SAMPLE TEST 1 QUESTIONS
Physics 2021

1. What is the phase of the Moon when it sets at noon?

_____

2. The observed motion of the night sky is produced by the

_____ of the Earth on its axis.

3. An inferior planet may never be at a position of _____.

4. A major contribution made by Tycho Brahe was

_____.

5. A spherical body acts gravitationally as though its mass was
    a. even distributed throughout its volume
    b. evenly distributed over its entire surface area
    c. concentrated at a point within the center of the sphere
    d. concentrated at several points within the sphere
    e. evenly distributed in the shape of a thick disk

6. Why were epicycles used in Ptolemy's model of the solar system?
    a. to account for the parallaxes of the stars
    b. to compensate for the ellipticity of the orbits of the planets
    c. to explain the retrograde motions of the planets
    d. to explain the phenomenon of day and night
    e. to account for precession

7. The point of closest approach of a planet to the Sun is called the
    a. aphelion
    b. epicycle
    c. zenith
    d. perihelion
    e. inferior conjunction

8. According to Newton's Second Law, a 4-kg rock dropped off a building will take [more/less/equal] (*circle your answer*) time to hit the ground as compared to a 1-kg rock dropped from the same height.

9. Describe the difference between the synodic and sidereal periods of a planet.

10. Calculate Mars' distance from the Sun. Mars has a sidereal period of 1.8 years.

ANSWERS

1. Third Quarter
2. Rotation
3. Opposition *or* Quadrature
4. Accurate positions of the planets
5. c
6. c
7. d
8. Equal
9. Synodic: based on the alignment with the Earth and Sun
   Sidereal: based on alignment with the stars
10. $P = 1.8$ yr

    $P^2 = a^3 = (1.8)^2 = 3.24$

    $a = 1.5$ AU