5. National Mission on Interdisciplinary Cyber Physical Systems (NMICPS)

Prelims Syllabus: Cyber Space Challenges

Mains Syllabus: GS-III Science and Technology - developments and their applications and effects in everyday life Achievements of Indians in science & technology; indigenization of technology and developing New Technology.

Why in News?

- Recently, the **Indian Institute of Technology (IIT)** Ropar, Punjab is setting up a Sectoral Application Hub in Technologies for Agriculture and Water.

About National Mission on Interdisciplinary Cyber Physical Systems (NMICPS):

- The hub is being set up under the National Mission on Interdisciplinary Cyber Physical Systems (**NMICPS**) and is granted by Union Government's Science and Engineering Research Board.
- It will bring solutions for stubble management, water quality improvement and mapping of hazardous substances in water.
- It aims at carrying out translational research and work with concerned departments to develop prototypes, products and implementations.
- It was launched in 2018 and is implemented by the Department of Science & Technology for a period of five years.
- It covers entire India which includes Central Ministries, State Governments, Industry and Academia.

Its objectives are:

- It is a comprehensive mission which would address technology development, application development, human resource development & skill enhancement, entrepreneurship and start-up development in Cyber-Physical System (CPS) and associated technologies.
- The mission aims at establishing **15 Technology Innovation Hubs (TIH), six Application Innovation Hubs (AIH) and four Technology Translation Research Parks (TTRP)**.
- They have four focused areas namely:
  - ✓ Technology Development.
  - ✓ HRD & Skill Development.
  - ✓ Innovation, Entrepreneurship & Start-ups Ecosystem Development.
  - ✓ International Collaborations.

Cyber-Physical Systems:

- These systems integrate sensing, computation, control and networking into physical objects and infrastructure, connecting them to the Internet and to each other.

Few Potential Applications:

- ✓ Driverless cars that communicate securely with each other on smart roads.
- ✓ Sensors in the home to detect changing health conditions.
- ✓ Improving agricultural practices.
- ✓ Enabling scientists to address issues arising out of climate change.

- Advances in cyber-physical systems will enable capability, adaptability, scalability, resiliency, safety, security and usability that will far exceed the simple embedded systems of today