Daily Current Affairs Prelims Quiz 19-10-2024 (Online Prelims Test)

1) Consider the following statements:
Statement-I: Scandium Nitride (ScN) is a rock-salt semiconductor with high thermal stability, robustness and electronic properties.
Statement-II: Single-crystalline scandium nitride (ScN) can emit, detect and modulate infrared light with high efficiencies.
Select the correct answer using the codes given below:

a. Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I

b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I

c. Statement-I is correct but Statement-II is incorrect

d. Statement-I is incorrect but Statement- II is correct

Answer : b

Scandium Nitride (ScN)

- Scandium Nitride (ScN), a ***rock-salt semiconductor*** with high thermal stability, robustness, and electronic properties.
- It is a transition metal nitride semi-conductor that has emerged as a promising candidate for next-generation electronics due to its properties.
- **Challenges** – Despite its potential, the practical application of ScN in electronic devices has been hindered due to its ***relatively lower electron mobility***.
- This key factor influences the speed and efficiency of semiconductor devices and researchers had been curious to unravel why the mobility of the electrons are limited.
- **The factors that limit electron mobility in ScN are** – Ionized-impurity and grain-boundary scatterings significantly reduced mobility.
- Depositing single-crystalline ScN that are devoid of impurities and defects is expected to increase its mobility significantly.
- **Applications**:
  - Thermoelectricity
  - Neuromorphic computing
  - High mobility electron transistors
- **Single-crystalline scandium nitride (ScN)** – Can emit, detect, and modulate infrared light with high efficiencies.
- **Applications**:
  - Infrared sources, emitters, and sensors
  - Electronics
  - Healthcare
  - Defence and security
  - Energy technologies

2) Consider the following statements with respect to Inter-Parliamentary Union (IPU)

1. It is the global organization of national parliaments that aids to promote peace through parliamentary diplomacy and dialogue.
2. India is one of the associate member of the union.
3. The Governing Council is the administrative and policy-making body that is empowered to elect the President and Secretary General of the union.

How many of the statements given above are correct?

a. Only one

b. Only two

c. All three

d. None of the above

Answer : b

Inter-Parliamentary Union (IPU)

Lok Sabha Speaker recently led a Parliamentary Delegation (IPD) to the 149th Inter-Parliamentary Union (IPU) Assembly in Geneva.

- Inter-Parliamentary Union (IPU) is the global organization of national parliaments.
- It facilitates parliamentary diplomacy and empowers parliaments and parliamentarians to promote peace, democracy and sustainable development around the world.
- **Funding** – Financed primarily by our Members out of public funds.
- **Headquarters** – Geneva, Switzerland and offices in New York, United States of America and Vienna, Austria.
- **Members** – 181 Member Parliaments and 15 Associate Members.
- ***India is one of the member of it and not an Associate Member of it***. (**Statement 2 is incorrect**)
- Member include from huge nations like China, India and Indonesia, to the tiny States of Cabo Verde, San Marino and Palau.
- 15 Associate Members are mostly parliaments drawn from groups of nations, or similar bodies.
- They include the Arab Parliament, the European Parliament and other parliamentary organizations in Africa and the Americas.
- **President** – Is the political head of our institution, who directs the activities, chairs full meetings and acts as the representative at global events and gatherings.
- The President serves as head of our Executive Committee.
- **Secretary General** – Act as the Chief Executive of the Organisation, manages the IPU and is accountable to the Governing Council.
- **Assemblies** – Is the IPU's main political body through which the IPU's Member Parliaments adopt parliamentary resolutions on global issues.
- It plays a pivotal role in addressing the issues which threaten peace, democracy and sustainable development, including through its four thematic standing committees.
- **Governing Council** – Is our administrative and policy-making body whose meetings are usually held during our twice-yearly Assemblies.
- The Governing Council elects the President and Secretary General and decides on the mandate and composition of committees, working groups and ad hoc bodies.
- It decides on admitting, readmitting and suspending members and on our activities.
- It oversees our budget and work programme and sets contribution rates.
- It is made up of 3 MPs from each Member Parliament, provided that the delegation includes both men and women.
- **Cremer-Passy Prize** – Being named after the IPU’s founders, William Randall Cremer and Frederic Passy.
- It is ***awarded every year*** to sitting parliamentarians who make an outstanding contribution to

the defence and promotion of the IPU's objectives
- It is also awarded to people who contribute to a more united, peaceful, sustainable and equitable world.

3) Consider the following statements with respect to Malabar Grey Hornbill

1. It is one of the nine species of hornbills that are found in India and endemic to India.
2. This species prefers the higher terrain with dense tree cover.
3. It is listed as Vulnerable under the IUCN Red List of Threatened Species.

How many of the statements given above are correct?

a. Only one

b. Only two

c. All three

d. None of the above

Answer : c

Malabar Grey Hornbill (Ocyceros griseus)

- India is home to 9 species of hornbills out of which 4 are found in Kerala.
- Malabar Grey Hornbill is endemic to India whose existence could be threatened due to rampant and unchecked deforestation, resulting in a decline of suitable nesting and fruit trees.
- **Features** – It is apparently sedentary but will move around locally, especially within deciduous forest parts of the range.
- This species prefers the higher terrain with dense tree cover.
- **Range** – It is found in evergreen forests and plantations.
- It occurs in evergreen and deciduous forests, especially riverine forest and in the hills above 500 m elevation, but also in the lowland.
- **Protection** – It is listed as Vulnerable under the IUCN Red List of Threatened Species.

4) Pyrocystis noctiluca, sometimes seen in the news recently, is associated with?

a. A unicellular phytoplankton species that can float upward in the ocean.
b. An invasive plant species that causes food shortage for the wildlife population.
c. An insectivorous fish that has a high breeding capacity.
d. An emerging multidrug-resistant fungus causing life-threatening outbreaks.

Answer : a

Pyrocystis Noctiluca

- Pyrocystis noctiluca is a single-celled organisms that can travel tens of meters by ballooning to six times the normal size.
- It's one of the most massive migrations on Earth that can float upward in the ocean.
- It can travel from 125 meters deep to 50 meters where there's more sunlight.
- Journey takes days, unlike daily zooplankton migrations and it is a one-time trip in their lifecycle.
- **Migration Mechanism** – Cells inflate by filling with seawater.
- Aquaporin proteins likely filter out dense salt, making the cell less dense than surrounding seawater.
- Process takes about 10 minutes.
- Calcium in seawater may trigger this transformation.
- **Life cycle** – Starts with inflated cells rising and at the end of 7-day cycle, cell divides into two as it sinks.
- New daughter cells then inflate and rise again.
- **Additional benefits of inflation** – Reduced predation risk due to larger size.
- Improved nutrient uptake and photosynthesis efficiency.

5) Consider the following statements:

1. A marine heatwave is a period of unusually high ocean temperatures and is defined by its duration and intensity.
2. The "twilight zone" of oceans is situated between 200 and 1,000 metres across the ocean.
3. In the deep ocean, atmospheric factors are responsible for temperature changes.

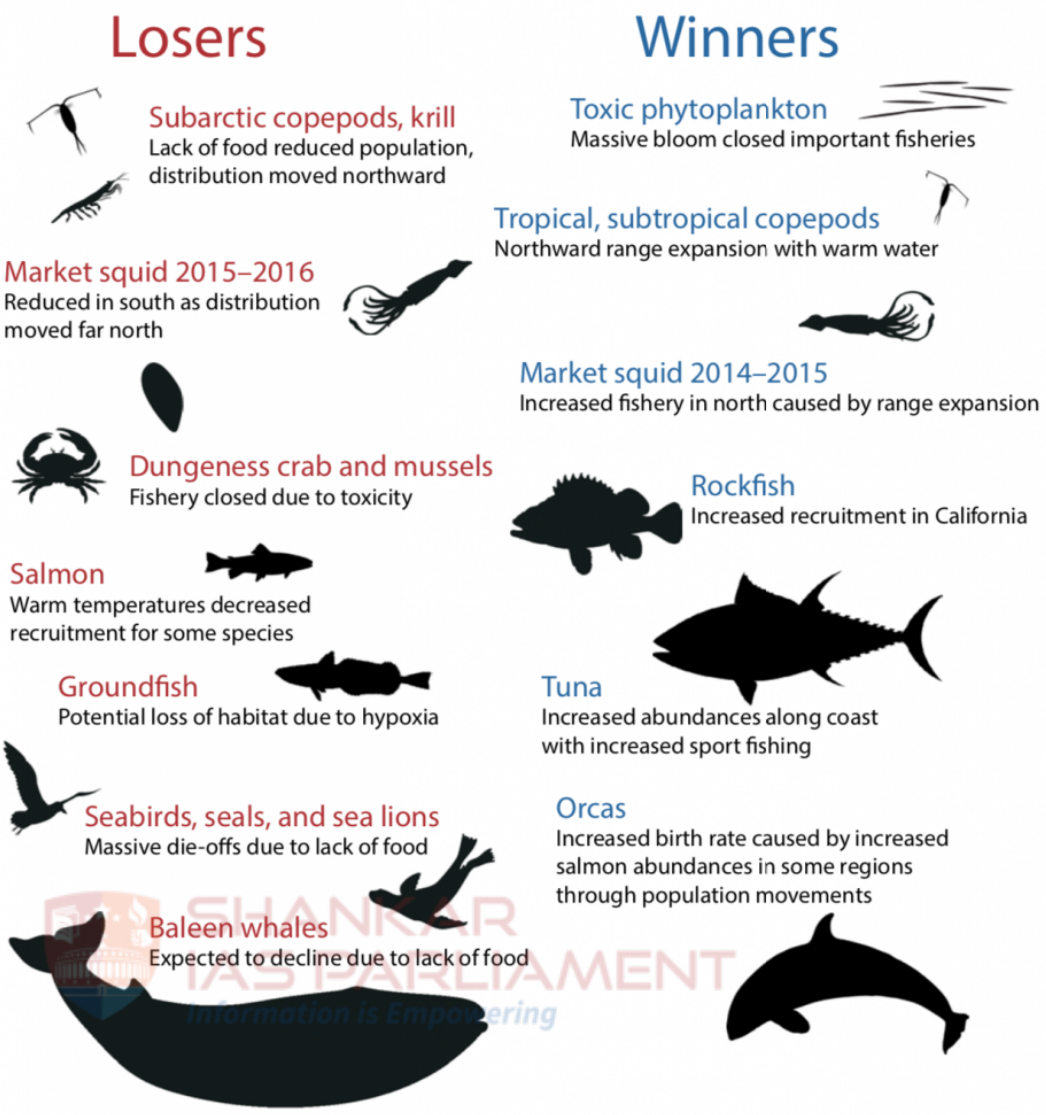
How many of the statements given above are correct?

a. Only one
b. Only two
c. All three
d. None of the above

Answer : b

Marine Heat Waves (MHWs)

- A marine heatwave is a period of unusually high ocean temperatures and is defined by its duration and intensity.
- One of the most common ways that scientists measure the ocean's temperature is through sea surface temperature.
- Deviations from average sea surface temperature are referred to as temperature anomalies.
- **Impact of Marine Heat Waves (MHWs)** – Marine heatwaves not necessarily cause harmful



algal blooms.

- **Twilight zone of ocean** – Is situated between 200 and 1,000 metres, still has some visibility, but research on the domain is lacking.
- Extreme temperature changes in the temperature of the twilight zone are also a matter of concern, since many fish species and plankton reside here.
- Heat and cold brought by eddies aren't the only threat to the twilight zone but can lead to low oxygen levels in the water and reduced nutrients.
- **Eddy currents** – Are huge loops of swirling current, sometimes hundreds of kilometres across and reaching down over 1,000 metres.
- In Deep Ocean, ***atmospheric factors are not responsible for temperature changes*** but instead eddy currents play a major role in it. (**Statement 3 is incorrect**)
- They can carry warm or cold water across long distances.
- Eddy currents are acting to magnify the warming rates of marine heatwaves and the cooling rate of the cold spells.
- Warmer oceans overall are leading to stronger eddy currents.