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Daily Mcqs- November 25th

1.Consider the following statements regarding extra tropical cyclones:

- 1.They are formed along the polar front.
- 2.They can originate over both land and sea.
- 3.They move from west to east.

Which of the statements given above is/are correct?

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

Answer : D

Explanation :

The systems developing in the mid and high latitude, beyond the tropics are called the middle latitude or extra tropical cyclones. The passage of front causes abrupt changes in the weather conditions over the area in the middle and high latitudes. Extra tropical cyclones form along the polar front.

The extra tropical cyclone differs from the tropical cyclone in number of ways.

- The extra tropical cyclones have a clear frontal system which is not present in the tropical cyclones.
- They cover a larger area and can originate over the land and sea. Whereas the tropical cyclones originate only over the seas and on reaching the land they dissipate.
- The extra tropical cyclone affects a much larger area as compared to the tropical cyclone. The wind velocity in a tropical cyclone is much higher and it is more destructive.

- The extra tropical cyclones move from west to east but tropical cyclones move from east to west.

2. Consider the following statements about Mega food parks

- 1) The primary objective of the Scheme is to provide modern infrastructure facilities for the food processing along the value chain from farm to market.
- 2) Functioning of Mega Food Parks is closely monitored by the Ministry of Agriculture and Farmers Welfare

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

Answer: A

Explanation

- The Mega Food Parks scheme aims to provide a **mechanism to bring together farmers, processors and retailers** and link agricultural production to the market so as to ensure **maximization of value addition, minimization of wastages** and improving farmers' income
- **Statement 1 is correct:** The primary objective of the Scheme is to **provide modern infrastructure facilities for the food processing** along the value chain from farm to market with a **cluster based approach** based on a hub and spokes model
- It includes creation of infrastructure for **primary processing and storage near the farm** in the form of **Primary Processing Centres (PPCs)** and **Collection Centres (CCs)** and

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common facilities and enabling infrastructure like roads, electricity, water, ETP facilities etc. at **Central Processing Centre (CPC)**

- These PPCs and CCs act as **aggregation and storage points** to feed raw material to the food processing units located in the CPC
- Food Processing being capital incentive activity, **common facilities are created at CPC** to be used by the processing units on hire basis. This helps in **reducing the cost of individual units** significantly and makes them more viable
- The scheme envisages a **one-time capital grant of 50% of the project cost** (excluding land cost) subject to a maximum of Rs 50 crore in **general areas** and **75% of the project cost** (excluding land cost) subject to a ceiling of Rs. 50 crore in **difficult and hilly areas** i.e. North East Region including Sikkim, Jammu and Kashmir, Himachal Pradesh, Uttarakhand and Integrated Tribal Development Project (ITDP) and notified areas of the states
- **Statement 2 is incorrect:** Functioning of Mega Food Parks is closely monitored by the **Ministry of Food Processing Industries** (not Ministry of Agriculture and Farmers Welfare) through a well-established mechanism that includes **detailed scrutiny of the periodical progress reports** of the project by the Programme Management Agency (PMA). The Mega Food Park project is **implemented by a Special Purpose Vehicle (SPV)** which is a **Body Corporate** registered under the Companies Act

Special Purpose Vehicle (SPV)

- SPV is an entity which is formed for a **single, well-defined and narrow purpose**
- Also called a special purpose entity (SPE), it is a **subsidiary created by a parent company** to **isolate financial risk**. Its legal status as a separate company makes its obligations secure even if the parent company goes bankrupt

Why in the news?

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Union Minister for Food Processing Industries, Agriculture and Farmers Welfare, Rural Development and Panchayati Raj virtually inaugurated Mega Food Park (MFP) at Phagwara in Kapurthala district of Punjab recently.

3. Which among the following countries are members of both SAARC and BIMSTEC?

- a) Thailand and Myanmar
- b) Pakistan and Srilanka
- c) Myanmar and Bhutan
- d) Bhutan and Bangladesh

Answer: D

Explanation:

- The South Asian Association for Regional Cooperation (SAARC) is a **regional intergovernmental organization and geopolitical union consists of 8 member states-- Afghanistan, Bangladesh, Bhutan, Nepal, India, Pakistan, Sri Lanka and Maldives.**

<http://saarc-sec.org/about-saarc>

- The **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)** is a regional organization comprising seven Member States lying in the littoral and adjacent areas of the Bay of Bengal constituting a contiguous regional unity.
- This sub-regional organization came into being on 6 June 1997 through the Bangkok Declaration.
- It constitutes seven Member States: five deriving from South Asia, including **Bangladesh, Bhutan, India, Nepal, Sri Lanka**, and two from Southeast Asia, including Myanmar and Thailand.

https://bimstec.org/?page_id=189

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4. Which of the following is/are applications of Gold nano particles?

- 1) Used to convert the greenhouse gas carbon dioxide into methane
- 2) Used for drug delivery in biological and medical applications
- 3) Used as contrast agents in the diagnosis of heart diseases
- 4) Used to desalinate seawater to produce drinking water

Select the correct answer using the codes given below

- a) 2,3 and 4 only
- b) 2 and 3 only
- c) 1,2 and 3 only
- d) 1,2,3 and 4

Answer: D

Explanation:

Gold Nano Particles:

- Gold nanoparticles (AuNPs) are small gold particles with a diameter of 1 to 100 nm which, once dispersed in water, are also known as colloidal gold.

Applications of Gold nano particles:

- Used to convert the greenhouse gas carbon dioxide into methane
- Used for drug delivery in biological and medical applications
- Used as contrast agents in the diagnosis of heart diseases
- Used to desalinate seawater to produce drinking water
- Used as biolabels
- biosensor applications

Hence all are applications of Gold Nano Particles.

5. Which of the following conditions/phenomena influences the Indian Monsoon?

1. The differential heating and cooling of land and water

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2. Intense heating of the Tibetan plateau during summer
3. The presence of the low-pressure area to the east of Madagascar
4. Presence of the tropical easterly jet stream over the Indian peninsula during summer.

Select the correct answer using the codes given below

- a) 1 and 2 only
- b) 1, 2 and 3 only
- c) 1, 2 and 4 only
- d) 1, 2, 3 and 4

Answer : C

Explanation

To understand the mechanism of the monsoons, the following facts are important

- **The differential heating and cooling of land and water creates low pressure on the landmass of India** while the seas around experience comparatively high pressure.
- **The shift of the position of Inter Tropical Convergence Zone (ITCZ) in summer**, over the Ganga plain (this is the equatorial trough normally positioned about 5°N of the equator. It is also known as the monsoon trough during the monsoon season).
- **The presence of the high-pressure area (not low pressure area) east of Madagascar**, approximately at 20°S over the Indian Ocean. The intensity and position of this high-pressure area affects the Indian Monsoon.
- **The Tibetan plateau gets intensely heated during summer**, which results in strong vertical air currents and the formation of low pressure over the plateau at about 9 km above sea level.
- **The movement of the westerly jet stream to the north of the Himalayas and the presence of the tropical easterly jet stream over the Indian peninsula during summer.**

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- The formation of Tropical easterly jet stream results in the **reversal of upper air circulation patterns [High pressure switches to low pressure]** and leads to the quick onset of monsoons.

