

Q1. Which of the following statements about electrons is TRUE?

- (a) Electrons have a positive charge and are attracted to the nucleus.
- (b) Electrons have no charge and are repelled by the nucleus.
- (c) Electrons have a negative charge and are attracted to the nucleus.
- (d) Electrons have a positive charge and are repelled by the nucleus.

Ans: (c)

Explanation:

- Electrons have a negative charge, while the nucleus of an atom has a positive charge. This is why electrons are attracted to the nucleus. The other answer choices are incorrect.

Q2. What is the Attosecond Timescale?

- (a) A unit of time commonly used in everyday life, equivalent to one billionth of a second.
- (b) A very short period of time, approximately one quintillionth of a second.
- (c) A measure of time used in astrophysics to describe the lifespan of a star.
- (d) A unit of time used in geology to estimate the age of Earth's rock formations.

Ans: (b)

Explanation:

- The attosecond timescale is the shortest timescale that has been measured, and it is the timescale of atomic and molecular processes, as well as the timescale of electronic processes in solids.
- Attosecond science is a new and rapidly developing field of research that studies the dynamics of matter on the attosecond timescale. Attoseconds are one-quintillionth of a second, or 10^{-18} seconds. This timescale is so short that it is difficult to comprehend, but it is the timescale on which many important physical processes occur.

EVA STALIN IAS ACADEMY – BEST IAS COACHING IN CHENNAI

12/24, Muthurangan Muthali St, West Tambaram, Chennai - 600045

<https://www.evastaliniasacademy.in/>

Contact Number – +91-8678969915, +91-9940332851

- For example, the motion of electrons around atoms and molecules occurs on the attosecond timescale. This motion is responsible for many of the properties of matter, such as its color, electrical conductivity, and chemical reactivity.
- Attosecond science is also being used to study the dynamics of electronic processes in solids. These processes are responsible for many of the properties of electronic devices, such as computers and transistors.

Q3. Which of the following statements about the Swachh Bharat Mission are correct?

- (a) A campaign to promote traditional Indian clothing styles.
- (b) A nationwide initiative in India aimed at promoting cleanliness and sanitation.
- (c) A cultural festival celebrating Indian cuisine.
- (d) A political movement advocating for agricultural reforms.

Ans: (b)

Explanation:

- The Swachh Bharat Mission (Clean India Mission) is a significant initiative launched by the Indian government in 2014 with the goal of promoting cleanliness, sanitation, and the eradication of open defecation in India. It involves various activities such as constructing toilets, promoting waste management, and raising awareness about hygiene and sanitation.

Q4. Consider the following statements about Badis limaakumi:

1. It is commonly found in streams with slow water flow.
2. It is naturally found in India only.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only

EVA STALIN IAS ACADEMY – BEST IAS COACHING IN CHENNAI

12/24, Muthurangan Muthali St, West Tambaram, Chennai - 600045

<https://www.evastaliniasacademy.in/>

Contact Number – +91-8678969915, +91-9940332851

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (a)

Explanation:

- Badis limaakumi belongs to the Badidae family and is a freshwater fish commonly found in streams with slow or moderate water flow.
- It is also found in ditches and stagnant water bodies in various countries, including India, Bangladesh, Nepal, Pakistan, Thailand, and Myanmar.
- The new species differs from other members of its family due to distinctive features, such as a dark opercular blotch at the base of its opercular spine and the absence of spots on its sides and cleithrum.
- Fish from the Badis family are known as chameleon fish because of their remarkable ability to change colour, which helps them blend with their surroundings when under stress.

Q5. Consider the following statements:

1. Hirakud Dam is built across the Mahanadi River.
2. Hirakud Reservoir was declared as a Ramsar site.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (c)

Explanation:

EVA STALIN IAS ACADEMY – BEST IAS COACHING IN CHENNAI

12/24, Muthurangan Muthali St, West Tambaram, Chennai - 600045

<https://www.evastaliniasacademy.in/>

Contact Number – +91-8678969915, +91-9940332851

- Hirakud Dam is built across the Mahanadi River, about 15 Km from Sambalpur in the state of Odisha in India. It is the longest earthen dam in the world. Behind the dam extends a lake, Hirakud Reservoir, 55 km long. It is one of the first major multipurpose river valley projects started after India's independence. Hirakud Reservoir was declared a Ramsar site on 12 October 2021.

