19. The absolute magnitude of a star is the __________ that we would see if the star were located at a distance of __________ from us.
A) apparent magnitude, 10 lightyears
B) apparent magnitude, 10 parsecs
C) absolute magnitude, 10 parsecs
D) luminosity, 32.6 parsecs
E) luminosity, 32.6 lightyears

20. The method known as **spectroscopic parallax** enables us to measure the __________ and requires the use of a __________.
A) absolute magnitude of a galaxy, galaxy rotation curve
B) proper motion of a farther star which lies at >50 pc from us, stellar absorption spectrum
C) tangential velocity of a planet, period-luminosity graph
D) distance to a farther star which lies at >50 pc from us, Hertzsprung-Russell Diagram
E) radius of a quasar, lunar occultation time measurement

21. What will be the consequences for our planetary system when the Sun reaches the Red Giant phase of its evolution?
A) All of the planets will be driven slightly outward from their present orbits by the intense solar wind but the entire planetary system will survive almost intact.
B) Some or all of our planetary system will melt and vaporize.
C) The entire planetary system will remain unmelted but will become uninhabitable as it is slowly drawn into the central core of the Sun by the strong gravitational field of the high density core.
D) The inner planets will be driven into deep space and out of the solar system entirely
E) The Sun is too far away to have any effect at all.

22. The energy generation process inside a white dwarf is __________.
A) the combining of electrons and protons within its core to form neutrons, thus releasing energetic photons
B) extremely efficient and rapid helium fusion
C) nonexistent...a white dwarf is simply cooling by radiating its leftover heat
D) simple hydrogen fusion
E) heavy element fission prior to a supernova explosion

23. The interior of an average white dwarf is mainly__________ and the radius of the white dwarf is about __________.
A) helium nuclei, 11 Earth radii
B) hydrogen nuclei, 1 Earth radius
C) carbon and some oxygen atoms, 1 solar radius (1.0 R_o)
D) helium atoms, 1 Earth radius
E) carbon and some oxygen nuclei, 1 Earth radius

24. Consider a binary (two star system) consisting of a normal giant star and a neutron "star" of 2.8 solar masses (2.8 M_o). What would happen if 1.2 solar masses (1.2 M_o) of material were transferred **onto** the neutron "star" from its companion?
A) It is believed that the neutron "star" would then have sufficient mass to collapse and form a black hole.
B) The neutron "star" would re-explode as a repeat supernova.
C) The neutrons in the neutron "star" would transform into protons, and the neutron "star" would re-establish itself as a normal star of smaller diameter.
D) The outward neutron pressure inside the neutron "star" would have to increase to balance the increased gravitational force within the neutron "star".
E) A neutron "star" of 2.8 + 1.2 = 4.0 solar masses (4.0 M_o) is completely stable and, thus, the neutron "star" is completely