

**October – 06**

## **TNPSC BITS**

- ❖ The Union Cabinet has remodified its earlier decision and decided to establish of National Institute of Mental Health Rehabilitation (NIMHR) in Sehore District (Bhopal-Sehore highway) instead of Bhopal, Madhya Pradesh.
  - NIMHR will be the first of its kind in the country in the area of mental health rehabilitation.

## **TAMIL NADU**

### **Sahyog HOP TAC -2018**

- ❖ The maiden joint exercise of Coast Guards of India and Vietnam “Sahyog HOP TAC -2018” was held in the Bay of Bengal off the Chennai coast, Tamil Nadu.
- ❖ It was aimed at strengthening the working level relationship between coast guards of both navies.
- ❖ From Indian side, Coast Guard ships Shaurya, Arnvesh and inreceptor boat C-431 along with Dornier aircraft and Chetak helicopter participated in the joint exercise.
- ❖ It also saw participation of Sagar Manjusa vessel of National Institute of Ocean Technology (NIOT).

## **NATIONAL**

### **First Assembly of International Solar Alliance**

- ❖ Prime Minister inaugurated first Assembly of International Solar Alliance (ISA) in New Delhi.
- ❖ The same event also marked inauguration of 2nd Indian Ocean Rim Association (IORA) Renewable Energy Ministerial Meeting and 2nd Global RE-Invest (Renewable Energy Investors’ Meet and Expo).
- ❖ RE-Invest is global platform to explore strategies for development and deployment of renewables.
- ❖ 21 countries in Indian Ocean Rim Association (IORA) adopted Delhi Declaration on Renewable Energy in Indian Ocean Region.

### **Swachh Survekshan Grameen Awards 2018**

- ❖ Prime Minister recently conferred Swachh Survekshan Grameen Awards 2018 to top ranked states and districts.
- ❖ Haryana was ranked as best State followed by Gujarat and Maharashtra.
- ❖ Satara District of Maharashtra was ranked as best district followed by Rewari (Haryana) and Pedapalli (Telangana).
- ❖ Uttar Pradesh was rewarded for maximum citizens' participation followed by Gujarat and Maharashtra.
- ❖ Nashik (Maharashtra) was rewarded for districts with maximum citizens' participation followed by Solapur (Maharashtra) and Chittorgarh (Rajasthan).
- ❖ The rankings were based on the National Swachh Survekshan Grameen 2018 of the Union Ministry of Drinking Water and Sanitation.

### **2018 Government e-Payments Adoption Ranking (GEAR)**

- ❖ India was ranked 28th among 73 countries in 2018 Government e-Payments Adoption Ranking (GEAR).
- ❖ India has jumped by 8 positions in this ranking from 36th in 2011 which reinforces country's progress towards digital transformation.
- ❖ Norway has topped 2018 GEAR list scoring 89.7 points in seven categories.
- ❖ 2018 GEAR is an Economist Intelligence Unit (EIU) global Index and benchmarking study commissioned by financial services corporation Visa.

### **Udyam Abhilasha**

- ❖ Small Industries Development Bank of India (SIDBI) has launched Udyam Abhilasha, a national level entrepreneurship awareness campaign.
- ❖ It was launched in 115 Aspirational Districts identified by NITI Aayog in 28 States.
- ❖ For implementing this campaign, SIDBI has partnered with CSC e-Governance Services India Limited, a Special Purpose Vehicle, (CSC SPV) under Ministry of Electronics & IT through their CSCs.

## INTERNATIONAL

### Global Guidelines on Sanitation and Health

- ❖ The World Health Organization (WHO) has launched first global guidelines on sanitation and health.
- ❖ These guidelines summarize evidence on effectiveness of range of sanitation interventions.
- ❖ According to estimation, for every US\$ 1 invested in sanitation a nearly six-fold return can be expected.

## SCIENCE AND TECHNOLOGY





### Digi Yatra

- ❖ Union Ministry of Civil Aviation has released policy on biometric based digital processing of passengers at airports called Digi Yatra.
- ❖ The initiative seeks to promote paperless and hassle-free air travel. It will be operational by end of February, 2019 at Bengaluru and Hyderabad airports.
- ❖ Under Digi Yatra, there will be one-time verification at departure airport while travelling for first time using ID.

## ENVIRONMENT

### Geographical Indication tag - Alphonso mango

- ❖ Chennai based Geographical Indication Registry and Intellectual Property India has granted Geographical Indication (GI) tag to Alphonso mango from 5 districts of Maharashtra.
- ❖ These five districts Ratnagiri, Sindhudurg, Palghar, Thane and Raigad are from western Konkan coastal region of Maharashtra State.
- ❖ With this recognition, Alphonso has joined list of 325 products from India with GI tag.
- ❖ Alphonso, better known as 'Hapus' in Maharashtra is considered as king of mangoes.

<b>LOBBYING BEARS FRUIT</b>		<b>BENEFIT OF GI TAG</b>
<p><b>Facts about Alphonso mangoes</b></p> <ul style="list-style-type: none"> <li>&gt; One of the most expensive varieties of mango, Alphonso is grown mainly in western India, including Sindhudurg, Ratnagiri and Raigad districts</li> <li>&gt; The thin skin of a ripe Alphonso turns bright golden yellow with a tinge of red which spreads across the top of the fruit</li> <li>&gt; Each Alphonso weighs between 150gm and 300gm</li> </ul>		<p>GI products can benefit the rural economy by supplementing the incomes of artisans, farmers, weavers and craftsmen. The GI creates a distinct identity of the product, assures buyers of quality &amp; creates global market for product</p>
<p><b>What is a GI</b>   It is a name or a sign used on products which corresponds to a specific geographical location or origin such as a town, a region or a country</p>		<p><b>Maha fruits with GI tag</b>   Nagpur orange, Mahabaleshwar strawberry, Nashik grapes, Solapur pomegranate</p>
<p><b>Other products</b>   Pune<i>ri</i> pagdi, Warli painting, Navapur tur dal, Lasalgaon onion,</p> 	<p>Sindhudurg and Ratnagiri kokum, Mangalwedha jowar, Kolhapuri jaggery and Kolhapuri chappal</p> 	

## PERSONALITIES, AWARDS AND EVENTS

### New Deputy National Security Advisor

- ❖ The Appointments Committee of the Cabinet (ACC) has redesignated R N Ravi, Chairman of Joint Intelligence Committee as Deputy National Security Advisor (Internal Affairs).
- ❖ He will be 3rd deputy NSA to National Security Advisor (NSA) Ajit Doval after former Research and Analysis Wing (RAW) chief, Rajinder Khanna and serving diplomat Pankaj Saran.
- ❖ At present, India has three-tier internal security structure which includes
  - National Security Council (NSC), headed by Prime Minister,
  - Strategic Policy Group (SPG) headed by cabinet secretary and
  - National Security Advisory Board (NSAB).

## 2018 Nobel Physics Prize

- ❖ The Royal Swedish Academy of Sciences has selected three scientists
  - Arthur Ashkin (USA),
  - Gerard Mourou (France) and
  - Donna Strickland (Canada)
 for the 2018 Nobel Prize in Physics.
- ❖ They were selected for ground breaking inventions in the field of laser physics.

The Nobel Prize in Physics 2018 was awarded with one half to **Arthur Ashkin** and the other half jointly to **G rard Mourou** and **Donna Strickland** for groundbreaking innovations in the field of laser physics.

**OPTICAL TWEEZERS**

**LASER PULSE AMPLIFICATION**

The first laser was invented in 1960. Ashkin invented 'optical tweezers', using lasers to grab atoms, molecules and even live cells. Mourou and Strickland developed ultrashort and super-strong laser pulses with a range of applications.

**LENS**

**LASER BEAM**

**TRAPPED SPHERE**  
(micron-sized polystyrene or silica bead)

VIRUSES  
BACTERIA  
PROTEINS  
MOLECULES

Ashkin focused laser beams with lenses to create optical tweezers. The radiation pressure produced by the light holds particles in place. Combining optical tweezers with other methods that stop and trap atoms allows visualising of molecules that perform important roles in cells.

**STRETCHER**   **AMPLIFIER**   **COMPRESSOR**

SHORT PULSE   STRETCHED PULSE   AMPLIFIED STRETCHED PULSE   AMPLIFIED SHORT PULSE

Mourou and Strickland devised a way of drastically increasing the intensity of short laser pulses. The ultra-sharp laser beams this makes possible can be used to cut and drill holes in materials and living matter. They can also be used to illuminate rapid chemical processes.

**WHY DOES THIS RESEARCH MATTER?**

Laser tweezers became standard equipment for studying biological processes. Ultrashort and intense laser pulses can illuminate molecular and atomic processes, and are also used in corrective eye surgery.

- ❖ Arthur Ashkin is 96 years old which makes him oldest scientist ever to be awarded a Nobel Prize.
- ❖ He received prize for optical tweezers and their application to biological systems.
- ❖ Gerard Mourou and Donna Strickland were jointly awarded for their innovative technique is known as 'chirped pulse amplification' (CPA).
- ❖ Strickland became 3rd woman to have received Nobel Prize in Physics, after Marie Curie in 1903 and Maria Goeppert Mayer in 1963.




## 2018 Nobel Chemistry Prize


- ❖ The Royal Swedish Academy of Sciences has selected
  - US scientists Frances Arnold and George Smith and
  - British researcher Gregory Winter
 for the 2018 Nobel Prize in Chemistry.
- ❖ They were selected for harnessing power of evolution to develop enzymes and antibodies that have led to new pharmaceuticals and biofuels.

### Chemical (r) evolution


The Nobel Prize in Chemistry has been awarded for using the concept of evolution to develop proteins and solve chemical problems



**Frances H. Arnold**  
California Institute of Technology, U.S.




**George P. Smith**  
University of Missouri, U.S.




**Sir Gregory P. Winter**  
MRC Lab of Molecular Biology, U.K.

**Mimicking evolution:** Evolution has solved complex chemical problems – for example, fish can swim in polar oceans as they have developed anti-freeze proteins. Arnold used this concept to build **better enzymes**. Enzymes are catalysts which **speed up chemical processes** such as digestion, clotting of blood. More effective the enzymes, quicker the process. Flow chart shows how she achieved it

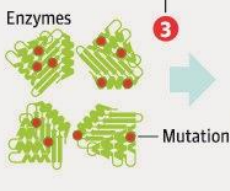
**1** She introduced random mutations in the DNA of the enzyme



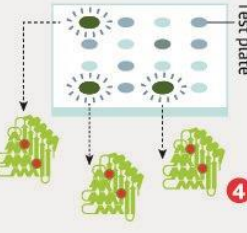
**2** Then, the genes were inserted into bacteria which produced randomly mutated enzymes



**3** Third, the mutated enzymes were tested. Those that were most efficient at catalysing the desired chemical reaction were selected



**4** Rest were discarded. This process was repeated again and again until the enzyme which gave the best results were arrived at. This method was called **directed evolution**



**Target and deliver:** Smith and Winter applied this technique to create **better antibodies**. Antibodies are proteins that function like targeted missiles; they can precisely identify and **bind to the viruses or bacteria that infect us**. When an antibody attaches to them, it sends a signal to aggressive immune cells to destroy the invaders. This is how our body fights off infections. The stronger the antibodies that get attached to the target, the more effective the cure will be. Winter used Arnold's directed evolution technique to **develop better drugs** to treat autoimmune diseases and even to cure metastatic cancer

**Uses:** Tailored enzymes are now being internationally developed to promote a **greener chemicals industry**, produce new materials, manufacture sustainable biofuels, mitigate disease and save lives

- ❖ Chemistry was third of this year's Nobel Prizes.
- ❖ Frances Arnold is the fifth woman to win a chemistry Nobel in the prize's 117-year history.

- ❖ Smith had developed new way to evolve proteins and Winter had used method for evolving antibodies

### **UN Conference on Disarmament - Pankaj Sharma**

- ❖ Pankaj Sharma has been appointed as ambassador and India's permanent representative to United Nations Conference on Disarmament in Geneva.
- ❖ He will replace Amandeep Gill.

#### **UN Conference on Disarmament (CD)**

- ❖ UN Conference on Disarmament (CD) is not formally United Nations (UN) organization.
- ❖ It is linked to UN through personal representative of UN Secretary-General.
- ❖ It is multilateral forum established in 1979 by international community to negotiate multilateral arms control and disarmament agreements.
- ❖ It is headquartered in Palais des Nations, Geneva, Switzerland.

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