

Jerusalem Science Contest 2020/21 - 5781 חדרון המדה הירושלמי

Astronomy

Test 1

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Proctor for this Test: \_\_\_\_\_

Form: \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

- 1) In order for a partial solar eclipse to be observed, what conditions must apply?
  - A) A new Moon on the ecliptic, with the observer on Earth in the Moon's penumbra
  - B) A new Moon at it's furthest point from Earth, with the observer on Earth in the Moon's umbra
  - C) A full Moon on the ecliptic, with the observer on Earth in the Moon's umbra
  - D) A new Moon on the equator, with the observer on Earth in the Moon's shadow
  
- 2) The four largest planets in our solar system are known as
  - A) exoplanets.
  - B) gigantoplanets.
  - C) gas giants.
  - D) terrestrial (rocky) planets.
  
- 3) The star Polaris is directly above which location?
  - A) Ottawa
  - B) The North Pole
  - C) The Equator
  - D) The Antarctic
  
- 4) The difference in length of time between a solar day and a sidereal day is
  - A) due to the fact that **the Sun moves in the Celestial Sphere**, so that Earth has to rotate **less than 360°** for the Sun to return to it's apparent location.
  - B) due to the fact that **the Sun moves in the Celestial Sphere**, so that Earth has to rotate **more than 360°** for the Sun to return to it's apparent location.
  - C) due to the fact that **Earth is orbiting the Sun as it rotates on it's own axis**, so that Earth has to rotate **less than 360°** for the Sun to return to it's apparent location.
  - D) due to the fact that **Earth is orbiting the Sun as it rotates on it's own axis**, so that Earth has to rotate **more than 360°** for the Sun to return to it's apparent location.

- 5) The frequency of a wave is
- A) the speed of the wave.
  - B) the number of cycles passing a point per unit time.
  - C) the length between two crests of the wave.
  - D) the time taken for the wave to repeat itself.
- 6) Which of the following is no longer categorized as a planet?
- A) Eris
  - B) Saturn
  - C) Pluto
  - D) Neptune
- 7) Which of the following **is not** a form of electromagnetic radiation?
- A) Radio
  - B) X-rays
  - C) Visible light
  - D) Alpha rays
- 8) The seasons on Earth are due to
- A) the tilt of Earth's magnetic axis.
  - B) the precession of Earth's rotational axis.
  - C) the movement of Earth closer to and further from the Sun as it orbits.
  - D) the tilt of Earth's rotational axis.
- 9) As the temperature of a body increases, what happens to the characteristic radiation it emits?
- A) The object emits red light as it becomes red hot.
  - B) The frequency increases.
  - C) The light becomes less focussed.
  - D) The amplitude decreases.
- 10) Which of the following is the largest object?
- A) A galaxy
  - B) The Sun
  - C) The Earth
  - D) The Moon
- 11) Which of the following correctly describe Aristotle's hypothesis?
- A) Earth must be spherical, since it casts a circular shadow on the Moon.
  - B) Earth must be flat, since a full Moon always looks the same from any location on Earth.
  - C) Earth must be spherical, since its shadow can hide the Moon during a lunar eclipse.
  - D) A solar eclipse is created by the Moon blocking out the Sun.

- 12) The phases of the Moon are caused by
- A) the movement of the Moon in and out of Earth's shadow as it orbits Earth.
  - B) the rotation of the Moon on its axis which exposes Earth alternately to the light and dark sides of the Moon.
  - C) the change of the angle of the Sun's rays hitting the Moon throughout a month.
  - D) the Moon moving closer to and further from Earth as it orbits Earth.
- 13) Which of the following types of radiation has the longest wavelength?
- A) Blue light
  - B) Ultraviolet radiation
  - C) Red light
  - D) X-rays
- 14) Which property of an astronomical object is the blackbody curve most useful in observing?
- A) Temperature
  - B) Mass
  - C) Distance from Earth
  - D) Direction of motion
- 15) Which of the following could possibly result from the "death" of a star?
- A) A blue supergiant
  - B) A quasar
  - C) A white dwarf
  - D) A red dwarf
- 16) David Gans writes that some planets appear "walking and confused". Why is that so?
- A) Retrograde motion looks like a person who is confused about which direction to go.
  - B) Planetary movement is chaotic.
  - C) Retrograde motion is a chaotic exception to normal planetary orbits.
  - D) Planets follow fixed orbits like stars; except for when they don't.
- 17) According to David Gans, who will experience at least one day a year with 24 hours of daylight or darkness?
- A) Those who live north of the Northern circle at the Tammuz solstice will experience a day of 24 hours of daylight.
  - B) Those who live 66 degrees 9 minutes north of the equator at the Nisan equinox will experience a day of 24 hours of daylight.
  - C) David Gans did not know that anyone could experience 24 hours of daylight in one day.
  - D) Those who live 66 degrees 9 minutes south of the equator at the Tevet solstice will experience a night lasting 24 hours.

- 18) From the manner in which David Gans wrote about Copernicus, one gets the impression that:
- A) Gans had very high regard for Copernicus being a master of astronomy.
  - B) Gans had very little regard for Copernicus knowledge of astronomy.
  - C) Gans could not accept Copernicus's model of the solar system, and considered it untenable.
  - D) Gans compares the scientific genius of Copernicus to the genius of Maimonides.
- 19) When faced with facts that contradict previous Talmudic scholars and sages, David Gans....
- A) had no problem saying that post Talmudic scholars were wrong.
  - B) made sure to re-interpret post Talmudic scholars so that current facts did not contradict them.
  - C) dismissed current scientific findings false in favor of Talmudic statements.
  - D) avoided discussion of such contradictions.
- 20) How does David Gans understand the Talmudic passage that says eclipses are a bad omen?
- A) He interprets the passage as advice to view natural events like eclipses as opportunities for self evaluation (hebrew - cheshbon hanefesh).
  - B) Even though eclipses are natural events, God makes them happen to forewarn us about a plague.
  - C) He understood it literally because in Gans's time, eclipses were still considered to be supernatural events.
  - D) Gans categorically says that the passage is one of many examples of the Talmud's erroneous science.

## Answer Key

Testname: JSC 5781 LEC 01 TEST SCIENCE AND JUDAICA

- 1) A  
ID: USER-28
- 2) C  
ID: USER-22
- 3) B  
ID: USER-25
- 4) D  
ID: USER-26
- 5) B  
ID: USER-31
- 6) C  
ID: USER-21
- 7) D  
ID: USER-30
- 8) D  
ID: USER-34
- 9) B  
ID: USER-33
- 10) A  
ID: USER-35
- 11) A  
ID: USER-29
- 12) A  
ID: USER-27
- 13) C  
ID: USER-25
- 14) A  
ID: USER-32
- 15) C  
ID: USER-23
- 16) A  
ID: USER-36
- 17) A  
ID: USER-37
- 18) A  
ID: USER-38
- 19) A  
ID: USER-39
- 20) A  
ID: USER-40

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