

### Question 1

What is believed to be the origin of starburst galaxies?

- A) The galaxies are slower rotators than other galaxies, so the slower-speed collisions between interstellar clouds produce more star formation.
- B) The galaxies are newly formed and are undergoing their initial, rapid star formation.
- C) A recent collision with another galaxy has triggered a wave of star formation.
- D) A recent series of supernovae has compressed the interstellar medium and started a wave of star formation.

Answer: <https://biology-forums.com/index.php?topic=586016>

### Question 2

The major feature that distinguishes a sunspot from other regions on the Sun is

- A) its faster rotation around the Sun's axis than neighboring regions that actually produce the spot.
- B) its very powerful magnetic field.
- C) the much higher emission of light from it.
- D) that a coronal hole always exists above it.

Answer: <https://biology-forums.com/index.php?topic=584758>

### Question 3

One important aspect of the study of binary star systems, as distinct from single stars, is that it provides

- A) a measurement of the masses of stars.
- B) a measurement of the surface temperatures of stars.
- C) a verification of the Doppler equation for wavelength shift of light from moving objects.
- D) a measurement of the composition (abundances of elements) inside stars.

Answer: <https://biology-forums.com/index.php?topic=585056>

### Question 4

How old are the lunar highlands?

- A) 4.0 to 4.3 billion years old
- B) 3.1 to 3.8 billion years old
- C) Less than 1 billion years old
- D) 1.8 to 2.6 billion years old

Answer: <https://biology-forums.com/index.php?topic=583907>

### Question 5

When electrons jump from higher levels in hydrogen atoms to the level  $n = 2$ , the resulting spectrum will consist of

- A) a continuum of light with a maximum in the visible spectral range.
- B) a series of UV lines, the Lyman series.
- C) a series of IR spectral lines, the Paschen series.
- D) a series of spectral lines, some of which are in the visible range, the Balmer series.

Answer: <https://biology-forums.com/index.php?topic=583574>

### Question 6

If you stay on the Earth while a friend races off in a rocket at a speed close to the speed of light, then according to special relativity you will see a clock on the rocket appear to tick more slowly than the one on your wall. If your friend looks back at your clock, then according to the same theory the friend will see your clock appear to tick

- A) at the same speed as the clock on the rocket.
- B) faster than the clock on the rocket.
- C) faster or slower than the clock on the rocket, depending on the direction of travel of the rocket compared to the Earth.
- D) more slowly than the clock on the rocket.

Answer: <https://biology-forums.com/index.php?topic=585543>

### Question 7

The Local Group, the cluster of galaxies to which our Milky Way galaxy belongs, is a

- (a) poor, irregular cluster of two to three dozen galaxies.
- (b) rich, roughly-spherical, cluster of many thousands of galaxies.
- (c) rich, irregular cluster of many thousands of galaxies.

Answer: <https://biology-forums.com/index.php?topic=587019>

### Question 8

How does the number of sunspots on the Sun vary with time?

- A) They vary relatively regularly, with a period of about 11 years.

- B) They vary irregularly, with no periodicity.  
C) They increase and decrease with a precise period of 11.1 years.  
D) They increase for about 11 years and then decrease again over the next 11 years.

Answer: <https://biology-forums.com/index.php?topic=584717>

### Question 9

The one terrestrial planet that rotates in the "wrong" way (opposite to the rotation of most other planets and to the planet's revolutionary direction) is  
A) Mars. B) Earth. C) Mercury. D) Venus.

Answer: <https://biology-forums.com/index.php?topic=584097>

### Question 10

On the absolute Kelvin temperature scale, the temperature of freezing water is about

- A) -273 K. B) +273 K. C) +373 K. D) 0 K.

Answer: <https://biology-forums.com/index.php?topic=583438>

### Question 11

In determining the distance to a galaxy by using observations of a Cepheid variable star, which of the following is NOT needed?

- A) The star's average brightness or apparent magnitude  
B) The star's velocity via the Doppler effect  
C) The type of spectrum of the Cepheid, i.e., whether it is metal-rich or metal-poor  
D) The Cepheid's period of variability

Answer: <https://biology-forums.com/index.php?topic=585676>

### Question 12

The Milky Way in which the Sun resides is an example of which type of galaxy?

- A) A spiral galaxy (i.e., with a regular pattern of spiral arms)  
B) An elliptical galaxy (i.e., with a smooth star distribution lacking spiral arms)  
C) It is not a galaxy at all but a large cluster of stars.  
D) An irregular galaxy (i.e., with possible clumps of stars but no overall pattern)

Answer: <https://biology-forums.com/index.php?topic=585730>

### Question 13

In connection with a star, what does the phrase "metal-poor" mean?

- A) It has a low abundance of all elements heavier than hydrogen in its spectrum.  
B) It has a low abundance of all elements heavier than hydrogen and helium in its spectrum.  
C) It has a low abundance of all elements in its spectrum.  
D) It might or might not have a low abundance of carbon in its spectrum but is definitely weak in iron.

Answer: <https://biology-forums.com/index.php?topic=585320>

### Question 14

Why is Cygnus X-1 thought to be a black hole?

- A) It emits X rays that flicker on time scales of one-hundredth of a second, a unique characteristic of a black hole.  
B) No light has ever been observed to come from it.  
C) It is smaller than the Earth, but its mass is too large to be a neutron star or white dwarf.  
D) It has pulled matter from its companion star into an accretion disk around itself.

Answer: <https://biology-forums.com/index.php?topic=585633>

### Question 15

When distances were carefully measured from the Earth to globular clusters above and below the Milky Way plane (where our view of them is not obscured by interstellar dust and gas), their distribution was found to be

- A) spherically symmetric about a point in the constellation Sagittarius and concentrated in that direction.  
B) in a relatively flat disk almost perpendicular to the plane of the Galaxy, with a relatively higher density of clusters toward its center.  
C) concentrated in the plane of the Milky Way and clustered around the Sun's position, indicating that the Sun is close to the Galaxy's center.  
D) uniformly distributed throughout space, with no concentration in any area of the Milky Way.

Answer: <https://biology-forums.com/index.php?topic=585698>

### Question 16

In which of the following parameters does a photon of blue light NOT differ from a photon of yellow light, in a vacuum?

- A) Energy B) Color C) Wavelength D) Speed

Answer: <https://biology-forums.com/index.php?topic=583256>

### Question 17

How do astronomers measure the luminosity class of a star?

- (a) From the absorption lines in the star's spectrum.
- (b) From the observed size of the star.
- (c) From the brightness of the star in the sky.

Answer: <https://biology-forums.com/index.php?topic=586856>

### Question 18

The Moon does not look completely dark when it is in the Earth's shadow during a total solar eclipse because

- A) of light reflected from the clouds on the Earth, the earthshine.
- B) atmospheric refraction bends red solar light onto the Moon.
- C) there are faint emissions from the tenuous lunar atmosphere, excited by solar wind bombardment.
- D) there is a remnant glow from the hot lunar surface.

Answer: <https://biology-forums.com/index.php?topic=582935>

### Question 19

On a Hertzsprung-Russell diagram describing the stars in a young cluster, in which position would you expect to find the T Tauri stars?

- A) Well above the main sequence and to the left of the diagram
- B) Just above and slightly to the right of the main sequence
- C) Well below the main sequence
- D) In the upper right of the diagram, well above the main sequence

Answer: <https://biology-forums.com/index.php?topic=585204>

### Question 20

According to Einstein's theory of general relativity, if you watch a clock from a distant location as it is moved closer to a source of gravity, you will see the clock

- A) maintain the same rate since time is unaffected by gravity.
- B) only change its rate if it is moving rapidly but maintain its standard rate if stationary in a gravity field.
- C) slow down.
- D) run faster.

Answer: <https://biology-forums.com/index.php?topic=585554>