

November 26, 2018

Q.1) Consider the following statements with respect to 'Quadricycles'

1. It cannot be used for personal use according to the Motor Vehicles Act 1988
2. It is being promoted as a replacement to the three-wheeler auto-rickshaws

Select the correct statements

- a) 1 Only
- b) 2 Only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.1) Solution (d)

Quadricycles can now be bought for personal usage, with the Ministry of Road Transport and Highways notifying insertion of the item 'Quadricycle' as a 'non-transport' vehicle under the Motor Vehicles Act 1988.

A quadricycle is a vehicle of the size of a three-wheeler but with four-tyres and is fully covered like a car. It has an engine like that of a three-wheeler. This makes it a cheap and safe mode of transport for last-mile connectivity

Though the government permitted the use of quadricycles for commercial purpose in June, the latest notification opens the door for their use for personal purpose.

Source: <https://www.thehindubusinessline.com/economy/logistics/quadricycles-for-personal-useget-governments-green-signal/article25580432.ece>

Q.2) Consider the following statements with respect to 'Hansen's disease'

1. It is a bacterial disease
2. It affects the skin and nerves which can lead to physical deformity and disability if left untreated

Select the correct statements

- a) 1 Only
- b) 2 Only
- c) Both 1 and 2
- d) Neither 1 nor 2

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Q.2) Solution (c)

Leprosy, also known as Hansen's disease, is a bacterial disease which affects the skin and nerves which can lead to physical deformity and disability if left untreated. Despite a centuries-long stigma, it is not hereditary, it is completely curable, and is only mildly infectious – more than 85% of cases are non-infectious and over 95% of the population has a natural immunity to the disease.

Q.3) Consider the following statements with respect to 'Apep', which was recently in news.

1. It is capable of producing a gamma-ray burst
2. It is named after the serpentine Egyptian god of chaos

Select the correct code:

- a) 1 Only
- b) 2 Only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.3) Solution (c)

Astronomers have identified a 'nearby' star system with the potential to produce a gamma-ray burst, one of the most extreme energetic events in the universe.

The rare star is only 8,000 light years from Earth and is on the brink of a massive supernova explosion, expected to produce a dangerous gamma-ray burst.

The star is a part of a system nicknamed Apep, after the serpentine Egyptian god of chaos. It was believed that Ra, the Sun god, would battle with Apep every night; prayer and worship ensured Ra's victory and the return of the Sun.

Apep comprises of two hot, luminous stars - known to astronomers as Wolf-Rayets. They orbit each other every hundred years or so, according to researchers from the University of Sydney in Australia.

These stars could explode into supernovae at any time and could result in a cataclysmic gamma-ray event combining with the system's extreme conditions.

Wolf-Rayet stars are extremely massive bluish stars, containing the mass of 10 to 15 suns.

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The blue-white color of the star indicates that its surface temperature is approximately 50,000 C.

Gamma-ray bursts (GRBs) are short-lived bursts of gamma-ray light, the most energetic form of light. Lasting anywhere from a few milliseconds to several minutes, GRBs shine hundreds of times brighter than a typical supernova and about a million trillion times as bright as the Sun.

When a GRB erupts, it is briefly the brightest source of cosmic gamma-ray photons in the observable Universe.

When astronomers looked at the number of bursts versus how long they lasted, they found two different classes of bursts: long-duration and short-duration.

These two classes are likely created by different processes, but the end result in both cases is a brand new black hole.

Long-duration bursts last anywhere from two seconds to a few hundreds of seconds (several minutes), with an average time of about 30 seconds. They are associated with the deaths of massive stars in supernovas; though not every supernova produces a gamma-ray burst.

Short duration bursts are those that last less than two seconds; lasting anywhere from a few milliseconds to two seconds with an average duration of about 0.3 seconds (or 300 milliseconds).

These bursts appear to be associated with the merger of two neutron stars into a new black hole or a neutron star with a black hole to form a larger black hole.

Fortunately, Apep appears not to be aimed at Earth, because a strike by a gamma-ray burst from this proximity could strip ozone from the atmosphere, drastically increasing our exposure to UV light from the Sun.

Q.4) Consider the following statements with respect to 'Mountain gorilla'

1. It is native to South East Asia
2. It is listed as critically endangered under the IUCN Red list

Select the correct code:

- a) 1 Only
- b) 2 Only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.4) Solution (d)

The mountain gorilla (*Gorilla beringei beringei*) is one of the two subspecies of the eastern gorilla. The subspecies is listed as endangered by the IUCN, with only two surviving populations. One is found in the Virunga Mountains of East Africa in three bordering national parks: Mgahinga Gorilla National Park in Uganda, Volcanoes National Park in Rwanda, and Virunga National Park in the Democratic Republic of Congo (DRC). The other population is found in Uganda's Bwindi Impenetrable National Park. A count in 2018 put the mountain gorilla population at just over 1,000. The species was previously listed as critically endangered until 2018.

Q.5) 'Rothschild's giraffe' is listed as _____ under IUCN Red List

- a) Endangered
- b) Near Threatened
- c) Vulnerable
- d) Extinct

Q.5) Solution (b)

Rothschild's giraffe has gone from endangered to near threatened.

The International Union for Conservation of Nature (IUCN) Red List classifies species according to their extinction risks on a spectrum from "extinct" to "least concern."

Source: <https://www.the-scientist.com/news-opinion/iucn-red-list-update-signals-hope-for-gorillas-65105>

