

19 April 2020: PIB Summary & Analysis

1. Central Board of Direct Taxes (CBDT)

Context:

CBDT revising return forms to enable taxpayers to avail the benefits of timeline extension due to [COVID-19](#).

To know more about [CBDT](#), click on the linked article.

2. Government launches online data pool of critical human resource for combating and containing COVID-19

Context:

The Union Government has created an online data pool on <https://covidwarriors.gov.in> of doctors including AYUSH doctors, nurses and other health care professionals, volunteers from NYKs, NCC NSS, PMGKVY, ex Servicemen, etc. for use by the ground level administration at state, district or municipal levels.

Details:

- The portal contains state-wise and district-wise availability of the large pool of human resources from various groups along with contact details of the nodal officers.
- The dashboard is available for use by various authorities to prepare Crisis Management/Contingency Plans based on the available manpower, in coordination with nodal officers for each group.
- This database can also be used to utilise the services of volunteers for enforcing social distancing at banks, ration shops, mandis and for providing help to elderly, physically handicapped and orphanages.
- This will also help States/UTs to move human resources from one location to the other for their utilisation.
- This platform provides anytime onsite delivery of training material/modules through any device (mobile/laptop/desktop).

3. IIA scientists connect Lithium abundance in interstellar space to new Lithium rich red giants

Context:

Researchers at the Indian Institute of Astrophysics (IIA), an autonomous institute under the Department of Science & Technology, Govt. of India, have discovered hundreds of Li-rich giant stars indicating that Li is being produced in the stars and accounts for its abundance in the interstellar medium.

Details:

- The researchers have also associated such Li (lithium) enhancement with central He-burning stars, also known as red clump giants, thereby opening up new vistas in the evolution of the red giant stars.

- Lithium (Li) is one of the three primordial elements, apart from Hydrogen and Helium (He), produced in the big bang nucleosynthesis (BBN) whose models predict primordial Li abundance.
- However, the present measurement of Li in the interstellar medium and very young stars is about 4 times more than the primordial value.
- Thus, identifying sources of Li enrichment in our galaxy has been of great interest to researchers to validate the Big Bang Nucleosynthesis as well as a stellar mixing process.
- Apart from reactions in which high energy cosmic ray particles bombard with heavier nuclei such as carbon and oxygen - producing lighter particles such as Li, stars are also proposed as likely Li source in the galaxy.
- In general, stars are considered as Li sinks. This means that the original Li, with which stars are born, only gets depleted over stars' life-time as Li burns at relatively very low temperatures of about 2.5×10^6 K – a range which is easily encountered in stars.
- By employing data from large scale ground and space missions, the research team discovered hundreds of Li-rich giants.
- The researchers determined the evolutionary phase of these giants by analysing the relative positions of thousands of stars using their temperature and luminosity and also subjecting their independent data set to atmospheric oscillations analysis using data from Kepler Space Telescope, a NASA mission for discovering planets.
- By determining their characteristic frequency and period spacing of pressure (p)-modes and gravity (g)-modes, they could differentiate between the stars that have a He-burning core, or inert He ash at the centre due to Hydrogen fusion reaction.
- **Importantly, they showed for the first time that the Li enhancement in giants is associated only with central He-burning stars, which are also known as red clump giants.**
- This is an important discovery that will help to eliminate many proposed theories such as planet engulfment or nucleosynthesis during the red giant evolution in which helium at the centre is not burning.