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Daily MCQs: 15-01-2025

1. Consider the following statements with respect to 'Hydroponics'

1. It is a method of soilless farming in which plants are grown using mineral nutrient solutions in the liquid medium.
2. Hydroponics helps plants to grow faster with higher yield when compared with conventional soil based cultivation.

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

2. Consider the following statements about Indian Meteorological Department

- 1) It has the responsibility of forecasting, naming and distribution of warnings for tropical cyclones in the Northern Indian Ocean region.
- 2) It is the principal agency under the Ministry of Earth Sciences (MoES).

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. The jurisdiction of the National Investigation Agency extends to which of the following?

- 1) persons in the service of the government wherever they are posted;
- 2) persons on ships and aircraft registered in India wherever they may be;
- 3) persons who commit a scheduled offence beyond India against the Indian citizen or affecting the interest of India.

Select the correct answer using the codes given below

- A) 1 and 2 only
- B) 2 and 3 only
- C) 1 and 3 only
- D) 1,2 and 3

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4. Consider the following statements about the North Atlantic Treaty Organization (NATO).

1. It is a security alliance of countries from North America and Europe.
2. The Washington Treaty of NATO states that an attack against one Ally is considered as an attack against all.

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

5. Which of the following is correct about the term 'Kavach' which is sometimes seen in news?

- A) A geological period in the history of Indian subcontinent
- B) A Russian hypersonic missile with which it attacked Ukraine
- C) A dark web that sells banking information illegally
- D) An indigenously developed Automatic Train Protection (ATP) system

Solutions:

1. Answer: C

Explanation

- **Statement 1 is correct:** Hydroponics is a subset of hydroculture, which is a method of growing plants without soil (Soilless farming) by instead using mineral nutrient solutions in a liquid medium. Terrestrial plants may be grown with only their roots exposed to the nutritious liquid, or the roots may be physically supported by an inert medium such as perlite or gravel.

Advantages of Hydroponics

- The increased control over growing conditions makes it easier to provide the best possible environment for plants, leading to better quality produce and high yield.
- **Statement 2 is correct:** Plants grow 50% faster than soil based cultivation under the same condition because of the easy access to food and water. The production in hydroponics may

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be increased approximately two times as compared with soil cultivation in a comparable area with correct management practiced because the plant does not have to compete for moisture and nutrients.

- Hydroponics gardens can provide plants with optimum qualities of the necessary nutrients during the different seasons. This will enable maximize growth to be achieved
- A small hydroponics garden can be set up almost anywhere, even upstairs, balconies and open areas and protected structures because the land is not necessary.
- Hydroponics products generally taste better and are higher in nutritional value than field-grown crops.
- The occurrence of soil borne disease and nematode damage is not possible, so hydroponic production is exported safely
- There is no need for crop rotations as growing media can be reused continuously or replaced.
- The plants are uniform in growth and maturity.

2. Answer: C

Explanation

- **Statement 2 is correct: India Meteorological Department** was established in 1875. It is the **National Meteorological Service of the country** and the principal government agency in all matters relating to **meteorology, seismology and allied subjects**. IMD is the **principal agency** under the **Ministry of Earth Sciences (MoES)**
- **Statement 1 is correct:** IMD is also one of the six Regional Specialized Meteorological **Centres of the World Meteorological Organization**. It has the responsibility for forecasting, naming and distribution of warnings for tropical cyclones in the Northern Indian Ocean region, including the Malacca Straits, the Bay of Bengal, the Arabian Sea and the Persian Gulf.

Mandate

- To take meteorological observations and to provide current and forecast meteorological information for optimum operation of weather-sensitive activities like agriculture, irrigation, shipping, aviation, offshore oil explorations, etc.
- To warn against severe **weather phenomena like tropical cyclones, norwesters, dust storms**, heavy rains and snow, cold and heat waves, etc., which cause destruction of life and property.

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- To provide **meteorological statistics required for agriculture**, water resource management, industries, oil exploration and other nation-building activities.
- To conduct and **promote research in meteorology** and allied disciplines.
- To detect and locate earthquakes and to evaluate seismicity in different parts of the country for development projects.

3. Answer: D

Explanation

- The National Investigation Agency (NIA) is functioning as the **Central Counter Terrorism Law Enforcement Agency** in the country.
- It is mandated to investigate all the **offences**:
 - **affecting the sovereignty, security and integrity of India, friendly relations with foreign states, and**
 - **the offences under the statutory laws enacted to implement international treaties, agreements, conventions and resolutions of the United Nations, its agencies and other international organisations.**
- These include **terror acts and their possible links with crimes** like smuggling of arms, drugs and fake Indian currency and infiltration from across the borders.
- The agency has the power to search, seize, arrest and prosecute those involved in such offences.
- Headquartered in **Delhi**, the NIA has its branches in several parts of the country.

When did the NIA come into being?

- In the wake of the **26/11 Mumbai terror attack in November 2008**, which shocked the entire world, the central government decided to establish the NIA.
- The agency came into existence on **December 31, 2008 under the NIA Act, 2008**, and started its functioning in **2009**.
- NIA was created mainly to specialize in investigations into **incidents of terrorist attacks and bomb blasts** in various parts of the country. Majority of such incidents were found to have **complex inter-state and international linkages** while at the same time being **linked to drug and arms smuggling** among other activities.
- The NIA Act was amended in the year **2019** to **enlarge the mandate** of the NIA by inclusion of **offences related to human trafficking, manufacture/sale of prohibited arms, cyber-**

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terrorism and offences under the Explosive Substances Act, 1908 and expanded its jurisdiction beyond India.

How wide is the NIA's jurisdiction?

- The law under which the agency operates extends to:
 - whole of India and also applies to Indian citizens outside the country;
 - persons in the service of the government wherever they are posted;
 - persons on ships and aircraft registered in India wherever they may be;
 - persons who commit a scheduled offence beyond India against the Indian citizen or affecting the interest of India. Hence all the statements are correct.

Why in the News?

- The National Investigation Agency (NIA) has arrested five individuals in a major operation against an organized human trafficking and cyber fraud syndicate.

4. Answer: C

Explanation

- **Statement 1 is correct:** Formed in 1949 with the signing of the **Washington Treaty**, North Atlantic Treaty Organization (NATO) is a **security alliance of 32 countries from North America and Europe**.
- Established in the Cold War as a bulwark against Soviet aggression, NATO's fundamental goal is to safeguard the Allies' freedom and security by political and military means.
- **Statement 2 is correct: Article 5 of the Washington Treaty** states that an attack against one Ally is an attack against all — is at the core of the Alliance, a promise of collective defence.
- **Article 4** of the treaty ensures consultations among Allies on security matters of common interest, which have expanded from a narrowly defined Soviet threat to the critical mission in Afghanistan, as well as new threats to security such as cyber attacks, and global threats such as terrorism and piracy that affect the Alliance and its global network of partners.
- A "**NATO decision**" is the expression of the collective will of all 30 member countries since all decisions are taken by **consensus**.
- At present, NATO has **30 members**. In 1949, there were **12 founding members** of the Alliance: Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom and the United States. The other member countries are: Greece and Turkey (1952), Germany (1955), Spain (1982), the Czech Republic, Hungary and Poland (1999), Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia and Slovenia

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(2004), Albania and Croatia (2009), Montenegro (2017), North Macedonia (2020), Finland (2023) and Sweden (2024).

- NATO's Headquarters are located in **Brussels, Belgium**,

5. Answer: D

Explanation

What is Kavach?

- The KAVACH is an **indigenously developed Automatic Train Protection (ATP) system** by the **Research Design and Standards Organisation (RDSO)** in collaboration with the Indian industry.
 - *RDSO is a research and development organization under the Ministry of Railways of India.*
- It is a **state-of-the-art electronic system with Safety Integrity Level-4 (SIL-4) standards**. It is meant to **provide protection by preventing trains to pass the signal at Red (which marks danger) and avoid collision**.
- It **activates the train's braking system automatically** if the driver fails to control the train as per speed restrictions.
- In addition, it **prevents the collision between two locomotives equipped with functional Kavach systems**.
- The system also **relays SoS messages during emergency situations**. An added feature is the **centralized live monitoring** of train movements through the Network Monitor System.
- 'Kavach' is one of the cheapest, SIL-4 certified technologies where the **probability of error is 1 in 10,000 years**.

How does Kavach work?

- The **Traffic collision avoidance system (TCAS)**, with the help of equipment on board the locomotive and transmission towers at stations connected with **Radio Frequency Identification (RFID) tags**, helps in **two-way communication** between the station master and loco-pilot to convey any emergency message.
- The instrument panel inside the cabin helps the loco-pilot know about the signal in advance without visual sighting, and the permissible speeds to be maintained.
- If a red signal is jumped and two trains come face to face on the same line, the **technology automatically takes over and applies sudden brakes**.

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- Additionally, the hooter activates by itself when approaching a level crossing which serves as a big boon to loco-pilots during **fog conditions when visibility is low.**



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