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Daily MCQs: 17-01-2025

1. Consider the following statements about Space Docking.

1. Docking allows spacefaring components to be launched separately and assembled in space to form a larger module.
2. India is the first country in the world to demonstrate space docking.

Which of the above statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

2. With reference to the United Nations Educational, Scientific and Cultural Organization (UNESCO), consider the following statements.

1. It is a specialized agency of the United Nations.
2. It is responsible for designating World Heritage Sites across the globe.

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

3. Consider the following statements

- 1) Green hydrogen is produced by electrolysis of water using renewable energy and has a lower carbon footprint.
- 2) Blue hydrogen is produced from natural gas where the associated emissions are released to the air.
- 3) Turquoise hydrogen is made using a process called methane pyrolysis to produce hydrogen and solid carbon.

How many of the above statements are correct?

- A) Only one
- B) Only two
- C) Only three
- D) None

4. Consider the following statements

- 1) Ecological hypoxia

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- 2) Harmful algal blooms
- 3) Extreme temperature
- 4) Abrupt salinity changes

How many of the above are the possible causes of fish kills?

- A) Only one
- B) Only two
- C) Only three
- D) All four

5. The World Press Freedom Index is published annually by which of the following organizations?

- A) UNESCO
- B) Reporters Without Borders (RSF)
- C) Committee to Protect Journalists (CPJ)
- D) International Press Institute (IPI)

Solution:

1. Answer: A

Explanation:

- On December 30, 2024, the Indian Space Research Organisation (ISRO) launched its PSLV-C60 mission.
- Its primary payload was a pair of satellites for the Space Docking Experiment, or SpaDeX, to demonstrate orbital rendezvous and docking.
- The ability to execute it in orbit is an essential stepping stone to more complex missions. The satellites successfully docked on January 16 after a few abortive attempts.
- With this, India became the **4th country to achieve successful Space Docking. Hence, statement 2 is incorrect.**
- Docking allows spacefaring components to be launched separately and assembled in space to form a larger module. **Hence, statement 1 is correct.**
- This allows a space agency to plan interplanetary missions whose spacecraft are heavier than what the heaviest rockets can launch. Docking is thus a symbolic gateway to new opportunities, with the Chandrayaan-4 lunar sample return mission being a good example.

2. Answer: C

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Explanation:

- **Statement 1 is correct:** The United Nations Educational, Scientific and Cultural Organization (UNESCO) is a **specialized agency of the United Nations (UN)** which works to build the conditions for dialogue among civilizations, cultures and peoples, based upon respect for commonly shared values.
- Its purpose is to **contribute to peace and security by promoting international collaboration** through education, science, and culture.
- **Statement 2 is correct:** For instance, it designates locations globally as **World Heritage Sites**, which means international recognition and possible funding.
- UNESCO has more than 190 member countries (including **India**) and it pursues its objectives through **five major programs:** education, natural sciences, social and human sciences, culture, and communication and information.

3. Answer: B

Explanation

- Hydrogen can be 'grey', 'brown', 'Turquoise', 'blue' and green.
 - **Statement 1 is correct:** Green hydrogen is produced through **electrolysis using renewable sources of energy** such as solar, wind or hydel power. It is produced by splitting water into hydrogen and oxygen using renewable electricity. That makes green hydrogen the **cleanest option** – hydrogen from renewable energy sources **without CO2 as a by-product**.
 - The vast majority of industrial hydrogen is currently produced from natural gas through a conventional process known as **steam methane reforming (SMR)**. The standard SMR process produces what is known as **Grey Hydrogen** and has the **major disadvantage of releasing large quantities of by-product CO2** into the atmosphere - the main culprit for climate change.
 - Grey hydrogen has increasingly been produced also from **coal**, with significantly higher CO2 emissions per unit of hydrogen produced so much that it is often called **brown or black hydrogen** instead of grey.
 - **Statement 2 is incorrect:** **Blue hydrogen**, too, is produced using electricity generated by burning **methane or coal** but with **technologies to prevent the carbon released** in the process from entering the atmosphere;
 - **Statement 3 is correct:** **Turquoise hydrogen** is made using a process called **methane pyrolysis** to produce hydrogen and **solid carbon**. As a result, there is no requirement for carbon capture and storage (CCS) and the carbon can even be used in other applications. Where the electricity driving the pyrolysis is renewable, the process is **zero-carbon**.

4. Answer: D

Explanation

What is fishkill?

- **Fish kills** or **mass mortalities of fish** can be defined as a sudden and significant death of fish.
- This is characterized by a large number of fish dying over a **short period of time** within the defined area.

Causes

Natural causes

- Globally fish kills are most frequently linked to natural causes such as **ecological hypoxia** (low dissolved oxygen) or **anoxia** (no or zero dissolved oxygen), **harmful algal blooms** (toxic and non-toxic freshwater cyanobacteria, marine dinoflagellates), **diseases**, **extreme** or abrupt changes of **temperature**, **salinity**, **floods**, **upwelling of the oceans**. **Hence all the statements are correct.**
- Minor and occasional natural causes of fish kills are volcanic eruptions, earthquakes, and meteorites.

Anthropogenic causes

- **Human activities** are also responsible for a number of fish kills, for example, **accidental spills** (e.g. oil), **runoff**, and **drainage discharge of pesticides** and **herbicides** from agriculture farmlands into water bodies.
- In addition, **mass killing** in the name of **recreational fishing** may also be responsible for significant fish kills in some countries.

Pollution Indicators

- Fish kills event is an indicator of **environmental stress**, a decline in aquatic ecosystem health, and **water quality problems**.
- Fish kills events provide useful information on the distributions of **pollutants** (e.g. nutrients, pesticides, trace metals, oils) in aquatic environments.

5. Answer: B

Explanation

What's in the news?

- Reporters Without Borders (RSF, short for Reporters sans frontières in French) has released its World Press Freedom Index 2024.
 - RSF is an **international non-profit organization** based in **Paris, France**.

About the Index

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- The index puts together an annual index of freedom enjoyed by journalists in 180 jurisdictions.
- The press freedom questionnaire covers **five categories** — **political context, legal framework, economic context, sociocultural context and security.**

Highlights of the 2024 Index

- **India's score fell** over the last year, from 36.62 to 31.28.
- **India's rank improved** from 161 in 2023 to **159** in 2024, but this was because other countries had slipped in their rankings.
- **Norway and Denmark** topped the RSF table while **Eritrea** was at the bottom, with **Syria** just ahead of it.
- Scores for India dropped in all but the security indicator.
- The Government of India has in the past dismissed international rankings of freedoms in India as misinformed and propaganda driven.

