

Q: Recently, Union Minister of State for Earth Sciences said in Rajya Sabha that about 28.81 km of coastline in Visakhapatnam is prone to erosion. Consider the following statement:

1. The erosion and deposition of sand are primarily due to the high wave action.
2. The beaches act as cushion between the high wave action of the sea and the landmass.
3. Beaches are dynamic landforms and are treated as part of the land 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:

- Beaches are dynamic landforms and should be treated as part of the sea and not part of the land.
- The erosion and deposition of sand are primarily due to the high wave action and high wave energy and the problem arises when man meddle with them.
- The beaches act as cushion between the high wave action of the sea and the landmass. Continuous nourishment of beaches is a must through the natural process and, if disturbed, they will face severe erosion.
- Due to the construction of the breakwaters on the south side, the sand no longer reaches the beaches in the north, such as RK Beach, and hence the beaches are not nourished.

Q: Consider the following statement regarding “quasicrystals”:

1. Its atom are arranged in a pattern that does not repeat itself in a regular interval.
2. Researchers reported that its remains was spotted in the first nuclear test conducted in 1945.
3. Its sample was also evident in the sample of red trinitite.

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:

- Scientists have reported finding only the third natural source of quasicrystals, a material once deemed impossible and whose unusual properties scientists are still unravelling.
- In a crystal, the atoms are arranged in a pattern that periodically repeats itself. A quasicrystal’s atoms are arranged in a pattern that repeats itself at irregular intervals.
- Quasicrystals were discovered in the lab in 1982. In the late 1990s, scientists began looking for quasicrystals in nature.
- In 2021, they reported finding a quasicrystal in the remains of the first nuclear weapon test, conducted on July 16, 1945, in New Mexico.
- They wrote that the material “was found in a sample of red trinitite, a combination of glass fused from natural sand and anthropogenic copper from transmission lines used during the test.”

Q: Consider the following statement regarding “Free Float”:

1. It refers to the proportion of the total outstanding shares of a publicly listed company that is readily available for trading in the market.
2. It can sometimes give investors a rough idea about the likely liquidity of the company's shares in the public market.

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:

- Free float refers to the proportion of the total outstanding shares of a publicly listed company that is readily available for trading in the market. Shares held by promoters and large institutional investors are normally not freely traded in the market.
- The free float of a company can sometimes give investors a rough idea about the likely liquidity of the company's shares in the public market. The weightage given to a company's stock in certain indices is based on the company's market capitalisation.

Q: Consider the following statement:

1. Avian influenza is a highly contagious viral infection.
2. H5N1 is a highly pathogenic subtype of avian influenza.
3. The H5N1 subtype has the potential to spill over to other mammals.

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:

- Avian influenza, or bird flu, is a highly contagious viral infection that primarily affects birds. Infrequently, the virus can infect mammals from birds, a phenomenon called spillover, and rarely can spread between mammals.
- There are several different subtypes of avian influenza viruses, ranging from low pathogenic to highly pathogenic types.
- H5N1 is a highly pathogenic subtype of avian influenza that causes severe disease and death in birds. This subtype has caused a number of human infections through close contact with infected birds or contaminated environments, and is often fatal.
- The H5N1 subtype has the potential to spill over to other mammals such as minks, ferrets, seals and domestic cats when the animals come in contact with infected birds or their feces or consume carcasses of infected birds and further serve as reservoirs.

Q: Consider the following statement regarding the recent earthquake in Turkey and Syria:

1. The bulk of Turkey sits on the Anatolian Plate.
2. Geologists say that the earthquakes were from a 'strike-slip'.
3. Turkey and Syria lie at the confluence of the Arabian Plate and the Anatolian Plate 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:

- Turkey and Syria lie at the confluence of three plates — the Arabian Plate, the Anatolian Plate and the Eurasian Plate, making the region an extremely seismically active zone.
- The Arabian Plate is inching north into Europe, causing the Anatolian Plate (which Turkey sits on) to be pushed out west. The bulk of Turkey sits on the Anatolian Plate between two major faults: the North Anatolian Fault and the East Anatolian Fault.
- Geologists say that the earthquakes were from a 'strike-slip' which is typical of the earthquakes in the region.