

Ministry of Science and Technology Schemes

NIDHI

- National Initiative for Development and Harnessing Innovations (NIDHI) is an umbrella program for nurturing ideas and innovations (knowledge-based and technology-driven) into successful startups.
- It aims to take forward student innovations in IEDC (Innovation and Entrepreneurship Development Centres) programme to commercialization stage and to accelerate the journey of idea to prototype by providing initial funding assistance.

Visiting Advanced Joint Research Faculty scheme

- Under 'Visiting Advanced Joint Research Faculty' (VAJRA) scheme, scientists or senior researchers abroad of Indian origin (NRIs and Overseas scientific community) can collaborate with Indian faculties for conducting joint researches in India.
- The foreign researchers would receive endowments at par with those in their own countries.
- Public funded academic institutions and national laboratories are eligible to host the VAJRA Faculty.
- The Faculty can also be allowed to participate in other academic activities as agreed to by the host institution and the Faculty
- The residency period of the VAJRA Faculty in India would be for a minimum of 1 month and a maximum of 3 months a year.
- The Scheme is open to active and accomplished scientist / faculty from all countries.
- The scheme will be regulated by a statutory body called Science and Engineering Research Board (SERB).

Vigyan Gram Sankul Pariyojana

- Pt. DeenDayal Upadhyay Vigyan Gram Sankul Pariyojana is an initiative for the upliftment and economic development of rural areas in the country.
- It aims to formulate and implement appropriate S&T interventions for sustainable development through cluster approach.
- The key deliverable in this approach is to utilise local resources and locally available skill sets and convert them in a manner using science and technology, that substantial value addition takes place in their local produce and services which can sustain the rural population locally.
- Practice of agriculture, agro-based cottage industries and animal husbandry in an eco-friendly manner will be emphasized during the implementation of the project.
- Few clusters of villages in Uttarakhand are selected by the ministry for transforming them to become self-sustainable in a time bound manner through the tools of Science and Technology (S&T).

Interdisciplinary Cyber-Physical Systems

- National mission on Interdisciplinary Cyber-Physical Systems aims at establishment of Technology Innovation Hubs (TIH), Application Innovation Hubs (AIH) and Technology Translation Research Parks (TTRP).
- It is a Pan India mission covering Central Ministries, State Governments, Industry and Academia, to effectively use Cyber Physical System (CPS) technologies.

- Smart grids, where electricity is optimally distributed on the basis of calculations in real time by microprocessors and autonomous unmanned vehicles and aircraft navigation systems qualify as _cyber physical systems.‘
- Artificial Intelligence (AI), Internet of Things (IoT), Machine Learning (ML), Deep Learning (DP), Big Data Analytics, Robotics, Quantum Computing, Quantum Communication, Quantum encryption (Quantum Key Distribution) are associated technologies of CPS.

Biotech KISAN

- Biotech- KISAN (Krishi Innovation Science Application Network) focuses on empowering Small- and WomenFarmers with Science Implementation.
- The scheme aims to create strong scientists-farmers interactive platform where scientists will work in sync with farmers to understand problems and find solutions.
- Several biotech kisan hubs is set up in 15 agro-climatic zones to understand the problems of individual farmers related to water, soil, seed and marketing and scientists provide solutions with validated technologies.
- It includes the Mahila Biotech- KISAN fellowships, for training and education in farm practices, for women farmers.

Cattle Genomics

- The scheme aimed to enhance selective breeding of the native livestock to ensure high-yielding, diseaseresistant, resilient livestock.
- The main objective is to predict breeding values of animal, using DNA level information with performance record, more accurately and identify genetic worth of animal (elite animal) at an early age.
- Through this programme, the government aims to improve the genetic health of the cattle population through genomic selection.
- The programme also envisages development of high-density DNA chips.
- This will reduce the cost and time interval for future breeding programmes and productivity of indigenous cattle would be enhanced.
- The cattle genomics programme is being implemented by National Institute of Animal Biotechnology,= an autonomous Institute funded by the Department.

INSPIRE/MANAK

- "Innovation in Science Pursuit for Inspired Research (INSPIRE)" is an innovative programme for attraction of talent to Science.
- It is a scholarship scheme to help young, talented scientists, collegians and doctorates embark on independent research careers.
- It was later rechristened MANAK (Million Minds Augmenting National Aspirations and Knowledge).

SATYAM

- SATYAM stands for Science and Technology of Yoga and Meditation is a new programme launched by DST to rejuvenate research on yoga and Meditation.
- Its objective is to tap potential for safer, holistic and cost effective treatment of physical and mental health problems.

KIRAN

- KIRAN stands for Knowledge Involvement in Research Advancement through Nurturing is an umbrella programme of women specific programmes of DST.
- It addresses various issues related with women scientists in our country.
- The scheme is meant to encourage women in S&T domain, preferably those having a break in career and not having regular employment, to explore possibility of re-entry into the profession.
- The minimum age to apply in WOS-A & WOS-B is 27 years and maximum age is 57 years.
- KIRAN is also actively involved in taking proactive measures to develop state of the art infrastructure in women universities

Nakshe Portal

- It was launched by the Ministry for Science & Technology and Earth Sciences, on the occasion of 250th anniversary of Survey of India (SoI).
- Topographic maps containing natural and man-made geographical features including terrain or topography are prepared by the SoI and it is made available for free download from —nakshel web portal.
- Survey of India is the oldest scientific department in India, created in 1767 and one of the oldest survey establishments in the world.

LOTUS HR Project

- The project LOcal Treatment of Urban Sewage Streams for Healthy Reuse (LOTUS HR) is an IndoNetherlands joint project funded by Department of Biotechnology(DBT), Govt of India and The Govt of Netherlands.
- The project aims to demonstrate a novel holistic waste-water management approach that will produce clean water, while simultaneously recovering nutrients and energy from the urban waste water, thus converting drain into profitable mines.
- Special attention will be paid to pathogen removal and removing conventional and emerging pollutants.

National Biopharma Mission

- The mission is aimed at accelerating bio pharmaceutical development in a bid to create a globally competitive bio pharmaceutical industry.
- It is targeted to increase India's share in the global bio pharmaceutical market to 5 per cent from the current 2.8 per cent.
- This brings together industry and academia to promote entrepreneurship and indigenous manufacturing in the bio-pharmaceutical sector.
- The mission will be implemented by Biotechnology Industry Research Assistance Council (BIRAC)

- It is expected to bring together expertise from national and international corridors to provide strategic guidance and direction to move promising solutions through the product development value chain.
- This flagship program is run in collaboration with the World Bank and will be implemented by the Biotechnology Industry Research Assistance Council (BIRAC), a Public-Sector Enterprise set up by DBT.
- It is the first ever Industry-Academia mission to accelerate bio pharmaceutical development in India

Devasthal Optical Telescope

- It is India's largest ground-based optical telescope.
- The telescope is the product of an Indo-Belgian collaborative effort.
- It is going to be operated by the Aryabhata Research Institute of Observational Sciences (ARIES), an autonomous research body under the Department of Science and Technology.
- It will also be Asia's largest ground-based optical telescope, succeeding the VainuBappu Observatory in Kavalur, Tamil Nadu.

Surya Jyoti

- It is the Low Cost and Environment-friendly solar lighting device.
- It is a Photovoltaic integrated Micro Solar Dome, a simple innovative technology developed to meet the lighting need for people who do not have access to reliable supply of electricity.
- The dome will capture day light and concentrate the same inside a dark room in urban slum or rural areas.

Farmer Zone

- Farmer Zone is a collective open-source data platform for smart agriculture which will use biological research and data to improve the lives of small and marginal farmers.
- The platform will connect farmers and scientists, government officials, thought leaders in agriculture, economists and representatives from global companies who work in the big-data and e-commerce space to bring about technology-based localised agri-solutions.
- It is envisaged that Farmer Zone will help cater to all needs of the farmer, from dealing with climate change, weather predictions and soil, water, and seed requirements to providing market intelligence.
- It was unveiled in the —Smart Agriculture Conclave organised by Department of Biotechnology (DBT), under the Ministry of Science and Technology.

Schemes related to Brain Drain Reversal

- The schemes launched to reverse the process of infamous 'brain drain' have finally started yielding results.
- This was reflected in the data presented at the first joint conclave of India's top three science fellowships.
- The three science fellowships are as follow,
 1. Ramanujan Fellowship of the Science and Engineering Research Board (SERB),
 2. Ramalingaswami Re-entry Fellowship of the Department of Biotechnology (DBT)
 3. INSPIRE Faculty Fellowship of the Department of Science and Technology (DST).
- The schemes cover all major disciplines of science.

- The Ramanujan Fellowship is meant for brilliant scientists from all over the world to take up scientific research positions in India.
- The Ramalingaswami Re-entry Faculty Fellowship of DBT was meant to bring back Indian scientists working abroad so that they can pursue their research interests of national relevance.
- INSPIRE Faculty Scheme opens up an 'Assured Opportunity for Research Career (AORC)' for young researchers in the age group of 27-32 years.

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