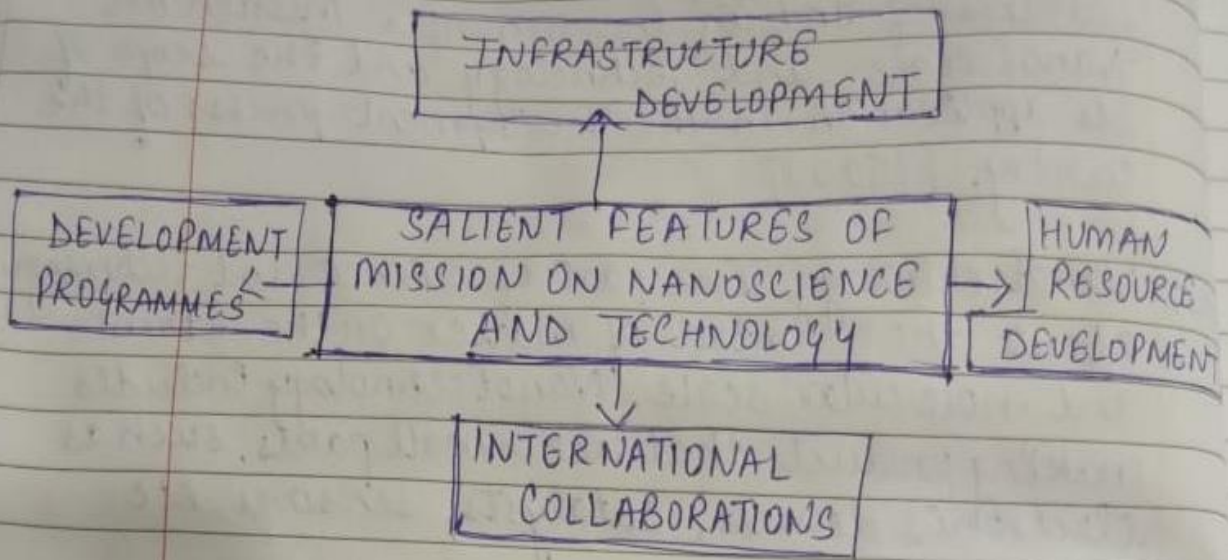


Que: Why is nanotechnology one of the key technologies of the 21st century? Describe the salient features of Indian Government's Mission on Nanoscience and Technology and the scope of its application in the development process of the country. [150 W]

Ans: Nanotechnology is a part of science and technology about the control of matter on the atomic and molecular scale. Nanotechnology includes making products that use small parts, such as electronic devices, catalysts, sensors, etc.

* SOME APPLICATIONS THAT MAKE NANOTECHNOLOGY ONE OF THE KEY TECHNOLOGIES IN 21ST CENTURY :-

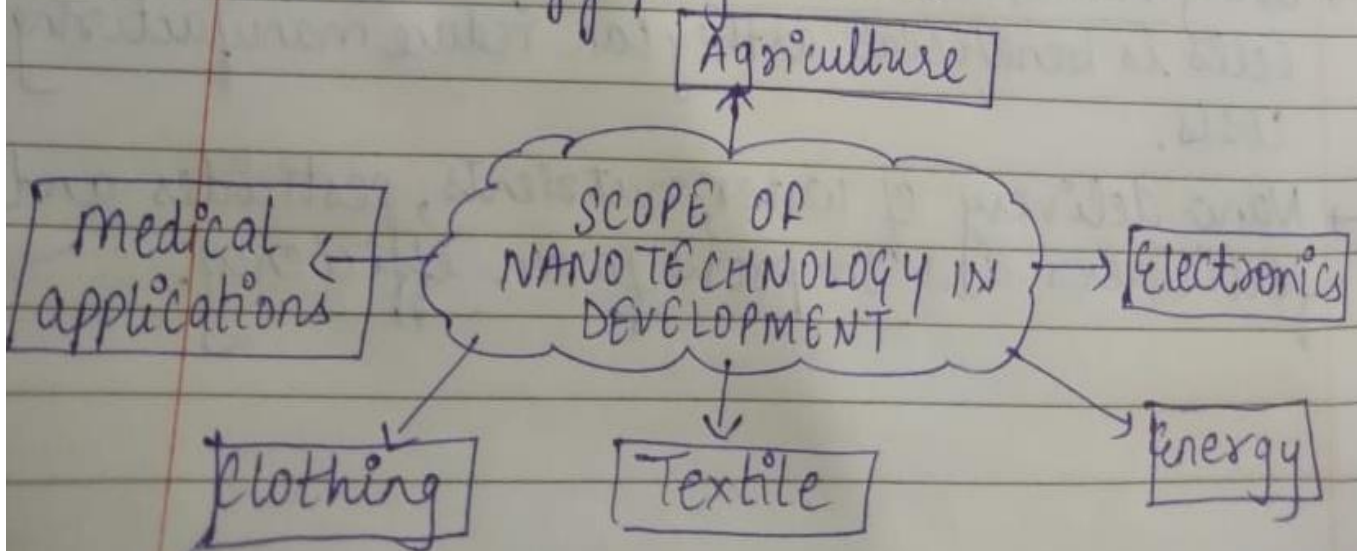
- ↳ Use of nanoparticles of titanium oxide to improve effect of sunscreen lotions.
- ↳ Nanotechnology plays a major role in the field of medicine. Nanosized materials are being developed to diagnose and treat diseases like cancer more effectively.
- ↳ Using nanoparticles in the manufacture of solar cells is beneficial as they can reduce manufacturing costs.
- ↳ Nano delivery of water, nutrients, pesticides and fertilizers to improve farm efficiency.



↳ Infrastructure Development: Mission aimed at establishing linkages b/w industry & research and educational institutions & promoting public private partnerships (PPPs).

↳ Human Resource Development: The project aims to create large-skilled manpower for nanoscale science technology can emerge.

↳ International Collaborations: The project focuses on promoting foreign collaboration in nanotechnology programmes.



- ↳ AGRICULTURE: Through Nanosensors can help enhance food production & improve food safety.
- ↳ ELECTRONICS: Improved electronic devices, including transistors, LED, plasma displays with the help of nanotechnology.
- ↳ CLOTHING: Improvements in manufacturing that allow for durable, light-weight, efficient production tools.
- ↳ MEDICINE: Advances in disease treatments, such as cancer & better imaging & diagnostic equipment.

CONCLUSION: Nanotechnology has emerged as a growing & rapidly changing field. It has potential in many sectors & provides new opportunities.