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

1. During a lunar eclipse, the Earth comes between the Sun and the Moon
2. The moon appears to be red, because the light which makes its way around the earth is of higher wavelengths

Select the correct statements

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

Q.1) Solution (c)

Sunlight is made of different colours, from violet and blue (low wavelength) to red and orange (high wavelength). When sunlight enters the Earth's atmosphere, these colours get scattered in different directions. During a lunar eclipse, the Earth comes between the Sun and the Moon, which means that it blocks light from getting between them. Any sunlight that does reach the Moon, therefore, has to make its way around the Earth. The light that manages to do so is that with the higher wavelengths, towards the red end of the spectrum. When this light hits the surface of the Moon, it gives it the reddish-orange glow that characterise a total lunar eclipse.

Source: <https://indianexpress.com/article/explained/this-word-means-blood-moon-lunar-eclipse-5282170/>

Q.2) Consider the following statements about 'Robert Bruce Foote'

1. He is called as "Father of Indian Prehistory"
2. Belum Caves, which is believed to be occupied by Jain and Buddhist monks' centuries ago, were discovered by him in 1884

Select the correct statements

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

Q.2) Solution (c)

Both the statements are correct.

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Read More –

- https://en.wikipedia.org/wiki/Robert_Bruce_Foote
- <https://www.livemint.com/Sundayapp/BylFK4qyhE0Pw0P8VzkpgJ/Robert-Bruce-Foote-The-father-of-Indias-prehistory.html>

Source: <https://www.thehindu.com/sci-tech/science/kolkata-museum-celebrates-early-tool-makers-of-tn-ap/article24542282.ece>

Q.3) Consider the following statements about 'Minke Whale'

1. It is found only in North Atlantic Ocean
2. It is listed as 'Critically Endangered' by IUCN

Select the correct statements

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

Q.3) Solution (d)

The Common Minke Whale is a cosmopolitan species found in all oceans and in virtually all latitudes, from 65°S to 80°N. In parts of its range it is very abundant, in other parts much less so. Its migration patterns are poorly known. It occurs in the North Atlantic, the North Pacific, and the Southern Hemisphere, but is not known from the northern Indian Ocean.

IUCN Status – Least Concern

Source: <https://www.thehindu.com/sci-tech/energy-and-environment/minke-whale-hunting-ends-in-iceland-as-industry-shuts/article24542253.ece>

Q.4) 'Eusociality' is observed in

1. Ants
2. Bees
3. Termites
4. Wasps

Select the correct statements

- a) 1, 2 and 3

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- b) 2, 3 and 4
- c) 1, 3 and 4
- d) All of the above

Q.4) Solution (d)

It is the highest level of organization of animal sociality, is defined by the following characteristics: cooperative brood care (including care of offspring from other individuals), overlapping generations within a colony of adults, and a division of labour into reproductive and non-reproductive groups. The division of labour creates specialized behavioural groups within an animal society which are sometimes called castes. Eusociality is distinguished from all other social systems because individuals of at least one caste usually lose the ability to perform at least one behaviour characteristic of individuals in another caste.

Eusociality exists in certain insects, crustaceans and mammals. It is mostly observed and studied in the Hymenoptera (ants, bees, and wasps) and in the termites.

Source: <https://www.pressreader.com/india/the-hindu/20180729/282166471984181>

Q.5) The term, 'CRISPR-Cas9' is often in news. What is 'Cas9'?

- a) Antibody
- b) Enzyme
- c) Gene
- d) Antigen

Q.5) Solution (b)

Cas9 is an enzyme that can edit DNA allowing the alteration of genetic patterns through genome modification. CRISPR (clustered regularly interspaced short palindromic repeats) is a collection of DNA sequences that lets scientists to selectively edit genome parts and replace them with new DNA stretches.

Source: <https://www.thehindu.com/sci-tech/health/how-safe-is-crispr/article24542728.ece>