

**HOWARD UNIVERSITY
COLLEGE OF ARTS AND SCIENCES
COMPREHENSIVE SCIENCES
LIFE SCIENCES**

UNIT I: SCIENCE

1. Define Science.
2. Cite two differences between scientific and non-scientific disciplines.
3. List three different categorical types of sciences.
4. List the two major sub-divisions of the Natural Sciences.
5. List three major sub-categories of the Life Sciences.
6. What basic factor is common to the natural, behavioral, social and political sciences?
7. Using the steps of scientific methodology (#1 - #4), outline an investigation to either prove or disprove this hypothesis: All humans have 32 teeth.
8. Scientific concepts, principles, etc. are based on _____.
9. List two applied sciences.
10. List two allied sciences.
11. List a specific botanical science.
12. List a specific zoological science.
13. List a specific microbiological science.
14. Why weren't any theories formed during the laboratory exercises? (Be specific)
15. Why was the metric (rather than English) system used to record data in the laboratory exercises?
16. What steps of scientific methodology were presented and/or utilized in the lab? (List in order)
17. What steps of the scientific method were not used in the lab?
18. Cite one difference between a scientific hypothesis and a theory.
19. Name two pre-21st century scientists and cite his/her contribution(s).
20. Name two 20th or 21st century scientists and cite his/her contribution(s).
21. Name two African-American scientists and cite their contributions.
22. Define Life.

23. List four criteria common to all living forms of life (i.e., bacteria, protozoans, multi-celled plants and animals).
24. List the five taxonomic Kingdoms of Life.
25. Define organic. Define inorganic.
26. Designate the following substances as organic or inorganic and give a reason why the substance is inorganic or organic.
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|--------------------------------------|------------------|--|
| a. salt (Na^+Cl^-) | d. animal matter | g. oil ($\text{C}_{36} -\text{COOH}$) |
| b. water (H_2O) | e. cement | h. sugar ($\text{C}_{12}\text{H}_{22}\text{O}_{11}$) |
| c. plant matter | f. bacteria | i. wood |
27. Cite a major characteristic of:
- plants
 - animals
 - protozoa
 - bacteria
28. List each level of organization that constitutes the physical composition of life.
29. Cite one function at the cellular or molecular level of organization for the following macromolecules.
- Proteins
 - Lipids
 - Carbohydrates
 - Nucleic Acids
30. What are the sub-units of a:
- Protein molecule
 - Lipid molecule
 - Carbohydrate molecule
 - Nucleic Acid molecule
31. What are the major elements of a:
- Protein molecule
 - Lipid molecule
 - Carbohydrate molecule
 - Nucleic Acid molecule