Aries-Devasthal Faint Object Spectrograph & Camera (ADFOSC)

March 5, 2021

In News: The Ministry of Science & Technology has commissioned the Aries-Devasthal Faint Object Spectrograph & Camera (ADFOSC) on Devasthal Optical Telescope.

About ADFOSC

- Indigenously designed and developed by Aryabhatta Research Institute of Observational Sciences (ARIES), Nainital.
- Largest of its kind among the existing astronomical spectrographs in the country
- It is a low-cost optical spectrograph that can locate sources of faint light from, Distant quasars and galaxies in a very young universe,Regions around supermassive black-holes around the galaxies, and cosmic explosions
- It is a backbone for observations of extremely faint celestial sources as it uses a complex arrangement of several lenses made of special glasses.

Features ADFOSC

- It is about 2.5 times less costly compared to the imported ones and can locate sources of light with a photon-rate as low as about 1 photon per second.
- It has been successfully commissioned on the 3.6-m Devasthal Optical Telescope (DOT), the largest in the country and in Asia, near Nainital Uttarakhand.
- This instrument uses a complex arrangement of several lenses made of special glasses, polished to better than 5-nanometer smoothness to produce sharp images of the

celestial sky.

- Photons coming from distant celestial sources, collected by the telescope, are sorted into different colours by the spectrograph and are finally converted into electronic recordable signals.
- It uses an in-house developed Charge-Coupled Device (CCD) camera cooled to an extremely low temperature of -120 0