1) Approximately how many times larger is the diameter of the sun compared to the earth?
   (1) 10 times (2) 100 times (3) 1000 times (4) 10,000 times

2) Compared to the sun, stars near the top of the H-R diagram are always
   (1) about the same brightness (2) over 10,000 times brighter
   (3) much redder (4) much hotter

3) Small cool stars would most likely appear to be
   (1) blue (2) red (3) yellow (4) white

4) Which two stars have the most similar luminosity and temperature?
   (1) Betelgeuse and Barnard's Star
   (2) Rigel and Betelgeuse
   (3) Alpha Centauri and the Sun
   (4) Sirius and Procyon B

5) As the sun ages it will be composed of
   (1) more hydrogen and less helium
   (2) more helium and less hydrogen
   (3) more oxygen and less carbon
   (4) less oxygen and more carbon

6) What type of star is Polaris?
   (1) White Dwarf (2) Supergiant (3) Red Giant
   (4) Main Sequence

7) When a star less massive than our sun consumes all of its nuclear fuel it will then become a
   (1) white dwarf (2) nova (3) supernova
   (4) black hole

8) In order to position a star on an H-R diagram you must know at least the star's
   (1) color and apparent brightness
   (2) color, apparent brightness and distance
   (3) apparent brightness and age
   (4) color and distance

9) What factor below usually determines whether a star will be on the main sequence?
   (1) age (2) mass (3) size
   (4) distance from our sun.

10) Compared to the sun a white dwarf star is
    (1) hotter and larger (2) hotter and smaller
    (3) cooler and larger (4) cooler and smaller

11) The explosion of a massive star near the end of its life is known as a
    (1) nova (2) pulsar (3) supernova
    (4) nebula

12) We know that red giant stars are larger in diameter than the sun because
    (1) they are more luminous but have the same temperature
    (2) they are less luminous but have the same temperature
    (3) they are hotter but have the same luminosity
    (4) they are cooler but have the same luminosity

13) At which phase of its evolutionary life is a white dwarf star?
    (1) the late phase for small mass star
    (2) the remains of a larger star's explosion
    (3) in the main sequence phase
    (4) early phases, soon after a star's formation

14) Which star has a higher luminosity and a lower temperature than the Sun?
    (1) Rigel (2) Barnard’s Star (3) Alpha Centauri
    (4) Aldebaran
15) What are the two most abundant elements in a main sequence star?
(1) carbon and hydrogen  
(2) hydrogen and helium  
(3) helium and carbon  
(4) carbon and heavy metals

16) Compared to the temperature and luminosity of the star Polaris, the star Sirius is
(1) hotter and more luminous  
(2) hotter and less luminous  
(3) cooler and more luminous  
(4) cooler and less luminous

17) The vertical axis of an H-R diagram relates to
(1) the color of the star  
(2) the actual visual brightness of the star  
(3) the apparent brightness of the star compared to our sun  
(4) the speed of the star

18) Compared to other stars, the sun is
(1) among the hottest stars  
(2) among the smallest stars  
(3) very unique  
(4) about average in all respects

19) Sun spots are believed to be most closely related to the sun's
(1) corona  
(2) period of rotation  
(3) magnetic field  
(4) changing size

20) Compared to other groups of stars, the group that has relatively low luminosities and relatively low temperatures is the
(1) Red Dwarfs  
(2) White Dwarfs  
(3) Red Giants  
(4) Blue Supergiants

21) The most observable phenomena in the "Solar Cycle" is the appearance of
(1) solar eclipses  
(2) sun spots  
(3) solar storms  
(4) black holes

22) Which of the following is the same for all stars along a horizontal line on an H-R diagram?
(1) temperature  
(2) diameter  
(3) mass  
(4) luminosity

23) Which star is cooler and many times brighter than Earth’s Sun?
(1) Barnard’s Star  
(2) Betelgeuse  
(3) Rigel  
(4) Sirius

24) Which of the following stars is hottest?
(1) a red giant  
(2) a white dwarf  
(3) the sun  
(4) a red dwarf

25) An astronomer can estimate the temperature of a star by observing its
(1) size  
(2) shape  
(3) color  
(4) brightness

26) In the H-R diagram, 90 percent of all stars fall
(1) in the Red Dwarf region.  
(2) in the Supergiant region.  
(3) among the White Dwarfs.  
(4) on the Main Sequence.

27) What factor from the choices below determines whether a star will evolve into a white dwarf, a neutron star, or a black hole?
(1) mass  
(2) percentage of helium  
(3) percentage of carbon  
(4) apparent brightness

28) What celestial phenomenon most affects radio communication and other electrical atmospheric changes for us on earth?
(1) solar eclipses  
(2) solar flares  
(3) meteorites entering the atmosphere  
(4) lunar eclipses
29) Which star’s surface temperature is closest to the temperature at the boundary between Earth’s mantle and core?
   (1) *Sirius*  (3) the Sun
   (2) *Rigel*  (4) *Betelgeuse*

30) Which factor does not affect a star's absolute magnitude (Luminosity)?
   (1) The star's temperature.
   (2) The star's size.
   (3) The star's distance.
   (4) The star's shape.

31) The apparent brightness of an object such as a star does not depend on
   (1) how fast the star is moving
   (2) the strength of the light emanating from the star
   (3) the distance from us to the star
   (4) the amount and kind of obstacles between us and the star

32) According to our present theories of stellar evolution, our sun will change next into
   (1) a white dwarf  (3) a supernova
   (2) a black hole  (4) a red giant

33) Compared to our sun, the star Polaris is
   (1) brighter  (3) cooler
   (2) smaller  (4) hotter

34) Which of the following stars is least bright?
   (1) the sun  (3) a white dwarf
   (2) a blue supergiant  (4) a red giant

35) The "fuel" of the sun is
   (1) hydrogen
   (2) helium
   (3) oil and various hydrocarbons
   (4) oxygen

36) If we plot many stars on an H-R diagram, all with the same luminosity but different temperatures, they
   (1) would all lie on the main sequence
   (2) would be all over the diagram
   (3) would form a horizontal line
   (4) would form a vertical line

37) Which star color indicates the hottest star surface temperature?
   (1) blue  (3) yellow
   (2) white  (4) red

38) *Barnard's Star* has a surface temperature of about
   (1) 300 ºC  (3) 5000 ºC
   (2) 3000 ºC  (4) 10,000 ºC

39) Two stars of the same color are plotted on an H-R diagram. Star *A* is more luminous than star *B*. Which one of the following statements could explain this?
   (1) Star *A* is hotter than star *B*.
   (2) Star *A* is more distant than star *B*.
   (3) Star *A* appears brighter in the sky than star *B*.
   (4) Star *A* is larger than star *B*.

40) The region of the H-R diagram occupied by most stars is the
   (1) main sequence region
   (2) red giant region
   (3) white dwarf region
   (4) quasar region

41) The smallest stars on a H-R diagram are found
   (1) at the upper left end of the main sequence
   (2) at the lower right end of the main sequence
   (3) at the upper right corner of the H-R diagram
   (4) at the lower left corner of the H-R diagram

42) Compared to the sun, Polaris is
   (1) hotter and less luminous
   (2) cooler and more luminous
   (3) the same temperature and larger
   (4) hotter and larger
43) Compared to the surface temperature and luminosity of massive stars in the Main Sequence, the smaller stars in the Main Sequence are
(1) hotter and less luminous
(2) hotter and more luminous
(3) cooler and less luminous
(4) cooler and more luminous

44) Red giant stars have greater luminosity than our sun mainly because they are
(1) hotter
(2) farther away
(3) larger
(4) older

45) Most of the radiant energy released by the sun results from the process of
(1) nuclear fission
(2) nuclear fusion
(3) combustion
(4) electrical generation

46) Measurements indicate that a certain star has a very high luminosity (100,000 times that of our sun) and yet has a temperature that is cooler than the sun. What can you conclude about this observation?
(1) It could be a main sequence star.
(2) It may be quite large.
(3) This is a typical characteristic of stars.
(4) There must be an error in measurement.

47) The probable fate of our sun is
(1) to expand as a red giant, undergo a nova outburst and end as a white dwarf
(2) to shrink to a white dwarf then eventually expand to a red giant
(3) become hotter and expand into a blue supergiant
(4) to become a black hole

48) A Red giant star would most likely have a temperature of
(1) 5,000ºC
(2) 10,000ºC
(3) 20,000ºC
(4) 30,000ºC

49) Which stars are the youngest?
(1) Supergiant
(2) White dwarf
(3) Blue star
(4) Red Dwarfs

50) The most abundant element on the sun is
(1) hydrogen
(2) helium
(3) carbon
(4) oxygen

51) According to the graph, the Sun is classified as a
(1) main sequence star with a temperature of approximately 4,000ºC and a luminosity of 100
(2) main sequence star with a temperature of approximately 6,000ºC and a luminosity of 1
(3) white dwarf star with a temperature of approximately 10,000ºC and a luminosity of 0.01
(4) blue supergiant star with a temperature of approximately 20,000ºC and a luminosity of 700,000

52) During a total solar eclipse one might view
(1) sun spots
(2) the sun's corona
(3) the sun's solar winds
(4) nothing of the sun, since it is totally blocked by the moon

53) By using a spectroscope an astronomer can
(1) measure the size of a star
(2) measure the altitude of a star
(3) identify elements in the atmosphere of a star
(4) measure the diameter of a star
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