

Processor Shakti

Prelims: Current events of national and international importance | Science & Technology

Why in news?

India's 1st 7 nanometer (nm) computer chip design to be ready by 2028: Announced by Union Minister Ashwini Vaishnaw

- It is India's 1^{st} indigenously designed 7 nm computer processor, is expected to be ready by 2028.
- Started in 2013, SHAKTI is based on open-source instruction set architecture, allowing anyone to adopt and use it freely without restrictions.
- **Developed by** Reconfigurable Intelligent Systems Engineering (RISE) group at Indian Institute of Technology-Madras (IIT Madras), through its SHAKTI initiative.

"Shakti initiative" is a key program to develop indigenous, opensource microprocessors. Eg. Development of SHAKTI processor family.

- **Nodal Ministry** Ministry of Electronics and Information Technology (MeitY).
- **Collaboration** It fosters collaboration among academic institutions, startups, and industry to enhance R&D infrastructure and expand talent capacity.

Features & Applications

- RISC-V Adopting <u>RISC-V</u> (Reduced Instruction Set Computer) <u>architecture</u>, an <u>open-source architecture</u> & a family of microprocessors is being developed based on different types of devices.
- Performance & efficiency The system is designed for high

- performance and energy efficiency and represents a major leap in semiconductor design.
- **Applications** Deployed across financial services, communications, defence and other strategic sectors.
- AI and 5G This will support emerging technologies like 5G, artificial intelligence, and supercomputing.
- Future Roadmap Through sustained R&D and strategic investment, the nation aims to build chips in India for the world.
- **Reinforces** India's strategic goal of <u>technological self-reliance</u> under the Atmanirbhar Bharat vision and aligns with India Semiconductor Mission.
- **Significance** With this initiative, India aims to bridge the gap by reducing import dependency, and strengthening its position in global semiconductor innovation.

References

- 1. PIB |Fueling innovation through indigenous 7 nm processor
- 2. Deccan Herald | 7 nm computer chip ready by 2028
- 3. Manufacturing Today | India's 1st indigenous 7 nm processor

