

Q: Consider the following statement regarding Chenab Bridge:

1. It is part of the Udhampur-Srinagar-Baramulla Rail Link project.
2. It is capable of withstanding the nation's maximum intensity zone-V earthquake forces.
3. It is the second highest single-arch railway bridge in the world.

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:

- Chenab Bridge is located between Bakkal and Kauri in the Reasi district of Jammu and Kashmir (J&K).
- The 1.3-km-long bridge is located 359 metres above the Chenab riverbed.
- It is the highest single-arch railway bridge in the world.
- It is part of the Udhampur-Srinagar-Baramulla Rail Link project.
- The arch consists of steel boxes. Concrete has been filled in the boxes to improve stability.
- The bridge has been designed with a life span of 120 years.
- It has been designed to withstand high wind speeds of up to 266 Kmph.
- It is capable of withstanding the nation's maximum intensity zone-V earthquake forces.

Q: Consider the following statement regarding Non-Alcoholic Fatty Liver Disease (NAFLD):

1. This buildup of fat is caused by heavy alcohol use.
2. NASH is the form of NAFLD in which you have inflammation of the liver and liver damage.
3. The inflammation and liver damage of NASH can cause fibrosis.

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:

- Non-Alcoholic Fatty Liver Disease (NAFLD) is the term for a range of conditions caused by a buildup of fat in the liver.
- This buildup of fat is not caused by heavy alcohol use. When heavy alcohol use causes fat to build up in the liver, this condition is called alcohol-associated liver disease.
- Two types of NAFLD are nonalcoholic fatty liver (NAFL) and nonalcoholic steatohepatitis (NASH).
- People typically develop one type of NAFLD or the other, although sometimes people with one form are later diagnosed with the other form of NAFLD.
- NASH is the form of NAFLD in which you have inflammation of the liver and liver damage, in addition to fat in your liver.
- The inflammation and liver damage of NASH can cause fibrosis, or scarring, of the liver.
- NASH may lead to cirrhosis, in which the liver is scarred and permanently damaged. Cirrhosis can lead to liver cancer.

Q: Consider the following statement regarding Very Short-Range Air Defence (VSHORAD) missile system:

1. It is a Man Portable Air Defence System (MANPAD) specially designed to counter low-altitude aerial threats.
2. These are short-range, lightweight, and portable surface-to-air missiles.

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:

- Very Short-Range Air Defence (VSHORAD) missile system is a Man Portable Air Defence System (MANPAD) specially designed to counter low-altitude aerial threats over short distances.
- These are short-range, lightweight, and portable surface-to-air missiles that can be fired by individuals or small groups.
- It has been designed and developed indigenously by DRDO's Research Centre Imarat (RCI), Hyderabad, in collaboration with other DRDO laboratories and Indian industry partners.
- The use of VSHORAD missiles in India is primarily by the Indian Army.

Q: Consider the following statement regarding Quantum Dots (QDs):

1. They are often referred to as "artificial atoms".
2. Semiconductor substance, have the properties of a QD.
3. The smallest quantum dots emit higher energy waves and produce blue light.

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:

- Quantum dots, often referred to as "artificial atoms," are semiconductor nanoparticles that have unique optical and electronic properties due to their small size.
- They were first theorized in the 1970s and then successfully synthesized in the early 1980s.
- Many semiconductor substances can be used as QDs, such as cadmium selenide, cadmium sulfide, or indium arsenide. Nanoparticles of these, or any other semiconductor substance, have the properties of a QD.
- By controlling the size of the QD, researchers can precisely tune the wavelength of light emitted or absorbed.
- They can be engineered to emit light across the entire visible spectrum and into the infrared and ultraviolet ranges, offering a wide palette of colors for various applications.
- The smallest quantum dots emit higher energy waves and produce blue light, and the biggest dots release lower energy waves, creating red light, with the middle sizes creating the colours in between.

Q: Consider the following statement regarding Glacial Lake Outburst Flood:

1. Glacial lakes are mostly dammed by unstable ice or sediment composed of loose rock and debris.
2. South Lhonak Lake in northern Sikkim is formed due to the melting of the glacier.
3. It can be triggered by extremely heavy rains only.

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:

- Glacial lakes are large bodies of water that sit in front of, on top of, or beneath a melting glacier.
- As they grow larger, they become more dangerous because glacial lakes are mostly dammed by unstable ice or sediment composed of loose rock and debris.

- In case the boundary around them breaks, huge amounts of water rush down the side of the mountains, which could cause flooding in the downstream areas. This is called glacial lake outburst floods or GLOF.
- It can be triggered by several reasons, including earthquakes, extremely heavy rains and ice avalanches
- South Lhonak Lake in northern Sikkim is situated about 5,200 metres above sea level. It formed due to the melting of the glacier.
- It is a moraine-dammed glacial lake at the snout of South Lhonak glacier, Sikkim Himalaya.