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Mains Practice Questions

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Q. Examine the objectives and significance of national supercomputing mission in India alongwith the challenges involved. (250 words)

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Approach

- Give a brief idea on supercomputing mission
- Mention its objectives
- Enumerate the advantages and challenges

Introduction

- National Supercomputing Mission is an important initiative by Government of India to boost indigenous efforts to be in the forefront of supercomputing capability for socio-economic development of the nation.
- The mission is jointly steered by Ministry of Electronics and IT and Department of Science & Technology.

Body

Objectives:

- **Strengthening Institutional Capacity:** The Mission envisages empowering our national academic and R&D institutions spread over the country by installing a vast supercomputing grid comprising of more than 70 high-performance computing facilities.
- **Pooling supercomputing resources:** These supercomputers will also be networked on the National Supercomputing grid over the National Knowledge Network (NKN). Academic and R&D institutions as well as key user departments/ministries would participate by using these facilities and develop applications of national relevance.
- **Capacity Building:** The Mission also includes development of highly professional High Performance Computing (HPC) aware human resource for meeting challenges of development of these applications.
- To provide continuity in maintaining a lead in supercomputing, the Mission also includes **advanced R&D**. This will create requisite expertise to build state-of-the-art next generation supercomputing

Significance

- It will **bring supercomputing within the reach** of the large Scientific & Technology community in the country; will provide significant qualitative and quantitative improvement in R&D and higher education in the disciplines of Science & Technology;
- The mission will **bring India into the select league of advanced countries** such as the US, Japan, China and the European Union (EU) which share top Supercomputing machines in the world.

- Supercomputing facilities will enable India in **S&T capabilities in areas** such as designing vehicles, aeroplanes, massive structures like high rise buildings and bridges, infrastructure , discovery of new life saving drugs, discovery and extraction of new energy sources including oil, natural gas etc.
- More accurate **weather forecast** as well as real time tracking of natural phenomenon, timely warning of cyclones etc.
- It would be an enabler for the **Digital India** vision of the Government by making available huge data storage space and linking systems together.
- The mission envisages manufacturing of supercomputing systems in India and may play a lead role in **Make in India** vision.

Challenges:

- There has been continuous delay in implementing programme
- India lacks highly skilled workforce for Supercomputer development.
- Need to work on policies to attract the talent from all over the world as well as retaining the indigenously available talent through financial and other incentives.
- Funding crunch for the mission because of which project has been delayed.
- While India's stronghold is in the field of software development, it has to depend on imports to procure the hardware components required for building supercomputers

Conclusion:

National Supercomputing Mission is timely effort to ensure India does not lag in new area as Industry 4.0 transforms the way of doing work, equipping Indian R&D establishment to develop and master newer technological applications to resolve developmental challenges India is facing.