is used as an electron carrier by living organisms?
    A) NAD+
    B) NADP+
    C) ubiquinone
    D) all of the above

12. The reduction of sulfate for use in the production of compounds such as cysteine is called ________ sulfate reduction.
    A) assimilatory
    B) dissimilatory
    C) amodulatory
    D) demodulatory

13. The series of enzymatic steps that fixes carbon dioxide into carbohydrate is called the ________.
    A) Pentose phosphate pathway
    B) Embden-Meyerhoff pathway
    C) Calvin cycle
    D) Entner-Doudoroff pathway

14. Which of the following is not a termination codon?
    A) AUG
    B) UAA
    C) UAG
    D) UGA
15. Which of the following may be used as sources of energy by chemolithotrophs?
   A) hydrogen gas
   B) ammonia
   C) elemental sulfur
   D) all of the above

16. Which of the following is not a phase of the Calvin Cycle?
   A) carboxylation phase
   B) oxidation phase
   C) reduction phase
   D) regeneration phase

17. Enzymes catalyze a reaction by
   A) decreasing the amount of energy released by the reaction.
   B) increasing the amount of energy released by the reaction.
   C) decreasing the activation energy of the reaction.
   D) increasing the activation energy of the reaction.

18. Which of the following can be used as electron acceptors during anaerobic respiration?
   A) nitrate
   B) sulfate
   C) carbon dioxide
   D) all of the above

19. The reduction of atmospheric nitrogen to ammonia is called
   A) ammonification.
   B) nitrification.
   C) denitrification.
   D) nitrogen fixation.

20. Amino acids are processed first by the removal of the amino group through
   A) deamination.
   B) transamination.
   C) phosphorolytic cleavage.
   D) a or b

21. As the result of exposure to a mutagen, cytosine is substituted for thymine in one strand of DNA. Upon subsequent DNA replication, one of the daughter cells will have a GC pair in this position instead of an AT pair. This is called a(n) __________ mutation.
   A) transversion
   B) transition
   C) frameshift
   D) insertion
22. __________ reactions are used to replace TCA cycle intermediates that have been used to provide carbon skeletons for amino acid biosynthesis.
   A) Amphibolic
   B) Anaplerotic
   C) Anabolic
   D) Catabolic

23. In higher eucaryotes, most aerobically generated ATP is produced by
   A) glycolysis.
   B) the TCA cycle.
   C) a membrane bound proton translocating ATP synthase.
   D) all of these generate equal amounts of ATP.

24. Competitive inhibition can be overcome by adding excess
   A) inhibitor.
   B) substrate.
   C) enzyme.
   D) none of the above.

25. When the end product of a pathway inhibits catalysis of the first step of that pathway, this phenomenon is called
   A) reversible covalent modification.
   B) feedback inhibition.
   C) metabolic channeling.
   D) non-competitive inhibition.

26. A purine or pyrimidine that is attached to a sugar, either ribose or deoxyribose, is called a
   A) nucleotide.
   B) nucleoside.
   C) nitrogenous base.
   D) nucleic acid.

27. Which of the following is not a complementary base pair usually found in DNA molecules?
   A) adenine-thymine
   B) guanine-cytosine
   C) adenine-uracil
   D) all of the above

28. Over twisting or under twisting of double helical DNA generates
   A) hypertwists.
   B) hypotwists.
   C) hypercoils.
   D) supercoils.
29. Which pathway(s) are used by eucaryotic microorganisms to fix carbon dioxide?
   A) Calvin-Benson cycle
   B) reductive tricarboxylic pathway
   C) Entner-Doudoroff
   D) none of the above

30. Mitochondrial electron transport takes place
   A) on the outer mitochondrial membrane.
   B) on the inner mitochondrial membrane.
   C) in the fluid matrix of the mitochondria.
   D) a and b

31. If an enzyme consists of a protein component and a non-protein component, the protein component is referred as the
   A) apoenzyme.
   B) coenzyme.
   C) holoenzyme.
   D) prosthetic group.

32. Enzyme activity can be controlled by
   A) allosteric regulation.
   B) covalent modification.
   C) feedback (end product) inhibition.
   D) all of the above

33. The region at which the RNA polymerase binds is the __________ region.
   A) leader
   B) promoter
   C) coding
   D) trailer

34. The nonprotein component of an enzyme that is firmly attached to the protein is called a(n)
   A) apoenzyme.
   B) coenzyme.
   C) holoenzyme.
   D) prosthetic group.

35. In the TCA cycle, two carbons in the form of __________ are added to oxaloacetate at the start of the cycle.
   A) acetyl-CoA
   B) ethanol
   C) carbon dioxide
   D) methanol
36. During replication the 2 strands of the DNA molecule are unwound from one another by enzymes called
   A) ligases.
   B) unwindases.
   C) helicases.
   D) primases.

37. The synthesis of ATP from ADP and Pi, when coupled with an exergonic chemical reaction is called _______ phosphorylation.
   A) chemiosmotic
   B) oxidative
   C) substrate-level
   D) conformational change

38. In theory, the largest possible net gain of ATP per molecule of glucose metabolized anaerobically in eucaryotes is
   A) 2.
   B) 32.
   C) 38.
   D) 85.

39. In the process of noncyclic photophosphorylation
   A) water is split to form oxygen gas.
   B) electrons from water flow through electron transport chains resulting in synthesis of ATP and NADPH.
   C) photosystems I and II are both required.
   D) all of the above

40. The net gain of ATP per molecule of glucose metabolized aerobically in eucaryotes is
   A) 2.
   B) 36.
   C) 38.
   D) 85.

41. In the TCA cycle, two carbons are removed from citric acid in the form of ________, thereby regenerating oxaloacetate to complete the cycle.
   A) acetyl-CoA
   B) ethanol
   C) carbon dioxide
   D) methanol
42. The synthesis of glucose from non-carbohydrate precursors is called
   A) glycolysis.
   B) glutamine synthase.
   C) gluconeogenesis.
   D) none of the above

43. The substrate of an enzyme binds at the
   A) affinity site.
   B) active site.
   C) determinative site.
   D) reaction site.

44. Repair of thymine dimers using light to split the dimers apart into separate monomers is called
   A) photodedimerization.
   B) photoreactivation.
   C) photoreparation.
   D) none of the above

45. In the process of __________, ATP is synthesized when excited electrons from chlorophyll P700 pass through a series of electron carriers then return to chlorophyll P700.
   A) photosynthesis
   B) cyclic photophosphorylation
   C) acyclic photophosphorylation
   D) noncyclic photophosphorylation

46. Production of ATP using the energy liberated by the electron transport system is generally referred to as __________.
   A) chemiosmotic
   B) respiration
   C) substrate-level
   D) conformational change

47. Which pathway(s) is used to fix carbon dioxide?
   A) glycolysis
   B) reductive tricarboxylic pathway
   C) Entner-Doudoroff
   D) pentose phosphate pathway
48. During breakdown of fatty acids, carbons are removed \__________ at a time as \__________.
   A) one; carbon dioxide
   B) one; methane
   C) two; acetyl-CoA
   D) two; ethanol

49. The coding sequence in the DNA of \__________ is normally continuous; that is, it
   is not interrupted by noncoding sequences.
   A) procaryotes
   B) plants
   C) mammals
   D) most insects

50. When a DNA molecule is replicated, the daughter molecules contain one strand of
   parental DNA and one strand of newly synthesized DNA; this is called \__________
   replication.
   A) hemiconservative
   B) conservative
   C) semiconservative
   D) dispersive