



Daily Current Affairs Prelims Quiz 18-10-2024 (Online Prelims Test)

1) Consider the following statements with respect to Central Nervous System Tuberculosis (CNS-TB)

1. It is one of the most dangerous forms of TB that affects the brain, often leading to severe complications or death.
2. Blood-brain barrier (BBB) prevents the medicines from entering the brain, limiting their effectiveness.
3. Chitosan, tiny particles made of a natural material are effective in by-passing BBB to deliver TB medicines directly to the brain through the nose.

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



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Central Nervous System Tuberculosis (CNS-TB)

Scientists at Institute of Nano Science and Technology (INST), Mohali has recently found a unique drug delivery method to improve treatment of brain tuberculosis.

- Central Nervous System Tuberculosis (CNS-TB) is one of the most dangerous forms of TB that affects the brain, often leading to severe complications or death.
- **Challenges in treating CNS-TB** – Drugs used to treat TB struggle to reach the brain because of a protective barrier known as the blood-brain barrier (BBB).
- This barrier prevents many medicines from entering the brain, limiting their effectiveness.
- Traditional treatments involve high doses of oral anti-TB drugs, but these often fail to achieve effective concentrations in the cerebrospinal fluid due to the blood-brain barrier (BBB).
- This limitation underscored the need for more effective delivery methods that can target the brain directly.
- **Chitosan** – A tiny particles made of a natural material to deliver TB medicines directly to the brain through the nose, bypassing the BBB.
- These tiny particles, known as nanoparticles, were then made into slightly larger clusters called Nano-aggregates, designed for easy nasal delivery.

Nano-aggregates are colloidal carriers that are made of amphiphilic block copolymers and polymers conjugated with drugs.

- They can hold TB drugs like isoniazid (INH) and rifampicin (RIF).
- The drug delivery technology used was nose-to-brain (N2B) drug delivery, which utilizes the

olfactory and trigeminal nerve pathways in the nasal cavity to bypass the BBB.

- By delivering the drug through the nasal route, the Nano-aggregates can transport the drugs directly into the brain, significantly improving drug bioavailability at the infection site.
- Chitosan is known for its mucoadhesive properties, and sticks to the nasal mucosa, which helps the Nano-aggregates stay in place and prolongs the time they can release the drug, enhancing its therapeutic effectiveness.
- It could be applied to treat other brain infections, neurodegenerative diseases (like Alzheimer's and Parkinson's), brain tumours, and epilepsy by enabling efficient drug delivery to the brain.
- **Institute of Nano Science and Technology (INST)** - It is an autonomous institution of the Department of Science and Technology (DST).
- It has been established under the umbrella of NANO MISSION, initiated by DST to boost research and development in the field of Nanoscience and Nanotechnology in India.
- It is situated at the *Mohali Punjab*.

2) Pavana Chitra, sometimes seen in the news recently, is associated with?

- a. A digital epigraphy museum set up by the Archaeological survey of India.
- b. An operation to crackdown cyber criminals.
- c. Airport based self-powered indoor air quality monitoring facility.
- d. An indigenously developed Automatic Train Protection (ATP) system.

Answer : c

Pavana Chitra

- Pavana Chitra is India's first self-powered indoor air quality monitor.
- It is situated at Thiruvananthapuram International Airport.
- The off-grid air quality monitor is powered by indigenous indoor solar cells developed by CSIR-National Institute for Interdisciplinary Science and Technology (NIIST).
- It embodies a powerful fusion of technology, tradition and art, presenting an off-grid, self-powered indoor air quality monitor.
- It is crafted from locally available materials and designed to *mimic the natural process of photosynthesis*.

3) Consider the following statements with respect to Shanghai Cooperation Organisation (SCO)

1. It is a permanent intergovernmental international organization.
2. India is the only SCO member to not endorse China's Belt and Road Initiative.
3. Iran and Belarus are the members of the organisation.

How many of the statements given above are **incorrect**?

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

Answer : a

Shanghai Cooperation Organisation (SCO)

The 2024 Shanghai Cooperation Organisation Summit, also known as the 23rd Meeting of the Council of the Heads of Government, was a diplomatic event that was recently held in Islamabad, Pakistan.

- The Shanghai Cooperation Organization is a *permanent intergovernmental international organization* established on June 15, 2001 in Shanghai (PRC), China.
- **Goals of the SCO** – To strengthen mutual trust, friendship and good-neighbourliness between the Member States.
- To jointly ensure and maintain peace, security and stability in the region.
- To promote a new democratic, fair and rational international political and economic international order.
- **Council of Heads of States (CHS)** – It is the supreme decision-making body of the SCO.
- It meets once a year and decide upon all the important issues of the Organization.
- **2 standing bodies** – The Secretariat in Beijing and the Executive Committee of the Regional Anti-Terrorist Structure (RATS) in Tashkent.
- **9 Member States** – India, **Iran**, Kazakhstan, China, Kyrgyzstan, Pakistan, Russia, Tajikistan and Uzbekistan.
- **3 Observer states** – Afghanistan, **Belarus** and Mongolia. (**Since Belarus is an observer state statement 3 is incorrect**)
- **14 Dialogue Partners** – the countries are:
 - Azerbaijan
 - Armenia
 - Bahrain
 - Egypt
 - Cambodia
 - Qatar
 - Kuwait
 - Maldives
 - Myanmar
 - Nepal
 - United Arab Emirates
 - Saudi Arabia
 - Turkey
 - Sri Lanka
- **Official languages** – Russian and Chinese.
- **China's Belt and Road Initiative** – India is the only SCO member to **not endorse** China's Belt and Road Initiative.



4) The highest statutory decision-making body on technical matters related to drugs in India is?

- Drugs Consultative Committee (DCC)
- Medical Council of India
- Drugs Technical Advisory Board (DTAB)
- Indian Pharmacopoeia Commission (IPC)

Answer : c

Drugs Technical Advisory Board (DTAB)

DTAB has recommended the inclusion of all antibiotics in the definition of new drugs in the New Drugs and Clinical Trial (NDCT) Rules, 2019 to arrest the growing incidence of antimicrobial resistance.

- Drugs Technical Advisory Board (DTAB) is the highest statutory decision-making body on technical matters related to drugs in India.
- It aims to advise the Central Government and the State Governments on technical matters arising out of the administration of Drug and Cosmetic Rules 1945.

- It has recently recommended the inclusion of all antibiotics in the definition of new drugs in the New Drugs and Clinical Trial (NDCT) Rules, 2019.
- **Drugs Consultative Committee (DCC)** - DTAB has recommended to DCC to curb the growing antimicrobial resistance which is now recognised as a public health threat globally.
- **New drug** - According to Rule 122 E of the Drug and Cosmetic Rules 1945, a new drug can be one which has not been used in the country and has not been recognised as effective and safe by the licensing authority for the proposed claims.
- It could also be an approved drug with modified or new claims including indications, dosage, and new route of administration.
- **Objectives of DTAB** - To amend the labelling requirements under the Drugs Rules, 1945 and adding a blue strip or box for antimicrobial products.
- It has recommended that no antimicrobials should be sold by the traders to the non-pharmaceutical industries who do not hold requisite licences.

Antimicrobial resistance has been recognised as a serious and growing threat to public health globally.

- **Diseases resistant to antibiotics** - Drug-resistant and difficult to treat urinary tract infections, blood stream infections, pneumonia, and typhoid are among the diseases that are showing resistance to commonly used antibiotics in India.

5) Yeti of the Himalayas and Yowie of the Australian Outback, sometimes seen in the news recently are examples of?

- Cryptids
- Insular fauna
- Oviparous
- Chionophiles



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Answer : a

Cryptids

- Cryptids are creatures that are unknown, legendary, or extinct and whose present existence is disputed or unsubstantiated.
- Cryptids have been reported on every continent and several cultures.
- **Examples of Cryptids** - Yeti of the Himalayas, Big Foot or the Sasquatch of the Pacific Northwest in North America, the Yowie of the Australian Outback, the Yeren of China and the Monkey Man of Delhi.
- The study of cryptids is known as 'cryptozoology' and debate exists over whether cryptozoology is a legitimate science.
- **Chupacabra** - The legend of the chupacabra originates from the island of Puerto Rico in the Caribbean.
- It means "goat sucker" in Spanish.
- It is described as having grey, scaly skin, dorsal spines, and fangs.
- Chupacabra is known for attacking livestock and allegedly draining their blood and there is a Myth spread across the Americas.