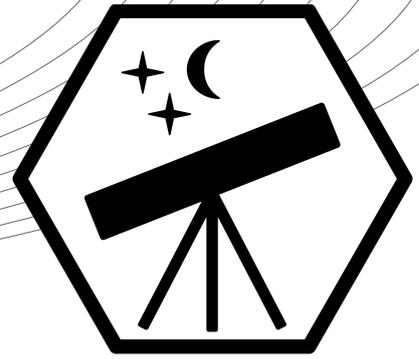


International Astronomy and Astrophysics Competition Final Round



Final Round Exam 2020

The final round exam was given in the form of an online exam.
Each participant was given a subset of 40 questions in random order.
This paper version is only available for training purposes.

Question 1 : How many parsecs are approximately 23 light years?

- (A) 6 (B) 7 (C) 8 (D) 9
-

Question 2 : Which one is the biggest moon of Jupiter?

- (A) Io (B) Europa (C) Ganymede (D) Callisto
-

Question 3 : Which object was investigated by the Cassini research mission?

- (A) A comet (B) Jupiter (C) Saturn (D) Pluto
-

Question 4 : What is the distinctive color of the star Betelgeuse?

- (A) Red (B) Orange (C) Blue (D) White
-

Question 5 : The International Space Station circles the Earth approximately every ...

- (A) 60 minutes (B) 90 minutes (C) 2 hours (D) 5 hours
-

Question 6 : The well-known Hyades star cluster is located in the constellation ...

- (A) Sagittarius (B) Virgo (C) Cancer (D) Taurus
-

Question 7 : What is the diameter of the Sun approximately?

- (A) 0.6 million km (B) 0.9 million km (C) 1.4 million km (D) 1.9 million km
-

Question 8 : The planet Jupiter orbits the Sun in ...

- (A) 12 years (B) 15 years (C) 18 years (D) 23 years
-

Question 9 : The value of the Hubble constant is approximately ...

- (A) 35 (km/s)/Mpc (B) 70 (km/s)/Mpc
(C) 120 (km/s)/Mpc (D) 180 (km/s)/Mpc
-

Question 10 : The first gravitational wave GW150914 was detected by using a Michelson interferometer with an arm length of ...

- (A) 4 km (B) 6 km (C) 8 km (D) 10 km
-

Question 11 : The Event Horizon Telescope is a very long baseline interferometry array observing at a wavelength of ...

- (A) 0.9 mm (B) 1.3 mm (C) 1.7 mm (D) 1.9 mm
-

Question 12 : Light with a wavelength of 100 micrometres is called ...

- (A) ultraviolet light (B) infrared light
(C) visible light (D) radio waves
-

Question 13 : How high above the Earth's equator is the geostationary orbit located?

- (A) 26000 km (B) 36000 km (C) 46000 km (D) 56000 km
-

Question 14 : Voyager 1 is the most distant man-made object. How fast is Voyager 1 moving away from the Sun at the moment?

- (A) 17 km/s (B) 19 km/s (C) 23 km/s (D) 28 km/s
-

Question 15 : When was the dwarf planet Pluto discovered?

- (A) 1630 (B) 1730 (C) 1830 (D) 1930
-

Question 16 : How many times more mass has the Earth compared to the Moon?

- (A) 15 times
(B) 30 times
(C) 50 times
(D) 80 times
-

Question 17 : What does the astronomical term barycentre describe?

- (A) The centre of zero gravitational potential of multiple objects.
 - (B) The centre of mass of multiple each other orbiting objects.
 - (C) The central axis of rotation of a spinning stellar object.
 - (D) The central axis of the precession of a rotating stellar object.
-

Question 18 : How many Lagrange points exist in a two-body system?

- (A) 3
 - (B) 5
 - (C) 8
 - (D) 16
-

Question 19 : The astronomical term axial precession describes the changing ...

- (A) angular velocity of the rotational axis.
 - (B) angular momentum of the rotational axis.
 - (C) orientation of the rotational axis.
 - (D) torque of the rotational axis.
-

Question 20 : Which astronomical term describes the alignment of three celestial objects?

- (A) Conjunction
 - (B) Eclipse
 - (C) Transit
 - (D) Syzygy
-

Question 21 : The farthest point of a planet to the Sun is called ...

- (A) Aphelion
 - (B) Perihelion
 - (C) Apogee
 - (D) Perigee
-

Question 22 : What is a synodic month?

- (A) The time between two full moons.
 - (B) The time between two Venus appearances.
 - (C) The time for 1/12th Earth orbit around the Sun.
 - (D) The time for one Earth rotation in respect to the Sun.
-

Question 23 : The astronomical object Hale-Bopp is a ...

- (A) Dwarf Planet (B) Meteor (C) Asteroid (D) Comet
-

Question 24 : The Olbers' paradox raises the following question:

- (A) Is the universe infinitely large?
(B) Is the universe infinitely old?
(C) Are we alone in the universe?
(D) Why is the night sky dark?
-

Question 25 : The picture below shows a very close and well-known galaxy:



What is the name of this galaxy?

- (A) Pinwheel Galaxy (B) Whirlpool Galaxy
(C) Bode Galaxy (D) Triangulum Galaxy
-

Question 26 : The correct astronomical term for shooting stars (or falling star) is ...

- (A) Asteroid (B) Meteoroid (C) Meteor (D) Comet
-

Question 27 : The calculated age of the universe is ...

- (A) 11.8 billion years (B) 12.8 billion years
(C) 13.8 billion years (D) 14.8 billion years
-

Question 28 : What is expected to happen at the end of the Sun's lifetime?

- (A) Become a white dwarf (B) Become a brown dwarf
(C) Explode as a supernova (D) Become a neutron star or black hole
-

Question 29 : Approximately how far away is the Sun from the centre of the Milky Way?

- (A) 12,000 light-years (B) 17,000 light-years
(C) 21,000 light-years (D) 27,000 light-years
-

Question 30 : Which one is the correct order of spectral classes according to the star's surface temperature (from high to low)?

- (A) O, A, B, F, G, K, M (B) O, B, A, F, G, K, M
(C) M, O, A, B, F, G, K (D) M, O, B, A, F, G, K
-

Question 31 : A rocket that has accelerated to the second cosmic velocity can...

- (A) circle around the Earth in a stable orbit.
(B) circle around the Earth in an elliptic orbit.
(C) escape the gravitational field of the Earth.
(D) escape the gravitational field of the Sun.
-

Question 32 : What is the diameter of the observable universe in parsec?

- (A) 13 billion pc (B) 29 billion pc (C) 36 billion pc (D) 55 billion pc
-

Question 33 : The well-known and very large volcano named Olympus Mons is located on ...

- (A) Mars (B) Venus
(C) Io (Jupiter moon) (D) Europa (Jupiter moon)
-

Question 34 : About how many Earth days are one Mars day?

- (A) 1 day (B) 1.5 days (C) 2 days (D) 2.5 days
-

Question 35 : The fascinating aurorae (or polar lights) are located in the ...

- (A) Ionosphere (B) Stratosphere (C) Troposphere (D) Exosphere
-

Question 36 : In which year did humans first land and walk on the Moon?

- (A) 1969 (B) 1986 (C) 1968 (D) 1976
-

Question 37 : The term heliocentric means ...

- (A) centred around the Earth (B) centred around the Venus
(C) centred around the Sun (D) centred around the Solar System
-

Question 38 : Saturn's moon Titan has many lakes which are made of liquid ...

- (A) Oxygen and Nitrogen (B) Nitrogen and Ethane
(C) Ethane and Methane (D) Methane and Nitrogen
-

Question 39 : Copernicus is located on our moon and refers to a well-known ...

- (A) Mountain (B) Sea (C) Crater (D) Apollo landing site
-

Question 40 : What type of nebula is the famous Orion Nebula?

- (A) Planetary Nebula (B) Dark Nebula
(C) Absorption Nebula (D) Emission Nebula
-

Question 41 : How is the path in the sky called that the Sun appears to cross within a year?

- (A) Equinox (B) Ecliptic
(C) Epicycle (D) Celestial Equator
-

Question 42 : Spectral line splitting caused by magnetic fields is called ...

- (A) Planck Effect (B) Russell Effect (C) Raylight Effect (D) Zeeman Effect
-

Question 43 : In which wavelengths is the cosmic background radiation concentrated?

- (A) Infrared Wavelengths (B) Gamma Wavelengths
(C) Ultraviolet Wavelengths (D) Microwave Wavelengths
-

Question 44 : Kepler's Laws state that the cube of a planet's semi-major axis is proportional to the ...

- (A) square of the average distance.
(B) covered area by the planet.
(C) cube of the average distance.
(D) square of the orbital period.
-

Question 45 : What is the astronomical term for the outer boundary of the Sun's magnetic field?

- (A) Heliopause (B) Heliosheath
(C) Heliotail (D) Termination Shock
-

Question 46 : The angle between an inferior planet and the Sun when observed from Earth is called ...

- (A) Inclination (B) Declination (C) Ecliptic (D) Elongation
-

Question 47 : The summer solstice in the northern/southern hemisphere occurs in ...

- (A) June / November (B) July / November
(C) June / December (D) July / December
-

Question 48 : Absolute magnitude is a star's apparent magnitude in a distance of ...

- (A) 5 pc (B) 10 pc (C) 15 pc (D) 20 pc
-

Question 49 : What is the visible part of the Sun called?

- (A) Radiative Zone (B) Heliosphere (C) Photosphere (D) Tachocline
-

Question 50 : The average albedo of the Earth (planetary albedo) is between ...

- (A) 20-25 % (B) 25-30 % (C) 30-35 % (D) 35-40 %
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