

07 June 2020: PIB Summary & Analysis

1. Centrally protected monuments under the ASI

Context:

820 centrally protected monuments under the ASI which have places of worship will open.

About Archaeological Survey of India (ASI):

- The Archaeological Survey of India (ASI), under the Ministry of Culture, is the premier organization for the archaeological researches and protection of the cultural heritage of the nation.
- Maintenance of ancient monuments and archaeological sites and remains of national importance is the prime concern of the ASI.
- Besides, it regulates all archaeological activities in the country as per the provisions of the Ancient Monuments and Archaeological Sites and Remains Act, 1958. It also regulates the Antiquities and Art Treasure Act, 1972.
- For the maintenance of ancient monuments and archaeological sites and remains of national importance, the entire country is divided into 24 Circles.
- The ASI has a large workforce of trained archaeologists, conservators, epigraphist, architects and scientists for conducting archaeological research projects through its Circles, Museums, Excavation Branches, Prehistory Branch, Epigraphy Branches, Science Branch, Horticulture Branch, Building Survey Project, Temple Survey Projects and Underwater Archaeology Wing.
- **Activities of ASI:**
 - Conducting archaeological explorations and excavations.
 - Maintenance, conservation and preservation of protected monuments and archaeological sites and remains of national importance.
 - Chemical preservation of monuments and antiquarian remains.
 - Architectural survey of monuments.
 - Epigraphical and numismatic studies.
 - Setting up and re-organization of Site Museums.
 - Training in Archaeology.
 - Bringing out archaeological publications.
 - Archaeological expeditions outside India.
 - Horticulture operation in and around ancient monuments and sites.
 - Implementation and regulation of – The Ancient Monuments and Archaeological Sites and Remains Act, 1958, the Antiquities and Art Treasures Act, 1972, etc.
- Under the Ancient Monuments and Archaeological Sites and Remains Act, 1958, the ASI has declared more than 3500 monuments to be of 'national importance' in India.
- The ASI was set up in 1861.
- Protected monuments and sites have many restrictions in place for their protection and conservation. For example, no construction activity is permitted within a certain distance of the area, and no damage or injury is to be caused to these monuments and areas, etc.

2. Mission Sagar

Context:

INS Kesari at Port Victoria, Seychelles, as part of Mission Sagar.

3. ARCI develops Rare earth based magnetocaloric material for cancer treatment

Context:

Scientists at the International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), an autonomous R&D Centre of Department of Science and Technology (DST) has developed a rare-earth-based magnetocaloric material that can be effectively used for cancer treatment.

Details:

- Magnetocaloric materials are certain materials in which application and removal of a magnetic field causes the materials to become warmer or cooler.
- Advancements in magnetic materials led to the development of magnetic hyperthermia to try to address the issues of side effects of cancer treatment like chemotherapy.
 - In magnetic hyperthermia, magnetic nanoparticles are subjected to alternating magnetic fields of few Gauss, which produce heat due to magnetic relaxation losses.
 - Usually, the temperature required to kill the tumour cells is between 40 and 45°C. However, the drawback in magnetic hyperthermia is the lack of control of temperature, which may damage the healthy cells in the body and also have side effects like increased blood pressure, etc.
- These problems can be avoided by using magnetocaloric materials, as it can provide controlled heating.
- The advantage of magnetocaloric materials which heat up or cool down with the application and removal of the magnetic field, respectively is that as soon as the magnetic field is removed, cooling effect is generated, unlike in magnetic nanoparticles where overheating persists, even after removal of the magnetic field.
- The team at ARCI chose rare-earth-based alloy for studies as some of the rare earth materials are human body compatible. They optimized the alloy composition so that the Curie temperature came close to the therapeutic range (i.e. 42-46°C) required for destroying cancer cells.
- This method, when used in conjunction with radiation therapy, would reduce the side effects, damage caused to the human body and also reduce the treatment time of cancer tumours.

4. Diagnosis of oral cancers

Context:

IASST develops an artificial intelligence-based computer diagnosis framework for rapid and accurate diagnosis of oral cancers.

Details:

- Scientists at the Institute of Advanced Study in Science and Technology (IASST), Guwahati, an autonomous institute of the Department of Science & Technology, Govt. of India, have developed an [artificial intelligence](#) (AI) based algorithm as an aid to rapid diagnosis and prediction of oral squamous cell carcinoma.
- The framework developed will also help grading of oral squamous cell carcinoma.

- The study was conducted applying two approaches through the application of transfer learning using a pre-trained deep convolutional neural network (CNN).

About oral cancer:

- Oral cancer is cancer that develops in the tissues of the mouth or throat.
- It belongs to a larger group of cancers called head and neck cancers.
- Most develop in the squamous cells found in the mouth, tongue and lips.
- Oral cancer appears as a growth or sore in the mouth that does not go away.
- Around 16.1% of all cancers amongst men and 10.4% amongst women are oral cancer, and the picture is all the more alarming in NE India. Oral cavity cancers are also known to have a high recurrence rate compared to other cancers due to the high consumption of betel nut and tobacco.