

**NOTE:**

This document contains both the pre- and post- test and the pages are labeled accordingly.

# The Large Scale Structure of the Universe

## Pre-test

Name \_\_\_\_\_ Date \_\_\_\_\_  
Graduation Date \_\_\_\_\_ Major \_\_\_\_\_

Rank the following three galaxies in order of the distance, closest to the most distant, using the spectra below.

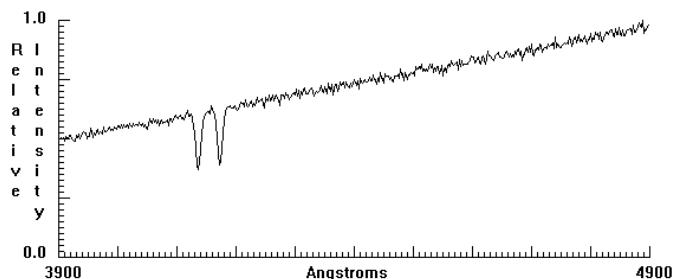


Figure 1

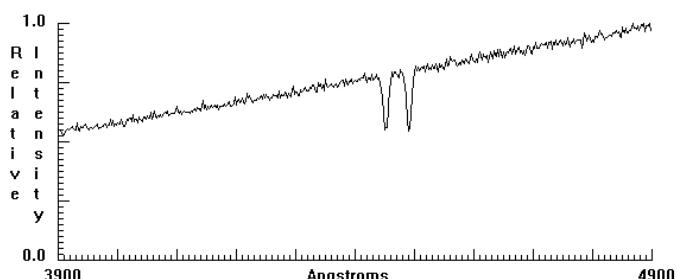


Figure 2

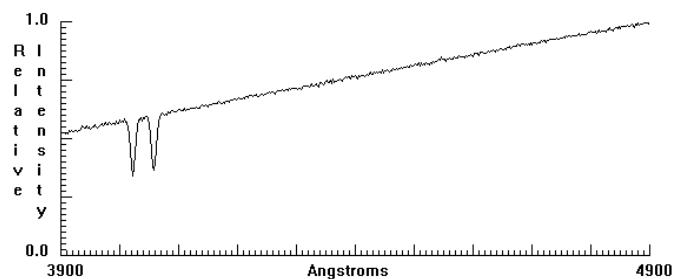
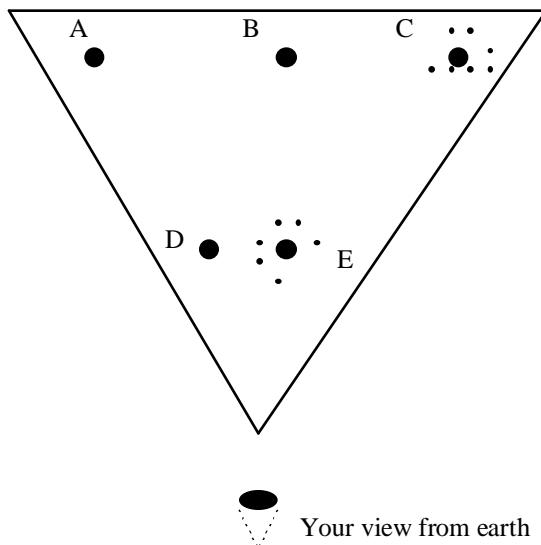


Figure 3

Closest \_\_\_\_\_                          Most Distant \_\_\_\_\_

2. Below is figure illustrating a portion of the sky containing five galaxies.



Your view from earth

- a. List two galaxies that are traveling at the same speed.
  - b. What is the speed of these galaxies?
  - c. List the two galaxies that would appear close to one another on a photograph of the sky?
  - d. List a galaxy that is in the most distance portion of the sky shown here.
3. What is meant by the Hubble Redshift Distance Relation?
4. How can you tell the difference between a star and a galaxy?
5. Describe how galaxies are distributed throughout the universe.

# The Large Scale Structure of the Universe

## Post-test

Name \_\_\_\_\_ Date \_\_\_\_\_  
Graduation Date \_\_\_\_\_ Major \_\_\_\_\_

Rank the following three galaxies in order of the distance, closest to the most distant, using the spectra below.

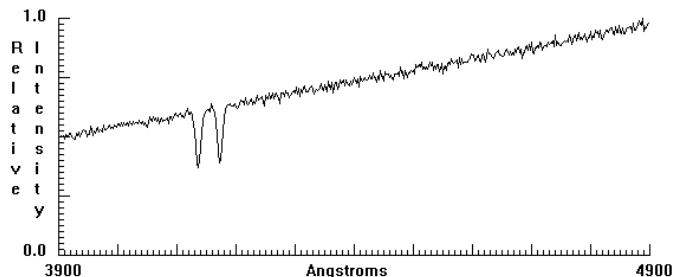


Figure 1

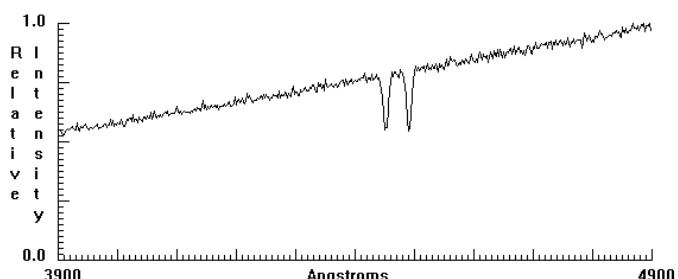


Figure 2

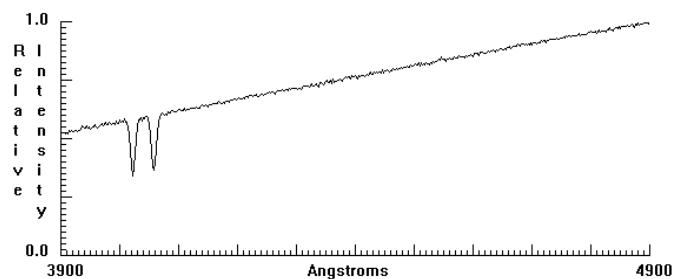
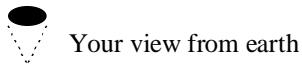
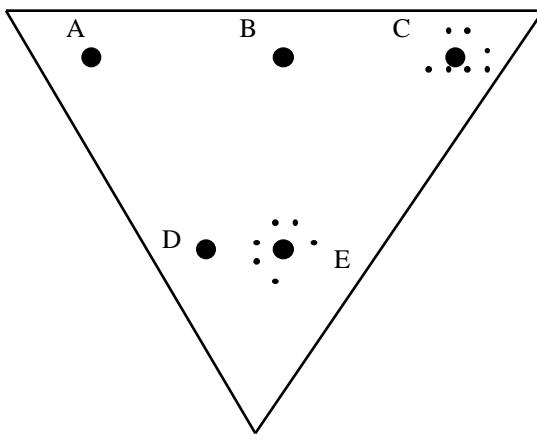


Figure 3

Closest \_\_\_\_\_                                  Most Distant \_\_\_\_\_

2. Below is figure illustrating a portion of the sky containing five galaxies.



- a. List two galaxies that are traveling at the same speed.
  - b. What is the speed of these galaxies?
  - c. List the two galaxies that would appear close to one another on a photograph of the sky?
  - d. List a galaxy that is in the most distance portion of the sky shown here.
3. What is meant by the Hubble Redshift Distance Relation?
4. How can you tell the difference between a star and a galaxy?
5. Describe how galaxies are distributed throughout the universe.