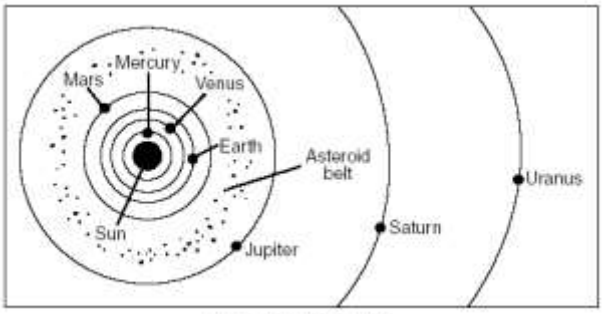
Modern Astronomy Review 2

1. What does a red shift in light from distant celestial objects indicate to a scientist on Earth?
   (1) The gravitational force on Earth changes.
   (2) The universe appears to be expanding.
   (3) The Jovian planets are aligned with the Sun.
   (4) Galaxies are becoming more numerous.

2. Compared to the terrestrial planets, the Jovian planets are
   (1) smaller and have lower densities
   (2) smaller and have greater densities
   (3) larger and have lower densities
   (4) larger and have greater densities

Base your answer to question 3 on the diagram below.
This diagram shows a portion of the solar system.



(Not drawn to scale)

3. What is the average distance, in millions of kilometers, from the Sun to the asteroid belt?
   (1) 129
   (2) 189
   (3) 503
   (4) 857

4. The explosion associated with the Big Bang theory and the formation of the universe is inferred to have occurred how many billion years ago?
   (1) less than 1
   (2) 2.5
   (3) 4.6
   (4) 13.7

5. Compared with our Sun, the star *Betelgeuse* is
   (1) smaller, hotter, and less luminous
   (2) smaller, cooler, and more luminous
   (3) larger, hotter, and less luminous
   (4) larger, cooler, and more luminous

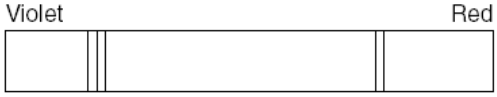
6. Compared to other groups of stars, the group that has relatively low luminosities and relatively high temperatures is the
   (1) Red Dwarfs
   (2) White Dwarfs
   (3) Red Giants
   (4) Blue Supergiants

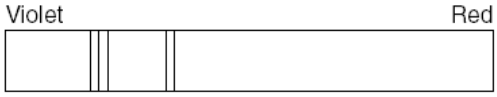
7. The diagram below shows the spectral lines for an element.

Which diagram best represents the spectral lines of this element when its light is observed coming from a star that is moving away from Earth?

(1)


(2)


(3)


(4)


8. In which sequence are the items listed from least total mass to greatest total mass?
   (1) solar system, Milky Way, universe
   (2) Milky Way, solar system, universe
   (3) universe, Milky Way, solar system
   (4) Milky Way, universe, solar system

9. How do Jupiter's density and period of rotation compare to Earth's?
   (1) Jupiter is less dense and has a longer period of rotation.
   (2) Jupiter is less dense and has a shorter period of rotation.
   (3) Jupiter is more dense and has a longer period of rotation.
   (4) Jupiter is more dense and has a shorter period of rotation.

10. Cosmic background radiation provides direct evidence for the origin of
    (1) the universe
    (2) our solar system
    (3) Earth's ozone layer
    (4) Earth's earliest atmosphere

11. Many meteors are believed to be fragments of celestial objects normally found between the orbits of Mars and Jupiter. These objects are classified as
    (1) comets
    (2) asteroids
    (3) planets
    (4) moons

12. Which planet's day (period of rotation) is longer than its year (period of revolution)?
    (1) Mercury
    (2) Venus
    (3) Jupiter
    (4) Saturn

13. The temperature of a star is most closely related to its
    (1) size
    (2) mass
    (3) brightness
    (4) color

14. Which of the following is the hottest planet in the Solar System?
    (1) Mercury
    (2) Venus
    (3) Jupiter
    (4) Mars

15. If a newly discovered galaxy is determined to be 7.6 million light years away, how long will it take the light from that galaxy to reach the Earth?
    (1) 1 year
    (2) 9.5 trillion years
    (3) 7.6 years
    (4) 7.6 million years

16. Which of the following information describing space debris is explained correctly?
    (1) a rock that strikes the Earth's surface is a meteoroid
    (2) comets are only composed of rock material
    (3) asteroids are located between Jupiter and Saturn
    (4) a meteor is commonly known as a shooting star

17. How old is the Earth and our Solar System?
    (1) 13.7 million years
    (2) 13.7 billion years
    (3) 4.6 million years
    (4) 4.6 billion years

18. Which of the following is a spiral galaxy?
    (1) the Milky Way
    (2) Sagittarius Dwarf Galaxy
    (3) the Magellanic Clouds
    (4) Betelgeuse

19. Which sequence of stars is listed in order of increasing luminosity?
    (1) *Spica*, *Rigel*, *Deneb*, *Betelgeuse*
    (2) *Polaris*, *Deneb*, *40 Eridani B*, *Proxima Centauri*
    (3) *Barnard's Star*, *Alpha Centauri*, *Rigel*, *Spica*
    (4) *Procyon B*, *Sun*, *Sirius*, *Betelgeuse*

20. Which of the following best describes the properties of Spica?
    (1) Its luminosity is 100 times brighter than the Sun and its temperature is 15,000K
    (2) Its luminosity is 100,000 times brighter than the Sun and its temperature is 20,000K
    (3) Its luminosity is 50,000 times brighter than the Sun and its temperature is 25,000K
    (4) Its luminosity is 25,000 times brighter than the Sun and its temperature is 45,000K

21. The reaction below represents an energy-producing process. The reaction represents how energy is produced

Hydrogen + Hydrogen → Helium + Energy
(lighter element) (lighter element) (heavier element)

    (1) in the Sun by fusion
    (2) when water condenses in Earth's atmosphere
    (3) from the movement of crustal plates
    (4) during nuclear decay

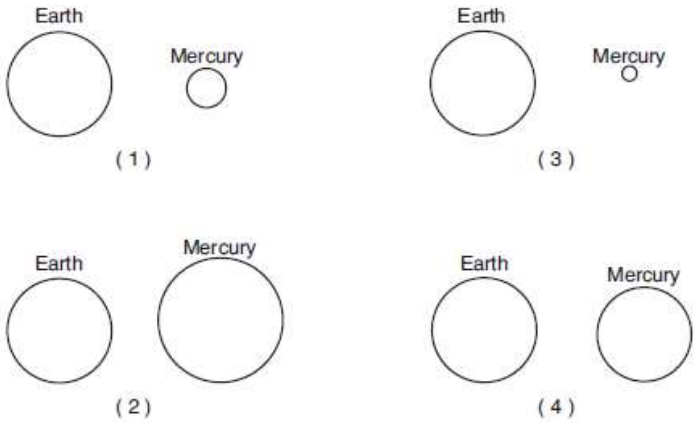
22. The average temperature of the planets
    (1) increases with greater distance from the Sun
    (2) has no relationship to the distance from the Sun
    (3) decreases with greater distance from the Sun
    (4) depends only on the chemical composition of the atmosphere of each planet

23. When a star less massive than our Sun consumes all of its nuclear fuel it will eventually become a
    (1) white dwarf
    (2) neutron star
    (3) supernova
    (4) black hole

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

25. What factor 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) luminosity

26. Which diagram most accurately represents the relative diameters of Earth and Mercury?



27. Which process produces the energy that allows the stars of the universe to radiate visible light?
    (1) convection
    (2) nuclear fusion
    (3) insolation
    (4) radioactive decay

28. Which of the following definitions is true?
    (1) asteroid – a rock orbiting the Earth
    (2) meteor – a rock burning up as it enters the Earth's atmosphere
    (3) comet – a rock in orbit between Mars and Jupiter
    (4) meteorite – a rock freely floating in space

29. All stars begin their lives as a
    (1) supernova
    (2) neutron star
    (3) nebula
    (4) planet