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1. 78th Commission Session for UN-ESCAP

Syllabus: GS III, Environment, Conservation

Prelims: UN ESCAP, AI, Blockchain

Mains: Importance of regional collaboration to mitigate climate change

Context: The 78th Commission Session of the UN-ESCAP was held virtually to discuss the strategic priorities for the adoption of emerging technologies in the energy sector for climate change mitigation.

Delving deeper:

- The event was organised by the Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, Government of India and the Asian and Pacific Centre for Transfer of Technology (APCCT) of ESCAP (Economic and Social Commission for Asia and Pacific).
- It involved discussions on emerging technologies and the ways to promote them to strengthen the scientific sphere in the country.
- The focus areas encompassed the following:
 - Artificial Intelligence
 - [Internet of Things](#)
 - Blockchain
 - Big Data
- These technologies are anticipated to create innovative applications in the energy sector that will contribute to reducing greenhouse gas emissions along with an increase in energy efficiency.
- There were thematic sessions on regional priorities and challenges wherein the experts put forth their recommendations for mitigating and tackling the challenges of climate change based on the current trends in the energy sector with examples of best practices from the Asia-Pacific region.

Read comprehensively about [UN ESCAP](#) in the shared link.

2. Biotechnological interventions in the Ayush sector

Syllabus: GS III, Science and Technology, Awareness in the field of biotechnology

Prelims: AYUSH, National Ayush Mission

Mains: Scope of Ayush sector in India

Context: An MoU was signed between the Ministry of Ayush and the Department of Biotechnology for Inter-Ministerial cooperation for evidence-based biotechnological interventions in the Ayush sector.

An Overview:

- Biotechnological interventions in the traditional healthcare system will offer an innovative combination to further the ongoing research on fundamental principles of Ayush systems.
- This cooperation will allow multidisciplinary approaches to develop and apply the ancient practice of medicine into the public healthcare domain.
- The MoU will also bring synergy between the stakeholders with the collaboration of experts under one platform.

Major objective:

- The biotechnological research and development and the Ayush medicinal practices have aimed at improving the quality of life as well as the life span (Vayahsthaapana Rasayana) and bringing down associated morbidity due to chronic diseases like:
 - Diabetes
 - Obesity
 - Cardiovascular Disease
 - Osteoarthritis
 - Cachexia
 - Infectious diseases like Tuberculosis
 - Pain management

Understanding Ayush:

- AYUSH exemplifies the age-old practice of medicines that involves Ayurveda, Yoga, Unani, Siddha and Homeopathy.

Ayurveda

- It is one of the world's holistic healing systems whose origin can be traced back to 3000 years ago in India.
- It is based on the belief that health and wellness depend on a delicate balance between the mind, body and spirit.
- The main goal of Ayurveda is to promote good health and not just fight diseases.
- According to ayurvedic science, everyone inherits a unique mix of the three doshas with one of them being stronger than the others.
- These doshas are **Vata Dosha** (when the individual develops anxiety, asthma, heart disease, skin problems and rheumatoid arthritis), **Pitta Dosha** (when the individual develops heart diseases, and high blood pressure) and **Kapha Dosha** (when the individual develops cancer, diabetes, nausea after eating, obesity and asthma).
- The goal of this treatment is to cleanse the body of undigested food by the process of panchakarma which is designed to reduce the symptoms and restore harmony and balance. The treatment involves the usage of medicinal oils, herbs and laxatives.

Yoga

- It is the ancient practice of India that entails meditation and breathing techniques to enhance mental and physical well being.
- Yoga upholds the philosophy of [Rig Veda](#) which is a collection of ancient texts.
- It is derived from the Sanskrit word “Yuj” which means “union” or to join.
- The major philosophical basis of [Yoga](#) is about the connection between the mind, body and spirit.
- It has six branches: Hatha Yoga, Raja Yoga, Karma Yoga, Bhakti Yoga, Jnana Yoga and Tantra Yoga.
- Chakras are the centre points of energy, thoughts, feelings and the physical body.
- Yoga has different types and styles such as:
 - Ashtanga Yoga
 - Bikram Yoga
 - Hatha Yoga
 - Iyengar Yoga
 - Kripalu Yoga
 - Kundalini Yoga
 - Power Yoga
 - Sivananda
 - Viniyoga
 - Yin Yoga
 - Prenatal Yoga
 - Restorative Yoga

Benefits of Yoga:

- Building muscle strength
- Enhancing flexibility
- Promoting better breathing
- Supporting heart health
- Reducing depression, anxiety, chronic pain
- Treatment for addiction

Read about [International Yoga Day](#) in the link shared.

Unani:

- The Unani system of medicine was introduced in India by the Arabs and Persians sometime around the 11th century.
- Today, India is one of the leading countries in the practice of Unani medicine with a large number of educational, research and health institutes.
- It originated in Greece and its foundation was led by Hippocrates.
- It is believed that the Arabs played an important role in protecting the Greek literature of the Unani medicine and enriched it further.
- This system involves physics, chemistry, botany, anatomy, physiology, pathology, therapeutics and surgery.
- The Central Council for Research in Unani Medicine is an autonomous organisation of the Ministry of Health and Family Welfare, Government of India with effect from 1979.

Principles of Unani:

- The basic theory of Unani states that the human body is made up of:
 - Arkan: Air, earth, fire and water
 - Mizaj: Temperament of an individual
 - Akhlat: Humour or the moist and fluid part of the body which is produced after the transformation and metabolism of the ailments.
 - Aaza: Organs
 - Arwah: Spirits
 - Quwa: Faculties of three kinds like Quwa tabiyah (power of metabolism and reproduction), Quwa Nafsaniyah (Nervous and psychic powers) and Quwa Haywaniyah (vital power for maintaining a life that enables all the organs to accept the effect of psychic power).
 - Afaal: Functions of the organs

Siddha:

- It is a traditional medicine that originated in South India and is considered the oldest system of medicine in India.
- The Siddha practitioners believe that five basic elements like earth, water, fire, air and sky are in food. Therefore, according to Siddha's philosophy, diet plays an important role in health and in curing diseases.
- The concept of Siddha medicine is termed pathiyam and apathiyam based on do's and don'ts.
- The herbal agents used by Siddha practitioners can be classified into:
 - Thavaram - herbal product
 - Thadu - inorganic substances
 - Jangamam - animal products

Know more about the [Siddha system of medicine](#) in the linked article.

Homoeopathy:

- It is a form of medicine that was developed in Germany more than 200 years ago.
- It is based on two theories such as:
 - Like cures like - it is a notion that ensures a disease to be cured by a substance that produces it.
 - Law of minimum dose - The lower the dose of medication, the greater its effectiveness.

Read about [National Ayush Mission](#) in the linked article.

3. Magnetron Technology for cancer radiation therapy

Syllabus: GS III, Science and Technology, indigenisation of technology and developing new technology

Prelims: About magnetron technology

Context: The Union government has extended its support to the indigenous development of high-powered magnetron technology which is mainly used for treating cancer.

Overview:

- A Memorandum of Understanding was signed between the Technology Development Board of the Department of Science and Technology and Panacea Medical Technologies Pvt. Ltd. to offer financial support for the development and commercialisation of 'S-Band Tunable Magnetron for particle accelerators.

- The high-powered magnetron technology has been developed by the Central Electronics Engineering Research Institute of [CSIR](#).
- This signifies an exemplary association between industry and academia working towards a shared vision.
- This is a welcoming step for India to become a global hub for the manufacturing of medical devices.

About Magnetron Technology:

- A Magnetron is a type of vacuum tube device which is a compact and low-cost source of microwave power.
 - It works on the principle of a crossed-field device which uses the motion of electrons in perpendicular electromagnetic fields to generate microwave radiation.
 - These radiations are used for generating RF power sources in Linear Accelerator for medical purposes along with other applications.
 - This technology has been developed by CSIR-CEERI and has been transferred to Panacea for mass production and usage in radiation therapies for cancer.
 - This is a landmark initiative to facilitate the oncologists to treat 2 mm diameter brain tumours with precision radiation and with very few side effects.
 - It enables a cost-effective treatment of micro and major tumours.
 - The government will put efforts into further reducing the cost of the particle accelerator Siddharth II to make cancer treatment affordable to the common people.
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4. PARAM PORUL

Syllabus: GS III, Technology, Awareness in the field of Computers

Prelims: Supercomputers, PARAM PORUL

Context: A supercomputer named PARAM PORUL was inaugurated at NIT (National Institute of Technology) Tiruchirappalli under the [National Supercomputing Mission](#).

Delving deeper:

- PARAM PORUL is a state-of-the-art supercomputer developed under Phase II of the National Supercomputing Mission.
- The National Supercomputing Mission is a joint initiative of the Ministry of Electronics and Information Technology and the Department of Science and Technology.

- The components of the system have been manufactured and assembled within the country along with an indigenous software stack developed by C-DAC (Centre for Development of Advanced Computing).
 - This is in line with the vision of Make in India.
 - PARAM PORUL system is based on Direct Contact Liquid Cooling technology to obtain high power usage effectiveness and thereby reduce the operational cost.
 - It has a wide range of applications such as:
 - Weather and Climate assessment
 - Bioinformatics
 - Computational Chemistry
 - Molecular dynamics
 - Material sciences
 - Computational fluid dynamics
 - Healthcare sector
 - Agriculture
 - Financial services
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