

**HOWARD UNIVERSITY**  
**COLLEGE of ARTS and SCIENCES**  
**COMPREHENSIVE SCIENCES**

**LIFE SCIENCES – UNIT VI: METABOLISM STUDY QUESTIONS**

1. Define metabolism.
2. Does all metabolism occur on a cellular, tissue, molecular or organ level?
3. Do all cell types (monerans, protists, metaphytans and metazoans) metabolize?  
Yes or No.
4. Name two types of synthesis metabolic events.
5. Name two macromolecules biosynthesized by all living cells.
6. Give the sub-units of the macromolecules listed in question #5.
7. Do all cells biosynthesize macromolecules (proteins, lipids, and nucleic acids)?
8. Where (in the cell) are:
  - a. proteins and
  - b. nucleic acids synthesized?
9. List one type of cell incapable of photosynthesizing.
10. What two types of energy are involved in the trapping and transformation process?
11. Do non-green plants such as fungi photosynthesize? Why/Why not?  
  
Can green plants use solar energy to do work?  
  
Are heterotrophs such as you capable of photosynthesizing?  
  
What happens during the light reaction? The dark reaction?  
  
What are the end products of the light and dark reactions?  
  
What are the uses of the products of the light and dark reactions?
12. Can **YOU** use solar energy directly? Can any cell use solar energy directly?

13. (a) Where does the light reaction occur in the chloroplast?
  - (b) What are the end products resulting from the splitting of water during the light reaction?
14. Where does the dark reaction occur in the chloroplast?
15. (a) What organic molecule is produced initially after the dark reaction has occurred?
  - (b) What is the intermediate molecule produced?
  - (c) What is the terminal, end product produced?
16. Why must solar energy be transformed into chemical energy?
17. What are the beginning items needed for chemical respiration?
18. (a) What are the end products of glycolysis?
  - (b) Where does glycolysis occur in the cell?
19. What general types of enzymes function during Krebs Citric Acid cycle?
20. What are the end products of chemical respiration?
21. Do all types of cells perform chemical respiration?
22. List work tasks performed in the cell by ATP.
23. How much difference is there between cell types that respire chemically?

24. Compare photosynthesis and chemical respiration with respect to:

	<u>Photosynthesis</u>	<u>Chemical Respiration</u>
a. site of occurrence?	_____	_____
b. beginning items?	_____	_____
c. universal in all life forms? (Yes or No)	_____	_____
d. end products?	_____	_____
e. types of enzymes?	_____	_____
f. energy binding?	_____	_____
g. energy expending?	_____	_____