1. **The ultimate source of energy for living things is...**
a. the Krebs cycle.
b. fossil fuels.
c. the sun.
d. glycolysis.
e. aerobic respiration.

2. **When molecules are broken apart in respiration...**
a. the heat produced is used to drive biological reactions.
b. the oxygen in the compounds that are broken apart is used as an energy source.
c. the energy released in respiration is channeled into molecules of ATP.
d. ATP is converted into ADP.
e. ADP is released as a waste product.

3. **Which liberates the most energy in the form of ATP?**
a. aerobic respiration
b. anaerobic respiration
c. alcoholic fermentation
d. lactate fermentation
e. All liberate the same amount, but through different means.

4. **Aerobes use _____ as the final electron acceptor in electron transport phosphorylation.**
a. hydrogen
b. carbon
c. oxygen
d. H_2O
e. NAD^+

5. **The correct operational sequence of the three processes listed below is:**
I. glycolysis
II. electron transfer
III. Krebs

a. I → II → III
b. II → I → III
c. III → I → II
d. II → III → I
e. I → III → II

6. **Glycolysis depends on a continuous supply of...**
a. NADP.
b. pyruvate.
c. NAD^+.
d. NADH.
e. H_2O.

7. **Glycolysis...**
a. occurs in the mitochondria.
b. results in the production of pyruvate.
c. occurs in the cytoplasm.
d. occurs in the mitochondria and results in the production of pyruvate.
e. results in the production of pyruvate and occurs in the cytoplasm.

8. **The end product(s) of glycolysis is(are)...**
a. acetyl CoA.
b. carbon dioxide.
c. pyruvate.
d. glucose.
e. glucose and carbon dioxide.

9. **Which is capable of being reduced during both glycolysis and the Krebs cycle?**
a. NAD^+
b. FAD^+
c. ADP
d. NADH
e. $NADP^+$

10. **The Krebs cycle takes place in the...**
a. ribosomes.
b. cytoplasm.
c. nucleus.
d. mitochondria.
e. chloroplasts.

11. **The breakdown of pyruvate in the Krebs cycle results in the release of...**
a. energy.
b. carbon dioxide.
c. oxygen.
d. energy and oxygen.
e. energy and carbon dioxide.

12. **Which process is a transition from glycolysis to the Krebs cycle?**
a. acetyl CoA formation
b. conversion of PGAL to PGA
c. regeneration of reduced NAD^+
d. oxidative phosphorylation
e. substrate-level phosphorylation

13. **When glucose is used as the energy source, the largest amount of ATP is produced in...**
a. glycolysis.
b. acetyl CoA formation.
c. the Krebs cycle.
d. substrate-level phosphorylation.
e. electron transport phosphorylation.

14. **What is the name of the process by which NADH transfers electrons to oxygen?**
a. glycolysis
b. acetyl CoA formation
c. the Krebs cycle
d. electron transport phosphorylation
e. substrate-level phosphorylation

15. **Hydrogen ions diffuse from the outer to the inner compartment of the mitochondria through what molecule?**
a. ATP synthase
b. phospholipid
c. $FADH_2$
d. cholesterol
e. NADPH

16. **Yeast fermentation produces...**
a. CO_2.
b. ethanol.
c. lactate.
d. ethanol and CO_2.
e. ethanol and lactate.

17. **Under anaerobic conditions, muscle cells produce...**
a. ethyl alcohol.
b. acetaldehyde.
c. pyruvate.
d. lactate.
e. citrate.

18. **When fats are broken down as energy sources, their components enter...**
a. glycolysis.
b. the Krebs cycle.
c. electron transport.
d. glycolysis and the Krebs cycle.
e. glycolysis and electron transport.

19. **The term anaerobic means...**
   a. without CO_2.
   b. without bacteria.
   c. without O_2.
   d. without ATP.
   e. with O_2.

20. **The processes of photosynthesis and cellular respiration are complementary. During these energy conversions, some energy is...**
   a. created in the form of heat.
   b. used to create light.
   c. lost in the form of heat.
   d. All of the choices are correct.
   e. None of the choices are correct.

21. **Which one of the following is true?**
   a. Photosynthesis occurs in chloroplasts and cellular respiration occurs in mitochondria.
   b. Photosynthesis occurs in mitochondria and cellular respiration occurs in chloroplasts.
   c. Cellular respiration occurs in mitochondria and in chloroplasts.
   d. Photosynthesis occurs in mitochondria and in chloroplasts.
   e. Neither cellular respiration nor photosynthesis occurs in mitochondria and in chloroplasts.

22. **Respiration _____, and cellular respiration _____.**
   a. is gas exchange . . . produces ATP
   b. produces ATP . . . is gas exchange
   c. uses glucose . . . produces glucose
   d. produces glucose . . . produces oxygen
   e. produces glucose . . . is gas exchange

23. **Which one of the following statements is false? Cellular respiration...**
   a. consumes glucose.
   b. releases heat.
   c. is a single chemical reaction with just one step.
   d. produces carbon dioxide.
   e. produces water.

24. **Humans use the calories they obtain from _____ as their source of energy.**
   a. water
   b. minerals
   c. food
   d. sunlight
   e. carbon dioxide

25. **Oxidation is the _____, and reduction is the _____.**
   a. loss of electrons . . . gain of electrons
   b. gain of protons . . . loss of protons
   c. loss of oxygen . . . gain of oxygen
   d. gain of oxygen . . . loss of oxygen
   e. gain of electrons . . . loss of electrons

26. **During which of the following phases of cellular respiration does substrate-level phosphorylation take place?**
   a. the citric acid cycle
   b. oxidative phosphorylation
   c. glycolysis
   d. "grooming" of pyruvic acid
   e. glycolysis and the citric acid cycle

27. **Which one of the following metabolic pathways is common in aerobic and anaerobic organisms?**
    a. glycolysis
    b. oxidative phosphorylation
    c. chemiosmosis
    d. the citric acid cycle
    e. None of the choices are correct.

28. **Glycolysis...**
    a. does not occur in animal cells.
    b. does not occur in bacterial cells.
    c. takes place in virtually all cells.
    d. does not occur in yeast cells.
    e. does not occur in plant cells.

29. **The enzymes of the citric acid cycle cycle are located in the...**
    a. cytoplasm.
    b. inner mitochondrial membrane.
    c. outer mitochondrial membrane.
    d. intermembrane space of the mitochondrion.
    e. mitochondrial matrix.

30. **A child is born with a rare disease in which mitochondria are missing from skeletal muscle cells. However, the muscles still function. Physicians find that...**
    a. the muscle cells cannot split glucose to pyruvic acid.
    b. the muscles require extremely large amounts of carbon dioxide to function.
    c. the muscles contain large amounts of lactic acid following even mild physical exercise.
    d. the muscles require extremely high levels of oxygen to function.
    e. the muscles contain large amounts of carbon dioxide following even mild physical exercise.

31. **Some friends are trying to make wine in their basement. They've added yeast to a sweet grape juice mixture and have allowed the yeast to grow. After several days they find that sugar levels in the grape juice have dropped, but there's no alcohol in the mixture. The most likely explanation is that:**
    a. the mixture needs less oxygen. Yeast only produce alcohol in the absence of oxygen.
    b. the mixture needs more oxygen. Yeast need oxygen to break down sugar and get enough energy to produce alcohol.
    c. the mixture needs less sugar. High sugar concentrations stimulate cellular respiration, and alcohol is not a by-product of cellular respiration.
    d. the mixture needs more sugar. Yeast need a lot of energy before they can begin to produce alcohol.

32. **Yeasts can produce ATP by either fermentation or oxidative phosphorylation; thus they are...**
    a. facultative aerobes.
    b. strict anaerobes.
    c. producers of lactic acid.
    d. strict aerobes.
    e. facultative anaerobes.

33. **If you consume one gram of each of the following, which will yield the most ATP?**
    a. sucrose
    b. starch
    c. glucose
    d. fat
    e. protein

34. **The conversion of CO_2 and H_2O into organic compounds using energy from light is called...**
    a. fermentation.
    b. photorespiration.
    c. photosynthesis.
    d. cellular respiration.
    e. glycolysis.

ID Number — mark only one bubble in each digit group

		0	1	2	3	4
1st	digit	5	6	7	8	9
2nd	digit	0	1	2	3	4
		5	6	7	8	9
3rd	digit	0	1	2	3	4
		5	6	7	8	9
4th	digit	0	1	2	3	4
		5	6	7	8	9
5th	digit	0	1	2	3	4
		5	6	7	8	9
6th	digit	0	1	2	3	4
		5	6	7	8	9

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

Form number 50060100

www.zip-scan.com

Feed this end into scanner slot with printed side facing collection tray.