NAME:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

EXAM

ASTR 1020 SECTION 001

April 20, 2010

DO ALL 20 PROBLEMS.

MARK YOUR ANSWERS ON THIS SHEET AND TURN IT IN.

Each answer worth 5 point.

All constants in mks units unless otherwise specified:

c=3x108 G=6.7x10-11 h=6.6x10-34 =5.7x10-8 REarth=6400km

1pc=3x1016m 1AU=1.5x1011m M=2x1030kg R=7x108m

   F=ma  x=vt v=at

   

\_\_\_\_\_ 1) Which property can a black hole not have?

a) mass b) electric field c) magnetic field d) angular momentum e) temperature

\_\_\_\_\_ 2) If you do a close orbit just above the surface of a black hole and then return out into normal space you will:

1. remain the same age as your twin
2. be older than your twin
3. younger than your twin
4. go back in time and never have a twin

\_\_\_\_\_ 3) How many stars are there in the Milky Way?

a) 109 b) 1011 c) 1013 d) 1015 e) 1017

\_\_\_\_\_ 4) How long does it take the Sun to orbit the Milky Way?

a) 2 million years b) 20 million years c) 200 million years d) 2 billion years

\_\_\_\_\_ 5) Where are the oldest stars in the Milky Way?

a) The outer edge of the disk b) the globular clusters c) the molecular clouds d) Sagittarius A\*

\_\_\_\_\_ 6) The bulk of the matter in the Milky Way is in what form?

a) dark matter b) stars c) molecular clouds d) neutron stars e) black holes

\_\_\_\_\_ 7) the high temperature of the interstellar medium is caused by:

a) planetary nebulae b) supernova remnants c) spiral density waves d) hydrogen burning e) cloud friction

\_\_\_\_\_ 8) The orbital velocity of the gas and stars around the center of galaxies

1. rises steadily with radius
2. falls steadily with radius
3. rises initially and then falls with radius
4. rises initially and then remains constant with radius

11.How can we observe a Black Hole, given that it’s black?

12. Draw an edge-on sketch of the Milky Way showing its main components

13. Why do star forming regions appear red?

14. Why are interstellar molecules generally found in the middle of dust clouds?