Q: Consider the following statement regarding NASA SWOT Mission:

1. It incorporates advanced microwave radar technology.
2. The first-ever global satellite mission that will observe nearly all water on Mars Surface.

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: a
Explanation

- NASA has launched the first-ever global satellite mission that will observe nearly all water on Earth's surface, measuring the height of water in the planet's lakes, rivers, reservoirs, and the ocean.
- The Surface Water and Ocean Topography (SWOT) spacecraft atop a SpaceX Falcon 9 rocket was launched from Vandenberg Space Force Base in California.
- Nearly 20 years in development, the SWOT incorporates advanced microwave radar technology that scientists say will collect height-surface measurements of oceans, lakes, reservoirs and rivers in high-definition detail over 90% of the globe.
- One major thrust of the mission is to explore how oceans absorb atmospheric heat and carbon dioxide in a natural process that moderates global temperatures and climate change.

Q: Consider the following statement regarding formation of "Coalition of Nature":

1. United Nation is leading the coalition.
2. It is for the implementing and adoption of the Global Biodiversity Framework (GBF) at the 15th Conference of Parties (COP15).

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: b
Explanation

- A number of **Small Island Developing States (SIDS)** have agreed to form a 'Coalition for Nature' for the implementation and adoption of the **Global Biodiversity Framework (GBF)** at the 15th Conference of Parties (COP15) to the Convention on Biological Diversity.
- The coalition is being **led by Cabo Verde, Samoa and Seychelles**.
- The organisers of the event made a call to action for "enhancing means of implementing ambitious objectives for nature in SIDS under the Post-2020 Global Biodiversity Framework (GBF)."

Q: Consider the following statement:

1. SIDS host 19 per cent of the world's coral reefs.
2. The island states are responsible for an ocean area 28 times the size of their land mass.

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

- Small Island Developing States (SIDS) host 19 per cent of the world's coral reefs and their geographic isolation safeguards an array of endemic plants and animals found nowhere else on earth.
- The island states are responsible for an ocean area 28 times the size of their land mass.

Q: Consider the following statement regarding Tal Chhapar Sanctuary:

1. It is famous for Blackbucks.
2. It is located in Rajasthan.
3. The issues confronting the sanctuary include hyper-aridity and grazing pressure.

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

- The famous Tal Chhapar blackbuck sanctuary in Rajasthan's Churu district has received a protective cover against a proposed move of the State government to reduce the size of its eco-sensitive zone.
- The World Wildlife Fund for Nature (WWF) has also taken up a major project for the conservation of raptors in the sanctuary, spread in an area measuring 7.19 sq. km.
- The issues confronting the sanctuary include hyper-aridity, grazing pressure, the invasive weed Prosopis juliflora, and salt mines in the vicinity. The sanctuary's area is insufficient for its large blackbuck population.

Q: Consider the following statement regarding Quantum Computing (QC):

1. 2022 Nobel Prize for Physics was given for QC.
2. Indian government launched a National Mission to study quantum technologies in 2021.
3. The Gaussian is the fundamental unit of a QC.

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

- The 2022 Nobel Prize for Physics was awarded for work that rigorously tested one such 'experience' and paved the way for its applications in computing which speaks to the contemporary importance of QCs.
- In 2021 alone, the Indian government launched a National Mission to study quantum technologies with an allocation of ₹8,000 crore; the army opened a quantum research facility in Madhya Pradesh; and the Department of Science and Technology co-launched another facility in Pune.
- The qubit is the fundamental unit of a QC. It's typically a particle like an electron. Google and IBM have been known to use transmons, where pairs of bound electrons oscillate between two superconductors to designate the two states.