

ANSWER ALL THE QUESTIONS. THE WORTH OF EACH QUESTION IS IN () AFTER THE QUESTION.

1. THE MILKY WAY:

a) Name two constellations that the Milky Way goes through in the sky **or** name two major stars in or near the Milky Way:

(1) _____, (1) _____.

b) Approximately how many stars does the Milky Way galaxy contain?(3) 200 billion.

c) What is the distance from one end of the Milky Way galaxy to the other end (longest distance)?

(3) 100,000 light years.

d) Draw a picture of the Milky Way galaxy and indicate approximately where we are in the galaxy. (3)

2. GALAXIES

a) What are the three major types of galaxies:

(2) elliptical, (2) spiral, (2) irregular;

b) What type of galaxy is the Milky Way? (2) spiral;

c) What type is the Andromeda galaxy?

(2) spiral.

d) How far away is the Andromeda galaxy from us?

(3) 2 million light years.

3. THE LOCAL GROUP

a) What is the local group? (2)

b) Roughly, how many are in the local group?

(1) _____.

c) Who are its three biggest members (give names):

(1) Andromeda, (1) Milky Way, (1) Triangulum.

4. GALACTIC DISTANCES

a) How are the distances to the nearer galaxies determined? (4)

b) How are the distances to the farther galaxies determined? (4)

c) How are the distances to the furthest galaxies determined? (4)

5. What are the three main cosmological facts that the cosmological theories have to address?

1. (2)

2. (2)

3. (2)

6. a) Briefly describe the "Big Bang" theory: (4)

b) Discuss how the Big Bang theory explains the three main cosmological facts:

1. (3)

2. (3)

3. (3)

7. a) According to the "Big Bang" theory, how old is the universe? (4) 13 billion years old.
- b) Describe two ways in which this age is determined:
1. (3)

 2. (3)
8. What is the main short-coming of the steady state theory according to most astronomers? (4)
9. What are two conditions **on a star** if that star is a good candidate to have planets on which life develops:
- a. (3)

 - b. (3)
10. List and then briefly describe three conditions **on a planet** if that planet has a good possibility of developing and/or sustaining life.
- a. (3)

 - b. (3)

 - c. (3)

11. TRUE or FALSE: (+1 for each correct; 0 for each blank; -1 for each wrong)
(or subtracting from 100: -0 if correct, -1 if blank, -2 if wrong)
[The word "about" in the following questions means within a factor of 10.]

- F a) The Milky Way galaxy is a spiral galaxy about **100 light years** across.
- T b) There are both giant and dwarf elliptical galaxies.
- T c) We have recently found that many of the nearby stars have planets that orbit them.
- F d) Hubble's Law refers to the relation of a galaxy's **mass** to its distance from the earth.
- F e) It is theoretically **impossible** to have a finite universe without edges.
- F f) It is mainly the problem **with continuous creation** that caused the steady state theory to be discarded.
- T g) It is speculated, but not proven, that there are other universes.
- F h) Silicon **is just as good** as Carbon for life to be based on.
- T i) Water is the best liquid to support life as long as the water is in liquid form.
- F j) According to the theory of relativity, it **is possible** to travel faster than the speed of light.