NOTE: Please do not write on the question sheets. Write your name and section number (Ex. BIO 101 01L) on the answer form. Use #2 pencils only. There is only one answer per question. Read the questions carefully. Good luck!

1. Energy transformations usually involve the loss of some useful energy as light energy.
   a. True
   b. False

2. Catabolism involves:
   a. Enzymatic synthesis
   b. Reduction reactions
   c. Breakdown of ATP to obtain energy
   d. All of the above
   e. None of the above

3. Each ATP molecule has _____________ high energy bonds.
   a. 1
   b. 2
   c. 3
   d. 4

4. When ADP is hydrolyzed it forms:
   a. ATP
   b. ADP
   c. AMP
   d. Adenosine

5. When a molecule accepts electrons it is considered reduced:
   a. True
   b. False

6. Glycolysis occurs in:
   a. Golgi apparatus
   b. Ribosomes
   c. Mitochondria
   d. Chloroplast
   e. Cytoplasm

7. Glycolysis is an anaerobic process:
   a. True
   b. False
8. During glycolysis there is a net gain of:
   a. 4 ATP molecules
   b. 4 ATP molecules and 2 NADH
   c. 2 ATP molecules and 4 NADH
   d. None of these

9. In the absence of O_2, pyruvic acid enters the mitochondria to begin citric acid cycle.
   a. True
   b. False

10. Electrons released during oxidation are usually picked up by:
    a. H_2O
    b. O_2
    c. CO_2
    d. NAD
    e. None of these

11. In human muscle cells, if O_2 is available pyruvic acid becomes:
    a. Alcohol
    b. Citric acid
    c. Lactic acid
    d. None of these

12. Reaction during which carbon is removed from a molecule is termed:
    a. Oxidation
    b. Reduction
    c. Decarboxylation
    d. Phosphorylation
    e. None of these

13. Glycolysis occurs in the cytoplasm of the cell.
    a. True
    b. False

14. For total oxidation of pyruvic acid ________________ atoms of oxygen are required.
    a. 1
    b. 2
    c. 3
    d. 4
    e. 5
15. During each Kreb’s cycle this is/are _____________ phosphorylative step(s):
   a. One
   b. Two
   c. Three
   d. Four
   e. None

16. How many pairs of hydrogen atoms are removed from each pyruvic acid molecule during Kreb’s cycle?
   a. 1
   b. 2
   c. 3
   d. 4
   e. 5

17. Each glucose molecule undergoes, during cellular respiration, _____________ ______ decarboxylations.
   a. One
   b. Four
   c. Six
   d. None

18. The enzymes of the respiratory chain (electron transport system) are found in the matrix of the mitochondria.
   a. True
   b. False

19. Formation of ATP in the presence of O₂ is termed:
   a. Phosphorylation
   b. Cyclic photophosphorylation
   c. Oxidative phosphorylation
   d. None of these

20. The net anaerobic gain from each glucose molecule is:
   a. 33 ATP
   b. 36 ATP
   c. 38 ATP
   d. 46 ATP
   e. None of these

21. The formation of alcohol by yeast cells would occur only in the absence of O₂.
   a. True
   b. False
22. The liquid matrix inside the chloroplast is termed:
   a. Grana
   b. Stroma lamellae
   c. Thylakoid system
   d. Stroma

23. Molecules of chlorophyll are found in structures called quantosomes.
   a. True
   b. False

24. Bulk of the photosynthesis occurs in blue and red light wavelengths.
   a. True
   b. False

25. Photic excitation occurs in:
   a. Mitochondria
   b. Stroma
   c. Quantosomes
   d. Lysosomes
   e. None of these

26. Dark reaction of photosynthesis does not require darkness.
   a. True
   b. False

27. The products of photchemical phase are:
   a. NADP
   b. NADPH₂
   c. ATP
   d. (b) & (c) are true

28. Another name for dark reaction is:
   a. Krebs cycle
   b. Calvin cycle
   c. Darwin cycle
   d. None of these

29. Atmospheric gaseous CO₂ is fixed by 5 carbon pentose sugar.
   a. True
   b. False

30. Total amount of energy required to make one glucose molecule is much more than the amount of energy one can obtain from that molecule.
   a. True
   b. False