



UPSC CURRENT AFFAIRS MCQS 26-11-2023

1. Consider the following statements, with reference to Tantalum:

1. Tantalum is a rare metal that is very hard and corrosion-resistant.
2. It has the highest melting point after tungsten and rhenium.
3. It is used in the production of electronic components.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (C)

Explanation: Recently, a team of researchers from the Indian Institute of Technology (IIT), Ropar has found the presence of tantalum, a rare metal, in the Sutlej River sand in Punjab. Tantalum is a rare metal that was discovered in 1802 by the Swedish chemist Anders Gustaf Ekeberg. It is bright, very hard, silver-grey metal of Group 5 of the periodic table. It is characterized by its high density, extremely high melting point, and excellent resistance to all acids except hydrofluoric at ordinary temperatures. It has 3rd highest melting point next to tungsten and rhenium. As tantalum has a high melting point, it is frequently used as a substitute for platinum, which is more expensive. It possesses high corrosion resistance, because when exposed to air, it forms an oxide layer that is extremely difficult to remove, even when it interacts with strong and hot acid environments. When pure, tantalum is ductile, meaning it can be stretched, pulled, or drawn into a thin wire or thread without breaking. It is almost completely immune to chemical attack at temperatures below 150°C and is attacked only by hydrofluoric acid, acidic solutions containing the fluoride ion and free sulphur trioxide. It is mined in many places including Australia, Canada and Brazil. Tantalum is non-toxic and has no known biological role. One of the main uses of tantalum is in the production of electronic components. The capacitors made from tantalum are capable of storing more electricity in smaller sizes without much leakage than any other

type of capacitor. Tantalum causes no immune response in mammals, so has found wide use in the making of surgical implants. It is very resistant to corrosion and so is used in equipment for handling corrosive materials. It is also used to make components for chemical plants, nuclear power plants, aeroplanes and missiles. Tantalum alloys can be extremely strong and have been used for turbine blades, rocket nozzles and nose caps for supersonic aircraft. Hence, all statements are correct.

2. Consider the following statements, with reference to ‘E Prime Layer’:

1. It is a new earth layer that is formed in the innermost part of the earth’s core.
2. It is formed as a result of surface water penetrating deep into the planet which alters the composition of the liquid core's outermost region.

Which of the above statements is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: (B)

Explanation: Recently, a study by an international team of researchers revealed the formation of a new enigmatic layer – E prime layer at the outermost part of Earth's core. Earth comprises 4 primary layers that includes:

- An ‘inner core’ at the planet's centre
- ‘Outer core’ that surrounds the inner core
- Mantle
- Crust

A new enigmatic layer or E prime layer is formed at the outermost part of Earth's core. It is formed as a result of "surface water penetrating deep into the planet" altering the composition of the metallic liquid core's outermost region. The material exchange between the core and mantle is small. But the experiments revealed that when water reaches the core-mantle boundary, it reacts with silicon in the core, forming silica. Layer formation process –



- Tectonic plates carrying surface water have transported it deep into the Earth over billions of years.
- Upon reaching the core-mantle boundary about 1,800 miles below the surface, this water initiates significant chemical changes, influencing the core's structure.

Findings by the international team –

- The team observed that subducted water reacts chemically with core materials under high pressure.
- This reaction leads to the formation of a hydrogen-rich, silicon-depleted layer at the outer core, resembling a film-like structure.
- Silica crystals generated by this process ascend and blend into the mantle, impacting the overall composition.
- These modifications in the liquid metallic layer could potentially result in reduced density and altered seismic characteristics. Hence, statement 1 is not correct

3. Consider the following statements, with reference to Indo-Pacific Economic Framework for Prosperity (IPEF):

1. IPEF was launched by the USA along with partner countries such as Australia, India, Japan and Republic of Korea.
2. The framework has 4 main pillars that includes Trade, Supply Chains, 'Clean Energy Decarbonisation and Infrastructure' and 'Tax and Anti-Corruption'.
3. India has joined all the 4 pillars of the framework.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (B)

Explanation: The recently concluded negotiations of IPEF agreement on “fair economy” dealing with corruption would give a big support to India’s efforts to bring back proceeds of crime and corruption parked overseas. The IPEF was



launched in Tokyo in May 2022. The 14 members of the IPEF include India, US, Australia, Brunei, Fiji, Indonesia, Japan, Republic of Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand and Vietnam. They account for 40% of the world's economic output and 28% of trade. This framework will advance resilience, sustainability, inclusiveness, economic growth, fairness, and competitiveness for our economies. Through this initiative, the IPEF partners aim to contribute to cooperation, stability, prosperity, development, and peace within the region. The 4 pillars of the framework includes:

- Trade
- Supply Chains
- Clean Energy, Decarbonisation and Infrastructure
- Tax and Anti-Corruption

India has joined 3 pillars except the trade pillar. The IPEF is designed to be flexible so that the IPEF partners are not required to join all four pillars. It seeks to address the vulnerabilities and disruption in supply chains that would not in any way take away the country's sovereign rights to impose export restrictions on products or change tariffs. Under the IPEF Fair Economy Agreement members have resolved to cooperate for combating corruption and seizing proceeds of crime. Hence, statement 3 is not correct.

4. It is indigenous to the Indo-Pacific region and has earned the moniker 'Sea Gold' due to its high market demand, notably in China. Aside from its monetary worth, it is treasured for its health benefits. Its collagen content promotes skin health by avoiding wrinkles, gaining it the reputation of a natural anti-aging product. Furthermore, the Omega-3 in it is thought to improve newborns' IQ by stimulating brain cell proliferation.

With which of the following the above passage is related?

- (a) Abalone
- (b) Sea Cucumber
- (c) Sea Urchin
- (d) Ghol Fish



Answer: (D)

Explanation: The ghol fish is primarily found in the Indo-Pacific region. Its habitat spans from the Persian Gulf to the expansive waters of the Pacific Ocean. Economic Significance:

- The ghol fish has a substantial market demand in China and other Asian countries.
- Ghol fish is also known as ‘Sea Gold’ for its high market value. Its meat is exported to European and Middle-Eastern countries, while the dried air bladder is in high demand, especially in China. Benefits: • Good for eye health and helps in maintaining eyesight.
- Prevent ageing and wrinkles, the collagen content in the ghol fish prevents wrinkles and also keeps the elasticity of the skin intact.
- Omega-3 content in ghol fish improves the Intelligence Quotient (IQ) of infants if fed on a regular basis – it stimulates the growth of brain cells. Hence, option (d) is correct.

5. What is the major goal of the recently publicized SATHEE Portal?

- (a) To encourage student entrepreneurship and innovation
- (b) To provide free entrance exam help and coaching
- (c) To give mental health and well-being counselling
- (d) To provide scholarships and financial aid for higher study

Answer: (B)

Explanation: The Ministry of Education (MoE) recently announced that it would write to all states to urge students to use the newly released exam preparation platform, SATHEE (Self-Assessment Test and Help for Entrance Exams). The Ministry of Education has launched a new effort to give students with a free learning and assessment platform. It will assist students in obtaining free training and coaching for competitive examinations. The platform's goal is to bridge the gap for kids in society who cannot afford the expensive entrance exam guidance and coaching. It will provide students with preparation materials in English, Hindi, and other regional Indian languages so that they can prepare for exams such as JEE and NEET. It will be valuable for candidates studying for



CAT, GATE, UPSC, and other competitive exams. It will also provide candidates with the opportunity to obtain experience in coaching centres. The website will include videos created by IIT and IISC faculty members to assist students in preparing for competitive tests. The videos would also assist pupils in learning concepts and revising topics in which they are weak. It makes use of a locally produced AI program called Prutor, which was created by IIT-Kanpur. Hence, option (b) is correct.