

Que-1 What is the Varroa mite, recently in News?

- 1- It is a parasitic insect that attacks and feeds on honeybees.
- 2- The spread of the mite is largely blamed for a sharp decline in the number of honey bee colonies worldwide.
- 3- They often travel from bee to bee and also via beekeeping equipment, such as combs that have been extracted.

Which of the following given above is/are correct

- | | |
|-----------------|-----------------|
| a) 1 and 2 only | b) 1 and 3 only |
| c) 1, 2 and 3 | d) 2 and 3 only |

Que-2 With reference to Montreal Protocol, consider the following statements

- 1- It was aimed at protecting the Earth's ozone layer by regulating the production and consumption of nearly 100 chemicals called ozone-depleting substances (ODS).
- 2- As per the Montreal Protocol developed countries have more responsibilities to curb ODS.
- 3- It is the first treaty to achieve universal ratification by all countries in the world.

Which of the following given above is/are correct

- | | |
|-----------------|-----------------|
| a) 1 and 2 only | b) 1 and 3 only |
|-----------------|-----------------|

- | | |
|---------------|-----------------|
| c) 1, 2 and 3 | d) 2 and 3 only |
|---------------|-----------------|

Que-3 What is Australopithecus?

- 1- Australopithecus, meaning "southern ape".
- 2- It was a group of hominins or now-extinct early humans, that was closely related to and almost certainly the ancestors of modern humans.
- 3- Their fossils have been found across Australia.

Which of the following given above is/are correct

- | | |
|-----------------|-----------------|
| a) 1 and 2 only | b) 1 only |
| c) 1, 2 and 3 | d) 2 and 3 only |

Que-4 With reference to superfood 'ant chutney', consider the following statements

- 1- It is rich in valuable proteins, calcium, zinc, vitamin B-12, iron, magnesium, potassium, sodium, copper, fiber and 18 amino acids, is known to boost the immune system and keep diseases at bay.
- 2- Applied under food category for the GI tag.
- 3- Found at Coimbatore, Tamil Nadu.

Which of the following given above is/are correct

- | | |
|-----------------|-----------|
| a) 1 and 2 only | b) 3 only |
|-----------------|-----------|

- c) 1, 2 and 3 d) 2 and 3 only

Que-5 With reference to gene MADS27 in plants, consider the following statements

- 1- It regulates nitrate absorption, root development, height adjustment and temperature control.
- 2- It is activated by the micro-RNA, miR444.
- 3- It leads to better development of the roots by regulating auxin hormone production and transport.

Which of the following given above is/are correct

- a) 1 and 2 only b) 1 and 3 only
c) 1, 2 and 3 d) 2 and 3 only

Que-6 With reference to Role of Nitrogen in plants, consider the following statements about

- 1- Nitrates play a role in controlling genome-wide gene expression that in turn regulates root system architecture, flowering time, leaf development, etc.
- 2- It is a part of chlorophyll, amino acids and nucleic acids, among others.
- 3- It is mostly sourced from the soil where it is mainly absorbed in the form of nitrates and ammonium by the roots.

Which of the following given above is/are correct

- a) 1 and 2 only b) 1 and 3 only

- c) 1, 2 and 3 d) 2 and 3 only

Que-7 With reference to Election to the Office of the Vice-President of India, consider the following statements

- 1- As per Article 64 of the Constitution of India, an election to fill the vacancy caused by the expiration of the term of office of the outgoing Vice-President is required to be completed before the expiration of the term.
- 2- As per Article 66 of the Constitution of India, the Vice-President is elected by the members of the Electoral College consisting of the members of both Houses of Parliament in accordance with the system of proportional representation by means of the single transferable vote.
- 3- Article 324 of the Constitution read with the Presidential and Vice-Presidential Elections Act, 1952 and the Presidential and Vice-Presidential Elections Rules, 1974, vests the superintendence, direction and control of the conduct of election to the office of the Vice-President of India in the Election Commission of India.

Which of the following given above is/are correct

- a) 2 only b) 1 and 3 only
c) 1, 2 and 3 d) 2 and 3 only

Que-8 Consider the following statements about Operation "NARCOS"

1- Launched by Railway Protection Force (RPF).

2- A month long pan India drive against smuggling of narcotics through rail.

Which of the following given above is/are correct

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

ANSWER

1- (c)

- Although Varroa mites can feed and live on adult honey bees, they mainly feed and reproduce on larvae and pupae in the developing brood, causing malformation and weakening of honey bees as well as transmitting numerous viruses.
- Over time, as the mite population increases in bee colonies, the symptoms grow more severe. Generally, heavy infestations lead to crippled bees, impaired flight performance, lower rate of return to the colony after foraging and reduced lifespan, Bee Aware states.

2- (b)

- As per the Montreal Protocol, developing and developed countries have but equal and differentiated responsibilities, however all countries have to follow binding, time-targeted and measurable commitments.
- The United Nations Environment Programme (UNEP) states that without this treaty, ozone depletion would have increased by more than ten times by 2050, as compared to current levels.

- The recovery of ozone layer caused by the Montreal Protocol has been estimated to save around 2 million people each year from skin cancer. Between 1990-2010, the treaty led to a reduction of greenhouse gas emissions by an approximate 135 gigatons of CO₂.

- Unlike other sources of pollution, the study finds that environmental damage caused by rockets is far greater, as they emit gaseous and solid chemicals directly into the upper atmosphere.

3- (a)

- Their fossils have been found across sites in eastern, northern, central and southern Africa.
- Australopithecus was originally defined by the anthropologist

Raymond Dart in 1925, after the discovery of the first australopith fossil (a small child's skull) in Tuang, South Africa. Through his research, Dart argued that early humans first evolved in Africa, challenging the conventional wisdom that they had done so in Europe and Asia.

- They stood at a height of around 3 ft 9 inches to 4 ft 11 inches, and likely weighed around 30 to 50 kg, with males almost double the size of females.

4- (a)

- Found at Mayurbhanj, Odisha.
- In Odisha, scientists are now fine-tuning their research to make a presentation for the geographical indications (GI) registry of Kai Chutney. Applied under food category, the GI tag would help develop a structured hygiene protocol in the preparation of Kai Chutney for standard wider use. GI labels enhance the reputation and value of local products and support local businesses.
- Weaver ants, scientifically called *Oecophylla smaragdina*, are abundantly found in Mayurbhanj throughout the year. They construct nests with leaves of host trees. "When required, leafy nests of ants are

plucked from their host trees and collected in a bucket of water before sorting and separation from leaves and debris. Larval and adult stages of the ants are preferred and are either eaten raw or turned into "chutney" by mixing them with spicy ingredients.

5- (d)

- It regulates nitrate absorption, root development and stress tolerance.
- First, it regulates nitrate absorption by switching "on" proteins involved in this process. Second, it leads to better development of the roots by regulating auxin hormone production and transport. Finally, and somewhat surprisingly to the researchers, it helps in the abiotic stress tolerance by keeping the main stress player proteins "on."
- Several gene regulatory switches that regulate nitrate absorption and root development, such as the micro-RNA, miR444, are known in monocot plants, such as rice.
- The micro-RNA 'miR444' is specific to monocots. When this is not made, its target, MADS27, is produced in higher abundance, and it improves biosynthesis and transport of the hormone auxin, which is key for root development and its branching.

- This regulatory miR444 switch is known to turn off at least five genes called MADS box transcription factor genes. The speciality of the MADS box transcription factors is that they function like switch boxes of their own. They bind to their favourite specific DNA sequences and they switch the neighbouring genes “on.”

6- (c)

- It is mostly sourced from the soil where it is mainly absorbed in the form of nitrates and ammonium by the roots.
- Nitrogen is one of the most important macronutrients needed for development of a plant. It is a part of chlorophyll, amino acids and nucleic acids, among others. It is mostly sourced from the soil where it is mainly absorbed in the form of nitrates and ammonium by the roots. Nitrates also play a role in controlling genome-wide gene expression that in turn regulates root system architecture, flowering time, leaf development, etc.
- Thus, while a lot of action takes place in the roots to absorb and convert nitrogen into useful nitrates, the absorbed nitrates in turn regulate plant development apart from being useful as a macronutrient.

- So, the presence of nitrates is important for the plant development and also for grain production. However, the overuse of nitrates in fertilizers, for instance, can lead to the dumping of nitrates in the soil which leads to accumulation of nitrates in water and soil. This accumulation adds to soil and water pollution and increased contribution to greenhouse gases.

7- (d)

- As per Article 68 of the Constitution of India, an election to fill the vacancy caused by the expiration of the term of office of the outgoing Vice-President is required to be completed before the expiration of the term.
- Article 64- The Vice-President to be ex officio Chairman of the Council of States.

8- (c)

- RPF has been empowered to conduct search, seizure and arrest under NDPS Act since April 2019 and has been actively participating in the efforts of Government to restrict this illegal trade.
- In order to bring attention to the menace of NDPS, a month long pan India drive against smuggling of narcotics through rail, was launched

under code name Operation
"NARCOS" in the month of June-2022.

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REPORTER