

Q: Consider the following statement regarding Freemartins:

1. They are cattle that are born exhibiting characteristics of both sexes.
2. The key reason is the exchange of blood between the male and female fetuses during gestation.
3. They can also reproduce

Choose the correct option from the codes given below:

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

Ans: a

Explanation:

- In animal husbandry, cattle that are born exhibiting characteristics of both sexes are called freemartins.
- Freemartins are sterile female cattle that result from the twinning of a male and a female within the same uterus.
- This phenomenon occurs in approximately 90% of such twin pregnancies in cattle.
- The key reason is the exchange of blood between the male and female fetuses during gestation.
- Genetically, freemartinism is attributed to the sharing of cells carrying the Y chromosome from the male twin with the female twin.
- Freemartins can't reproduce, so farmers often identify them through physical and/or behavioural traits to cull them from the breeding herd to improve reproductive efficiency.

Q: Consider the following statement regarding Myristica swamps:

1. The formation of these swamps is dependent on biotic conditions only.
2. These are called live fossils.
3. In India, these unique habitats occur in the Western Ghats and in the Andaman and Nicobar Islands.

Choose the correct option from the codes given below:

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

Ans: b

Explanation:

- Myristica swamps are called live fossils, a biodiversity hotspot dominated by evergreen trees belonging to the Myristicaceae family, one of the oldest flowering plants on earth.
- These are freshwater swamps.
- These forests are characterised by trees with large, protruding roots jutting out of waterlogged soil, which remains inundated throughout the year.
- They have evolved over millions of years and are comprised of old-growth trees.
- In India, these unique habitats occur in the Western Ghats and a smaller distribution exists in the Andaman and Nicobar Islands.
- The formation of these swamps is dependent on abiotic conditions like the shape of the valley between the forested hills, the amount of rainfall a place receives (with an average of 3000 mm), and water availability throughout the year.

Q: Consider the following statement regarding Onattukara Sesame:

1. It is cultivated in the state of Kerala.
2. Its high content of unsaturated fat makes it beneficial for heart patients.

Choose the correct option from the codes given below:

- a) 1 Only
- b) 2 Only

- c) 1 and 2
- d) None of the above

Ans: c

Explanation:

- Onattukara Sesame is cultivated in the state of Kerala.
- Onattukara Ellu and its oil are famous for their unique health benefits.
- The relatively higher antioxidant content in Onattukara Ellu helps fight free radicals, which destroy body cells.
- Its high content of unsaturated fat makes it beneficial for heart patients.
- This sesame grown in the region contains high levels of Vitamin E and antioxidants.
- It also contains oleic acid, linoleic acid, palmitoleic acid, and so on, which help maintain good health.

Q: Consider the following statement regarding Geographical Indication (GI) tag:

1. It is a sign used on products that have a specific geographical origin and possess qualities or a reputation.
2. This is typically used for agricultural products, foodstuffs, wine and spirit drinks, handicrafts and industrial products.
3. This GI tag is valid for 10 years following which it can be renewed.

Choose the correct option from the codes given below:

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

Ans: d

Explanation:

- Geographical Indication (GI) tag is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin.
- This is typically used for agricultural products, foodstuffs, wine and spirit drinks, handicrafts and industrial products.
- The Geographical Indications of Goods (Registration and Protection) Act, 1999, seeks to provide for the registration and better protection of geographical indications relating to goods in India.
- This GI tag is valid for 10 years following which it can be renewed.

Q: Consider the following statement regarding Chromosomes:

1. It is a thread-like structure located inside the nucleus of animal and plant cells.
2. Each chromosome is made of protein and a single molecule of deoxyribonucleic acid (DNA).
3. All biological males and female have X and Y chromosomes.

Choose the correct option from the codes given below:

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

Ans: a

Explanation:

- Chromosome is a thread-like structure located inside the nucleus of animal and plant cells.
- Each chromosome is made of protein and a single molecule of deoxyribonucleic acid (DNA).
- It is passed from parents to offspring.
- DNA contains the specific instructions that make each type of living creature unique.
- In humans, in addition to the 22 pairs of chromosomes in each, we have a pair of sex chromosomes called X and Y.
- All biological males have X and Y chromosomes, and all biological females have two X chromosomes.