Name: _____ Class: _____ Date: _____ ID: A

Unit Two C Level Version A

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

1. Which of the following is a nitrogenous waste that requires hardly any water for its excretion?
   a. amino acid
   b. urea
   c. uric acid
   d. ammonia
   e. nitrogen gas
2. Organisms that can exist with light as an energy source and an inorganic form of carbon and other raw materials
   a. are called photoautotrophs.
   b. do not exist in nature.
   c. are called heterotrophs.
   d. are best classified as decomposers.
   e. both C and D
3. All of the following are adaptations to an herbivorous diet *except*
   a. broad, flat molars.
   b. a rumen.
   c. ingestion of feces.
   d. bile salts.
   e. amylase.
4. A controlled experiment is one in which
   a. the experiment is repeated many times to ensure that the results are accurate.
   b. the experiment proceeds at a slow pace to guarantee that the scientist can carefully observe all reactions and process all experimental data.
   c. there are at least two groups, one of which does not receive the experimental treatment.
   d. there are at least two groups, one differing from the other by two or more variables.
   e. there is one group for which the scientist controls all variables.
5. Which of the following is an advantage of a complete digestive system over a gastrovascular cavity?
   a. Extracellular digestion is not needed.
   b. Specialized regions are possible.
   c. Digestive enzymes can be more specific.
   d. Extensive branching is possible.
   e. Intracellular digestion is easier.
6. Probably the most important factor(s) affecting the distribution of biomes is (are)
   a. wind and water current patterns.
   b. species diversity.
   c. community succession.
   d. climate.
   e. day length and rainfall.

7. Hydrophobic substances such as vegetable oil are
   a. nonpolar substances that repel water molecules.
   b. nonpolar substances that have an attraction for water molecules.
   c. polar substances that repel water molecules.
   d. polar substances that have an affinity for water.
   e. charged molecules that hydrogen-bond with water molecules.
8. What is the term for metabolic pathways that release stored energy by breaking down complex molecules?
   a. anabolic pathways
   b. catabolic pathways
   c. fermentation pathways
   d. thermodynamic pathways
   e. bioenergetic pathways
9. Why are cattle able to survive on a diet consisting almost entirely of plant material?
   a. They are autotrophic.
   b. Cattle, like the rabbit, reingests its feces.
   c. They manufacture all 15 amino acids out of sugars in the liver.
   d. Cattle saliva has enzymes capable of digesting cellulose.
   e. They have cellulose-digesting, symbiotic microorganisms in chambers of their stomachs.
10. Most enzymatic hydrolysis of the macromolecules in food occurs in the
    a. small intestine.
    b. large intestine.
    c. stomach.
    d. liver.
    e. mouth.
11. Organisms categorized as osmoconformers are most likely
    a. terrestrial.
    b. marine.
    c. amphibious.
    d. found in freshwater streams.
    e. found in freshwater lakes.
12. What is the fundamental difference between matter and energy?
    a. Matter is cycled through ecosystems; energy is not.
    b. Energy is cycled through ecosystems; matter is not.
    c. Energy can be converted into matter; matter cannot be converted into energy.
    d. Matter can be converted into energy; energy cannot be converted into matter.
    e. Matter is used in ecosystems; energy is not
13. What is the functional unit of the kidney?
    a. cortex
    b. vasa recta
    c. nephron
    d. bladder
    e. glomerulus

14. In addition to ATP, what are the end products of glycolysis?
    a. CO_2 and H_2O
    b. CO_2 and pyruvate
    c. NADH and pyruvate
    d. CO_2 and NADH
    e. H_2O, $FADH_2$, and citrate
15. Most terrestrial animals dissipate excess heat by
    a. countercurrent exchange.
    b. acclimation.
    c. vasoconstriction.
    d. hibernation.
    e. evaporation.
16. How does positive feedback differ from negative feedback?
    a. Positive feedback benefits the organism, whereas negative feedback is detrimental.
    b. In positive feedback, the effector's response is in the same direction as the initiating stimulus rather than opposite to it.
    c. In positive feedback, the effector increases some parameter (such as temperature), whereas in negative feedback it decreases.
    d. Positive feedback systems have effectors, whereas negative feedback systems utilize receptors.
    e. Positive feedback systems have control centers that are lacking in negative feedback systems.
17. The dynamics of any ecosystem include the following major processes:
    a. the flow of energy from sunlight to producers
    b. the flow of energy from sunlight to producers and then to consumers
    c. the recycling of chemical nutrients
    d. the flow of energy to producers and the recycling of nutrients
    e. the flow of energy from sunlight to producers and then to consumers, and the recycling of chemical nutrients
18. For most ecosystems ____ is (are) the ultimate source of energy, and energy leaves the ecosystem in the form of ____.
    a. sunlight; heat
    b. heat; light
    c. plants; animals
    d. plants; heat
    e. producers; consumers
19. What part(s) of the digestive system have secretions with a pH of 2?
    a. small intestine
    b. stomach
    c. pancreas
    d. A and B only
    e. A, B, and C
20. Which one of the following statements about digestion is *false*?
    a. Digestion is catalyzed by enzymes.
    b. Digestion cleaves nucleic acids into nucleotides.
    c. Digestion cleaves fats into glycerol and fatty acids.
    d. During digestion the essential macromolecules are directly absorbed.
    e. During digestion polysaccharides and disaccharides are split into simple sugars.

21. All of the following are functions of the mammalian kidney *except*
    a. water reabsorption.
    b. filtration of blood.
    c. excretion of nitrogenous waste.
    d. regulation of salt balance in the blood.
    e. production of urea as a waste product of protein catabolism.
22. What do cohesion, surface tension, and adhesion have in common with reference to water?
    a. All increase when temperature increases.
    b. All are produced by ionic bonding.
    c. All are properties related to hydrogen bonding.
    d. All have to do with nonpolar covalent bonds.
    e. C and D only
23. In a single molecule of water, the two hydrogen atoms are bonded to a single oxygen atom by
    a. hydrogen bonds.
    b. nonpolar covalent bonds.
    c. polar covalent bonds.
    d. ionic bonds.
    e. van der Waals interactions.
24. The lowest level of biological organization that can perform all the activities required for life is the
    a. organelle-for example, a chloroplast.
    b. cell-for example, a skin cell.
    c. tissue-for example, nervous tissue.
    d. organ system-for example, the reproductive system.
    e. organism-for example, an amoeba, dog, human, or maple tree.
25. Which of the following animals is *incorrectly* paired with its feeding mechanism?
    a. lion—substrate feeder
    b. baleen whale—suspension feeder
    c. aphid—fluid feeder
    d. earthworm—deposit feeder
    e. snake—bulk feeder
26. The advantage of excreting wastes as urea rather than as ammonia is that
    a. urea can be exchanged for Na^+.
    b. urea is less toxic than ammonia.
    c. urea requires more water for excretion than ammonia.
    d. urea does not affect the osmolar gradient.
    e. less nitrogen is removed from the body.
27. Two plant species live in the same biome but on different continents. Although the two species are not at all closely related, they may appear quite similar as a result of
    a. parallel evolution.
    b. convergent evolution.
    c. allopatric speciation.
    d. introgression.
    e. gene flow.

28. Which of the following properties or processes do we associate with living things?
    a. evolutionary adaptations
    b. energy processing
    c. responding to the environment
    d. growth and reproduction
    e. all of the above
29. The slight negative charge at one end of one water molecule is attracted to the slight positive charge of another water molecule. What is this attraction called?
    a. a covalent bond
    b. a hydrogen bond
    c. an ionic bond
    d. a hydrophilic bond
    e. a hydrophobic bond
30. Some nutrients are considered "essential" in the diets of certain animals because
    a. only those animals use the nutrients.
    b. they are subunits of important polymers.
    c. they cannot be manufactured by the organism.
    d. they are necessary coenzymes.
    e. only some foods contain them.
31. Which metabolic pathway is common to both cellular respiration and fermentation?
    a. the oxidation of pyruvate to acetyl CoA
    b. the citric acid cycle
    c. oxidative phosphorylation
    d. glycolysis
    e. chemiosmosis
32. At what temperature is water at its densest?
    a. 0°C
    b. 4°C
    c. 32°C
    d. 100°C
    e. 212°C
33. Which of the following organisms fix nitrogen in aquatic ecosystems?
    a. cyanobacteria
    b. chemoautotrophs
    c. phytoplankton
    d. legumes
    e. fungi
34. The producers in ecosystems include organisms in which of the following groups?
    a. prokaryotes
    b. algae
    c. plants
    d. B and C only
    e. A, B, and C

35. Aquatic primary productivity is often limited by which of the following?
    a. light
    b. nutrients
    c. pressure
    d. A and B only
    e. A, B, and C
36. Which statement is true about marine fishes?
    a. Compared to marine fishes, freshwater fishes have fewer glomeruli.
    b. The kidneys of marine fishes excrete little urine.
    c. Marine fishes lack proximal tubules.
    d. Marine fishes secrete uric acid to conserve water.
    e. Their kidneys produce filtrate at high rates.
37. The symbiotic microbes that help nourish a ruminant live mainly in specialized regions of the
    a. large intestine.
    b. liver.
    c. small intestine.
    d. pharynx.
    e. stomach.
38. Which organism(s) has excretory organs known as Malpighian tubules?
    a. earthworms
    b. flatworms
    c. insects
    d. jellyfish
    e. both A and B
39. The digestion and utilization of which nutrient creates the greatest need for osmoregulation by the kidneys?
    a. protein
    b. starch
    c. fat
    d. oil
    e. cellulose
40. To leave the digestive tract, a substance must cross a cell membrane. During which stage of food processing does this take place?
    a. ingestion
    b. digestion
    c. hydrolysis
    d. absorption
    e. elimination
41. What is a hypothesis?
    a. the same thing as an unproven theory
    b. a tentative explanation that can be tested and is falsifiable
    c. a verifiable observation sensed directly, or sensed indirectly with the aid of scientific instrumentation
    d. a fact based on qualitative data that is testable
    e. a fact based on quantitative data that is falsifiable

42. Why is glycolysis considered to be one of the first metabolic pathways to have evolved?
    a. It produces much less ATP than does oxidative phosphorylation.
    b. It is found in the cytosol, does not involve oxygen, and is present in most organisms.
    c. It is found in prokaryotic cells but not in eukaryotic cells.
    d. It relies on chemiosmosis which is a metabolic mechanism present only in the first cells-prokaryotic cells.
    e. It requires the presence of membrane-enclosed cell organelles found only in eukaryotic cells.
43. Terrestrial animals mainly exchange heat with the environment by all of the following physical processes *except*
    a. conduction.
    b. convection.
    c. evaporation.
    d. illumination.
    e. radiation.
44. The body's automatic tendency to maintain a constant internal environment is termed
    a. negative feedback.
    b. physiologic control.
    c. homeostasis.
    d. static equilibrium.
    e. organ system function.
45. Where and from what compound(s) is urea produced?
    a. liver from NH_3 and CO_2
    b. liver from glycogen
    c. kidneys from glucose
    d. kidneys from glycerol and fatty acids
    e. bladder from uric acid and H_2O
46. Which of these animals has a gastrovascular cavity?
    a. pigeon
    b. hydra
    c. elephant
    d. beetle
    e. leech
47. What is the term used for the metabolic pathway in which glucose ($C_6H_{12}O_6$) is degraded to carbon dioxide (CO_2) and water?
    a. cellular respiration
    b. glycolysis
    c. fermentation
    d. citric acid cycle
    e. oxidative phosphorylation
48. Which bonds must be broken for water to vaporize?
    a. ionic bonds
    b. nonpolar covalent bonds
    c. polar covalent bonds
    d. hydrogen bonds
    e. covalent bonds

49. Which of the following animals generally has the lowest volume of urine production?
    a. a marine shark
    b. a salmon in freshwater
    c. a marine bony fish
    d. a freshwater bony fish
    e. a shark inhabiting Lake Nicaragua
50. Select the pair in which the nitrogenous waste is *incorrectly* matched with the benefit of its excretion.
    a. urea—low toxicity relative to ammonia
    b. uric acid—can be stored as a precipitate
    c. ammonia—very soluble in water
    d. uric acid—minimal loss of water when excreted
    e. urea—very insoluble in water

Unit Two C Level Version A
Answer Section

MULTIPLE CHOICE

1.	ANS: C	PTS: 1	TOP: Concept 44.2
2.	ANS: A	PTS: 1	TOP: Overview
3.	ANS: D	PTS: 1	TOP: Concept 41.5
4.	ANS: C	PTS: 1	TOP: Concept 1.5
5.	ANS: B	PTS: 1	TOP: Concept 41.3
6.	ANS: D	PTS: 1	TOP: Concept 50.3 | Concept 50.4
7.	ANS: A	PTS: 1	TOP: Concept 3.2
8.	ANS: B	PTS: 1	TOP: Concept 9.1
9.	ANS: E	PTS: 1	TOP: Concept 41.5
10.	ANS: A	PTS: 1	TOP: Concept 41.4
11.	ANS: B	PTS: 1	TOP: Concept 44.1
12.	ANS: A	PTS: 1	TOP: Concept 54.1
13.	ANS: C	PTS: 1	TOP: Concept 44.4
14.	ANS: C	PTS: 1	TOP: Concept 9.2
15.	ANS: E	PTS: 1	TOP: Concept 40.5
16.	ANS: B	PTS: 1	TOP: Concept 40.4
17.	ANS: E	PTS: 1	TOP: Concept 1.1
18.	ANS: A	PTS: 1	TOP: Concept 1.1
19.	ANS: B	PTS: 1	TOP: Concept 41.4
20.	ANS: D	PTS: 1	TOP: Concept 41.4
21.	ANS: E	PTS: 1	TOP: Concept 44.4
22.	ANS: C	PTS: 1	TOP: Concept 3.2
23.	ANS: C	PTS: 1	TOP: Concept 3.1
24.	ANS: B	PTS: 1	TOP: Concept 1.1
25.	ANS: A	PTS: 1	
26.	ANS: B	PTS: 1	TOP: Concept 44.2
27.	ANS: B	PTS: 1	TOP: Concept 50.4
28.	ANS: E	PTS: 1	TOP: Overview
29.	ANS: B	PTS: 1	TOP: Concept 3.1
30.	ANS: C	PTS: 1	TOP: Concept 41.2
31.	ANS: D	PTS: 1	TOP: Concept 9.5
32.	ANS: B	PTS: 1	TOP: Concept 3.2
33.	ANS: A	PTS: 1	TOP: Concept 54.2
34.	ANS: E	PTS: 1	TOP: Concept 54.2
35.	ANS: D	PTS: 1	TOP: Concept 54.2
36.	ANS: B	PTS: 1	TOP: Concept 44.6
37.	ANS: E	PTS: 1	
38.	ANS: C	PTS: 1	TOP: Concept 44.3
39.	ANS: A	PTS: 1	TOP: Concept 44.2
40.	ANS: D	PTS: 1	TOP: Concept 41.3

41. ANS: B PTS: 1 TOP: Concept 1.5
42. ANS: B PTS: 1 TOP: Concept 9.5
43. ANS: D PTS: 1 TOP: Concept 40.5
44. ANS: C PTS: 1 TOP: Concept 40.4
45. ANS: A PTS: 1 TOP: Concept 44.2
46. ANS: B PTS: 1 TOP: Concept 41.3
47. ANS: A PTS: 1 TOP: Concept 9.1
48. ANS: D PTS: 1 TOP: Concept 3.2
49. ANS: C PTS: 1
50. ANS: E PTS: 1