

# CURRENT AFFAIRS

*For*

# APSC Prelims 2018

(REVISION NOTES)

**SCIENCE & TECH, DEFENCE & SECURITY**

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## SCIENCE-TECHNOLOGY, DEFENCE & SECURITY

(REVISION NOTES from Nov 2017 – Nov 2018)

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### Global Conference on Cyberspace organized in India.

- Theme - Cyber4All: A Secure and Inclusive Cyberspace for Sustainable Development.

### Brahmos missile successful air launch

- The Indian Air Force conducted the first-ever successful air launch of the BrahMos cruise missile from a Sukhoi Su-30 MKI multirole aircraft.
- It is the **world's fastest supersonic cruise missile**

### Glide Bomb – Smart Anti Airfield Weapon

- DRDO successfully test fired the Glide Bomb – a Smart Anti Airfield Weapon (SAAW).

### India successfully test fires Indigenous Subsonic Cruise Missile Nirbhay

- Chandipur test range along the Odisha coast.
- It is India's first indigenously designed and developed Long Range Sub-Sonic Cruise Missile.

### NASA Launches Next-Generation Weather Satellite Joint Polar Satellite System-1 (JPSS-1)

- to monitor weather around the world and help improve forecasts.
- is a joint venture between the US space agency and the National Oceanic and Atmospheric Administration (NOAA).

### Moscow Declaration on TB & HIV

- Representatives from 120 countries adopted the Moscow Declaration to **eliminate additional deaths from HIV co-infection by 2020 and achieving synergy in coordinated action against TB and non-communicable diseases.**

### ISRO's Sun Mission to take off in 2019

- India will send ISRO's solar mission **Aditya-L1** to a vantage point in space, known as the **L1 Lagrange point**, to do imaging and study of the sun.

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### Facebook Rolls out Disaster Maps in India

- In a bid to help communities recover and rebuild faster in the aftermath of natural disasters in India, Facebook introduced new measures, including its Disaster Maps feature in the country.

### First Power Plant under PM Ladakh Scheme commissioned in Drass

- The 1.5-mw small hydropower plant in Biaras Drass of Kargil has become the first project to be commissioned under the Prime Minister's Ladakh Renewable Energy Initiative.
- to minimize dependence on diesel in the Ladakh region and meet power requirement through local renewable sources.

### International Solar Alliance and India

- the first treaty-based international government organisation to be based in India, with 19 countries ratifying its framework agreement.
- countries located between the Tropic of Cancer and the Tropic of Capricorn.
- The ISA is headquartered in Gurgaon

### International Training Centre for Operational Oceanography

- The Union Cabinet approved the agreement with UNESCO on establishment of International Training Centre for Operational Oceanography, as a Category-2 Centre (C2C) of UNESCO, in Hyderabad.

### AAROGYAM – 2017

- The 1st International Exhibition & Conference on AYUSH & Wellness.



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### Ajeya Warrior Military Exercises



- This is a biennial joint military exercise between India and army of United Kingdom

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#### Ekuverin

- The joint military exercise between Indian Army and Maldives National Defence Force

#### Sentinel-5p Satellite

- a European satellite being commissioned by the European Union and the European Space Agency, tracking the levels air pollutants around the world
- designed to make daily global maps of the gases and particles that pollute the air.

#### New Graphene-Based Battery Charges Five Times Faster

- Scientists has developed a new graphene-based battery material with charging speed five times faster than today's lithium-ion batteries.
- **Graphene** is a sheet of carbon atoms bound together in a **honeycomb lattice pattern**, is hugely recognized as a "**wonder material**" due to the myriad of astonishing attributes it holds.

#### Monkey Fever

- **Kyasanur forest disease (KFD)** is a tick borne viral haemorrhagic fever endemic in Karnataka.
- The virus causing the disease: **KFD virus (KFDV)** is a member of the genus **Flavivirus** and family **Flaviviridae**.

#### What Is CYBORG

- The term Cyborg was first coined by Manfred Clynes and Nathan S. kline to describe man-machine system in which the control mechanism of the human portion are modified externally by drugs or regulatory devices so that the being can live in an environment different from the normal one
- an organism with organic and biomechatronic body parts that is partly human and partly machine .

#### Agni 5

- India successfully conducted the "first pre-induction trial" of its over 5,000-km range Agni-V intercontinental ballistic missile
- Agni -5 is the fifth in the line of the Agni Missiles

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### NASA to launch Parker Solar Probe to explore Sun's outer atmosphere

### Bharat Bio Typhoid Shot

- Bharat Biotech has received a pre-qualification from the World Health Organisation (WHO) for **Typbar Typhoid Conjugate Vaccine**.
- **Typbar TCV is the first typhoid vaccine clinically proven to be administered to children from 6 months of age to adults, and confers long-term protection against typhoid fever.**

### GOLD and ICON Mission to explore the Ionosphere

- NASA has announced that it would launch two missions to explore the little-understood area of 96 km above Earth's surface.
- **The Global-scale Observations of the Limb and Disk (GOLD) mission will be launched in January 2018, and the Ionospheric Connection Explorer (ICON) will be launched later in 2018.**

### India's Fastest Supercomputer

- **Pratyush**, India's fastest supercomputer yet, was unveiled at the Indian Institute of Tropical Meteorology (IITM) in Pune.
- Pratyush is a collection of several computers that can deliver a **peak power of 6.8 petaflops**, facilitating the weather forecasting and climate monitoring in the country.
- **Pratyush is fourth fastest supercomputer in world** dedicated for weather and climate research



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### India Misses Kala Azar Elimination Deadline



- India has missed the 2017 deadline for elimination of Kala Azar (black fever).
- Elimination is defined as reducing the annual incidence of **Kala Azar (KA)** to less than 1 case per 10,000 people at the sub-district level.
- Kala Azar is a slow progressing indigenous disease **caused by a single-celled parasite of the Leishmania family.**
- **In India Leishmania donovani is the only parasite causing the disease.** The parasite is found in abundance in the bone marrow, spleen and liver.

#### Somatic Cell Nuclear Transfer

- In SCNT the nucleus, which contains the organism's DNA, of a somatic cell (a body cell other than a sperm or egg cell) is removed and the rest of the cell discarded.

#### Rotavac is the First Indian designed vaccine to pass the WHO Test

- Rotavac became first indigenously developed vaccine from India to be pre-qualified by **World Health Organisation (WHO)**. It means that vaccine can be sold internationally to several countries in South America and Africa.
- The **Rotavac vaccine, developed by the Hyderabad-based Bharat Biotech Limited,** was included in India's national immunization programme.

#### Venezuela becomes first country to launch its own Digital Currency

- Venezuela became the first country to launch its own cryptocurrency.
- The official cryptocurrency has been named **Petro**

#### World Congress on Information Technology

- The Government of Telangana has hosted the World Congress on Information Technology (WCIT) in 2018, at Hyderabad.

#### World Sustainable Development Summit 2018 held in India

- organized by the Energy and Resources Institute (TERI).

#### International Conference on Sustainable Biofuels 2018 organized in New Delhi

- jointly organized by Department of Biotechnology, Govt. of India on behalf of Mission Innovation and Biofuture Platform

- **Biofuels** - fuels produced directly or indirectly from organic material – biomass – including plant materials and animal waste.

Page | 6 **India Energy Congress 2018** was held in New Delhi

- organised by World Energy Council India (WEC India) and inaugurated by Union Power and New and Renewable Energy Minister.

**Milan 2018 multinational mega event at Andaman & Nicobar**

- With the underlying theme of 'Friendship Across the Seas'

**Rustom 2**

- India's Defence Research and Development Organisation successfully completed the test flight of its Rustom 2 drone at the Aeronautical Test Range.
- It is part of the Rustom line of Unmanned Aerial Vehicles (UAVs) that includes Rustom-I, Rustom-H and Rustom-C.

**Three-parent Babies**

- Mitochondrial replacement therapy, which creates "three-parent babies", involves a portion of the child's DNA coming from their mother, father and a third person – an egg donor.
- Britain's fertility regulator Human Fertilisation and Embryology Authority (HFEA) has allowed doctors to create country's first 'three-parent' babies through mitochondrial donation therapy.
- aimed at preventing passage of incurable genetic diseases from mothers to offsprings

**India Successfully Test-Fires Nuclear Capable Ballistic Agni II Missile**

- An indigenously developed intermediate-range nuclear capable ballistic Agni II was successfully test-fired from Launch Complex-4 of Integrated Test Range (ITR) from the Abdul Kalam Island off the Odisha coast.



### India Successfully Test-Fires Nuclear Capable Prithvi-II

- India successfully test-fired its indigenously developed nuclear capable Prithvi-II missile as part of a user trial by the Army from a test range in Odisha.

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### Integrated Guided Missile Development Programme (IGMDP)

- was conceived by renowned scientist Dr A P J Abdul Kalam to enable India attain self-sufficiency in the field of missile technology.
- IGMDP was sanctioned to develop Prithvi, Trishul, Akash, Nag and a Technology Demonstrator Agni Missile.

### Japanese Encephalitis

- Japanese encephalitis virus (JEV) is a flavivirus related to dengue, yellow fever and West Nile viruses, and is spread by mosquitoes.

### Nearly 100 New Exoplanets Have Been Found in Kepler Space Telescope (K2 mission) Mission Data of NASA

- **Exoplanets** - are all the planets in the universe beyond own solar system.
- **Rocky planets:** Rocky planets are mainly composed of heavier elements
- **Super-Earths:** Super-Earths are planets of between 1 and about 10 Earth masses
- **Ocean planets and desert planets:** planets with enough water to completely cover the entire surface of the planet with oceans.
- **Gas Giants:** All planets with masses exceeding 10 Earth masses
- **Hot Jupiter:** a gas giant that orbits its host star in a very close orbit
- **Rogue planets:** planets without a central star; they are free-floating throughout our galaxy

### India To Launch Mission To Explore Moon's South Pole

- India's second lunar mission – Chandrayaan-II – is scheduled for an April 2018 launch.
- It is under Chandrayaan-1 mission that the ISRO spotted water on the moon.
- Chandrayaan-2 is a further extension of the project and it is as good as landing a man on the moon.

### Chandrayaan-2 Mission

- India's second mission to the Moon is a totally indigenous mission comprising of an Orbiter, Lander and Rover.

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### Marshall Islands to Issue World's First Legal Tender cryptocurrency

- It will be world's first sovereign cryptocurrency that can be used as legal tender.
- This cryptocurrency will be called Sovereign (SOV), has been developed in partnership with Israeli startup Neema.
- Unlike Venezuela's Petro cryptocurrency, the SOV will be recognized in law as legal tender, holding equal status as the US dollar, which is the Pacific island nation's current currency.

### Arctic Seed Vault celebrated the 10th anniversary

- The Svalbard Global Seed Vault in Norway in the Arctic Circle got a delivery of more than 76,000 seed batches from gene banks in 22 countries.
- The Svalbard Global Seed Vault is meant as a natural deep freeze to back up the world's gene banks in case of disasters ranging from nuclear war to global warming. It has about 900,000 seed samples.

### Exercise Samvedna

- a Multilateral Air Force exercise, aimed to ensure better understanding and sharing of response procedures between a number of friendly neighbouring nations.
- It was the first Humanitarian Assistance and Disaster Relief (HADR) exercise of the Indian Air Force (IAF) in association with South Asian Region nations.
- involved representatives from air forces of Sri Lanka, Bangladesh, Nepal and the UAE.



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### MILES-18: first ever multi-nation naval exercise at sea held in Andaman

- As part of the tenth edition of MILAN 2018.
- Australia, Bangladesh, Indonesia, Malaysia, Myanmar, Singapore, Sri Lanka and Thailand were the participating countries.

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### MILAN:

- Milan' was first held in 1995 with the participation of just five navies.
- The aim of the initiative was to have an effective forum to discuss common concerns in the Indian Ocean Region and forge deeper cooperation among friendly navies.

### Saposhi - a new malware

- It is capable of taking over electronic devices and turning them into 'bots', which can be then used for any purpose, including a Distributed Denial Of Service attack which, with enough firepower, can cripple entire industries.

DDoS (Distributed Denial of Service) attack is an illegal large-scale cyber campaign where a big number of devices are used to create traffic to a certain server.

### Lamitye 2018

- Joint military exercise 'Lamitye' was held between India and Seychelles. It is conducted biennially between the two countries.

### Varuna-18

The navies of India and France conducted a joint bilateral exercise, "Varuna-18", in the Arabian Sea off the Goa coast

### India-Based Neutrino Observatory Project gets Centre's approval

- The project in Theni district has been cleared by the Expert Appraisal Committee (EAC) of the Union Ministry of Environment, Forests and Climate Change (MoEF&CC).
- aims to study atmospheric neutrinos in a 1,300-m deep cavern in the Bodi West Hills in Theni district, Tamil Nadu.



- If completed, the INO would house the largest magnet in the world, four times more massive than the European Organization for Nuclear Research, CERN's Compact Muon Solenoid (CMS) detector's magnet.

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### India Successfully Tests 3rd-Gen Anti-Tank Missile NAG In Desert Conditions

- Anti Tank Guided Missiles (ATGM) Nag is one of five missile systems developed indigenously by DRDO under integrated guided missile development programme (IGMDP). The other four missiles are Agni, Akash, Trishul and Prithvi.

### India's First Cloned Assamese Buffalo Born

The Central Institute for Research on Buffaloes (CIRB) claimed that a cloned Assamese buffalo male calf was born for the first time in India.

### New State Of Matter Rydberg polarons Created

- created "giant atom" and filled it with ordinary atoms, creating a new state of matter termed Rydberg polarons. These atoms are held together by a weak bond and are created at very cold temperatures.
- It uses ideas from two different fields: Bose Einstein Condensation and Rydberg atoms.
- **BEC (Bose Einstein Condensate)** is a liquid-like state of matter that occurs at very low temperatures. A BEC can be perturbed to create excitations which are akin to ripples on a lake.
- A 'Rydberg atom' is an atom in which an electron has been kicked out to a very large orbit.

### TESS: NASA, SpaceX Collaborate To Search For Exoplanets

- NASA's little spacecraft, the Transiting Exoplanet Survey Satellite, or TESS, will ascend on a Falcon 9 rocket of the SpaceX to go up in the space.
- The primary mission objective of TESS is to survey brightest stars near Earth for transiting exoplanets over two-year period.



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### **ISRO–BHEL Tie up for the Production of Space Grade Lithium-Ion Cells**

- ISRO has entered into a Technology Transfer Agreement (TTA) with Bharat Heavy Electricals
- Limited (BHEL), to transfer the technology for the manufacture of space grade Li-Ion cells

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### **Li-Ion Battery**

- type of rechargeable battery that contains several cells. Each cell consists of cathode, anode and electrolyte, a separator between electrodes and current collectors.
- It is light weighted and is one-third the weight of lead acid batteries. It is nearly 100% efficient in both charging and discharging as compared to lead battery which has 70% efficiency. It completely discharges i.e. 100% as compared to 80% for lead acid.

### **Scientists discovered a new human organ 'interstitium'**

- It will be the 80th organ in the human body. It might be also the biggest organ in human body.
- The discovery of interstitium will help to explain how cancer spreads in body and pave way for new ways to detect and treat the disease.

### **Defence Planning Committee under National Security Advisor Ajit Doval**

- The committee will drive the country's military and security strategy, draft capability development plans, guide and accelerate defence equipment acquisitions.

### **AFSPA lifted in Meghalaya**

- However, it has been partially revoked in Arunachal Pradesh.

### **The Armed Forces (Special Powers) Act**

- enacted in 1958 to bring under control what the government of India considered 'disturbed' areas.
- States under AFSPA (before April 1, 2018) included: Assam, Nagaland, Manipur (except the Imphal municipal area), Arunachal Pradesh (only the Tirap, Changlang and Longding districts plus a 20-km belt bordering

Assam), Meghalaya (confined to a 20-km belt bordering Assam) and J&K.

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### Cybersecurity Tech Accord signed by 34 global technology and security companies

- It represents a watershed agreement among the largest-ever group of companies agreeing to defend all customerseverywhere from malicious attacks by cybercriminal enterprises and nation-states.
- The 34 companies include ABB, Arm, Cisco, Facebook, HP, HPE, Microsoft, Nokia, Oracle, and Trend Micro, and together represent operators of technologies that power the world's internet communication and information infrastructure.

### Internet Security Threat Report 2017 - India emerged as 3rd most cyber-threat vulnerable

- released by security solutions provider Symantec, summarizes the state of cyber threats across the world.

### ISRO loses contact with GSAT-6A Satellite

Indian Space Research Organisation (ISRO) has lost contact with GSAT-6A, a satellite launched aiming to provide mobile communication facilities.

### Chinese Space Station Tiangong 1 Falls to Earth

- China's prototype space station, whose name translates as "Heavenly Palace 1," breaking apart and burning up in the skies over the southern Pacific Ocean.

Tiangong-1 was China's first prototype space station or space laboratory. It was placed in orbit in September 2011.

### The spacecraft cemetery also known as Point Nemo

- considered the most remote place on Earth (at about 2400 km from any spot of land).
- used to crash-land defunct satellites.



### Harimau Shakti 2018

- joint training exercise between Indo-Malaysian defence is being conducted in the dense forests of Sengai Perdik, Hulu Langat, Malaysia.

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### SAHYOG-HYEOBLYEOG 2018

- The Indo-Korean joint anti-piracy exercise

### Govt. bans imports of hormone Oxytocin

- to stop its misuse in the livestock industry because it causes hormonal imbalances and shortens the lives of milch animals.
- Often called the 'love hormone'

**Oxytocin** is a neurotransmitter and a hormone that is produced in the **hypothalamus**. From there, it is transported to and secreted by the **pituitary gland**, at the base of the brain.

It plays a role in the female reproductive functions, from sexual activity to childbirth and breast feeding.

### Odilorhabdins (ODLs) - new class of Antibiotics to combat Drug Resistance

- which has a distinct way of killing bacteria, has been discovered which may help combat drug-resistant or hard-to-treat bacterial infections.
- The bacteria help to kill the insect and importantly secrete the antibiotic to keep competing bacteria away. The antibiotic kills bacteria by binding to ribosome.

### IIT-Delhi Installs India's First 5G Lab

- It will be the first of its kind 5G lab in the country and has been setup at Bharti School of Telecommunication Technology and Management.

### IRNSS-1I Navigation Satellite successfully launched aboard ISRO's PSLV-C4

- from Satish Dhawan Space Centre SHAR, Sriharikota.
- IRNSS-1I is expected to replace IRNSS-1A, the first of the seven navigation satellites that was rendered ineffective after its three rubidium atomic clocks failed.

### The Indian Regional Navigation Satellite System (IRNSS)

- is an independent satellite based regional system developed indigenously by India
- The NAVIC system is constellation of seven satellites, (namely IRNSS-1I, 1B, 1C, 1D, 1E, 1F and 1G) of which three are geostationary and four are nongeostationary.

### **NASA launches planet-hunter Transiting Exoplanet Survey Satellite (TESS)**

- It will discover thousands of exoplanets in orbit around the brightest stars in the sky.

### **Brahmos Supersonic Cruise Missile extended life of 15 years**

- The BrahMos supersonic cruise missile with an extended life of 15 years was for the first time
- successfully test fired from the Integrated Test Range in Balasore in Odisha.
- BrahMos has become the first Indian missile whose life has been extended from 10 to 15 years.
- The missile had also reached the maximum speed of 3 Mach, i.e. three times faster than the speed of sound.
- BrahMos is supersonic cruise missile developed by joint-venture between Russia's Mashinostroyenia and India's Defence Research and Development Organization
- It has been named after two rivers Brahmaputra and Moskva (river in western Russia).

### **Punjab government organised First census to estimate Indus Dolphin**

- Indus Dolphins, one of the world's rarest mammals
- Punjab government along with WWF-India are conducting a first organised census.
- Found only in India and Pakistan, the Indus Dolphins are confined to only 185 km stretch between Talwara and Harike Barrage in India's Beas river in Punjab.



### Technology to tackle Space Junk

- A spacecraft that will demonstrate a range of innovative technologies to clean up space debris has been deployed from the International Space Station (ISS)
- **RemoveDEBRIS** - will attempt to address the build-up of dangerous space debris orbiting Earth.
- RemoveDebris will deploy a large sail that will drag it into the Earth's atmosphere, where it will be destroyed.

### Net Generation SFDR Surface-to-Air Missile

- successfully carried out the first test of a new surface-to-air missile with nozzle less booster making its mark as a military superpower in South East Asia region.
- Indigenously designed and developed by DRDO, the missile flew in its intended trajectory at a
- speed of Mach 3 (thrice the speed of sound).
- The missile, powered by Solid Fuel Ducted Ramjet (SFDR), was test-fired at Integrated Test Range (ITR) off Odisha coast.

### Russia Launches Soyuz-2.1B

- Russia has successfully launched Glonass-M positioning satellite on board of Soyuz-2.1b carrier rocket

**GLONASS** is Russian acronym for Global Navigation Satellite System, which provides real-time

- positioning data for surface, sea and airborne objects around globe, at accuracy reportedly at par with US Global Positioning System (GPS).
- now total 26 Glonass satellites in orbit.
- Glonass is considered as counterpart to GPS of US, Galileo of European Union (EU) and Beidou of China.

### Genome Valley 2.0

- The Telangana Government has signed a MoU with Singapore-based Surbana Jurong for preparing a roadmap for Genome Valley 2.0, an upgraded version of life sciences and biotechnology.

The **Genome Valley** cluster has emerged as the largest life sciences destination in Asia, being home to over 200 companies employing 10,000 people.

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### Meghalayan - Newest phase in Earth's History

- named it The stalagmite from a cave in Meghalaya helped define climatic events 4,200 years ago, marking the beginning of the phase that continues till today.
- The Meghalayan Age began with a mega global drought that devastated ancient agricultural civilizations from Egypt to China.
- It is part of a longer period known as the Holocene Epoch, which reflects everything that has happened over the past 11,700 years.
- This discovery done by the International Commission on Stratigraphy of the International
- Union of Geological Sciences (IUGS)

### Biodiesel in India

- India's domestic crude oil output stagnating and the demand for oil continuing to rise at an everincreasing pace, India has an opportunity to use substitutes of fossil fuels for both, economic and environmental benefits.
- Ethanol is one such substitute that can be produced from sugarcane and used for transport by blending it with petrol/gasoline.
- Another option is biodiesel, which can be produced from the oil-bearing seeds of certain plants and blended with diesel.
- India's **first-ever environment friendly biofuel powered flight** between Dehradun and Delhi was propelled by blend of oil from jatropha seeds and aviation turbine fuel.
- Bio-jet fuel is greenhouse gas (GHG) neutral, carbon neutral, reduces air pollution.

### Jatropha

- Jatropha is drought-resistant perennial plant that can grow in marginal or poor soil.
- The Problem of Jatropha is availability of its seeds.



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### **Delhi Police gets india's first All-Women SWAT Team**

- Delhi Police is the first police force in the country to have an all-women Special Weapons And Tactics (SWAT) team.

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### **SCO Peace Mission 2018**

- Shanghai Cooperation Organization (SCO) Peace Mission 2018 exercise was started on 24 August 2018 at Chebarkul, Russia.
- All eight members of SCO (China, India, Kazakhstan, Kyrgyzstan, Pakistan, Russia, Tajikistan, and Uzbekistan) participated

### **Roadmap for 'Gaganyaan' manned flight to space**

- ISRO unveiled details of its first indigenous human space mission to be launched in 2022.
- This will be the first human space mission to be indigenously developed by ISRO. If successful,
- India will become fourth nation in the world to send astronaut into space after US, Russia and China.
- Indian Air Force (IAF) Rakesh Sharma was first Indian to travel to space.

### **World's First Wind-Sensing Satellite 'Aeolus'**

- European Space Agency (ESA) successfully launched wind-sensing satellite named 'Aeolus' into orbit on board of Vega rocket from French Guyana.
- satellite dedicated to map Earth's wind on global scale in particular tropical winds which are very poorly mapped.

### **IIT Madras developed first microprocessors under Project Shakti**

- The first of family of six industry-standard microprocessors under Project Shakti.
- Project Shakti was started in 2014 as IIT-M initiative and part of it is funded by Ministry of Electronics and Information Technology.

### **The International Nitrogen Initiative**

- Indian scientist and academician Nandula Raghuram was elected as the Chair of the International Nitrogen Initiative (INI), a global policy making initiative.

### Government bans Fixed Dose Combination (FDC) Drugs

- Central government has banned 328 combination drugs in the background of growing antibiotic resistance due to the misuse of medicines.
- Fixed Dose Combination (FDC) drugs includes two or more active pharmaceutical ingredients (APIs) combined in a single dosage form, which is manufactured and distributed in fixed doses.

### Zika Virus cause of microcephaly and Guillain-Barré syndrome

- Transmission: Zika virus is primarily transmitted to people through the bite of an infected mosquito from the Aedes genus, mainly Aedes aegypti in tropical regions. Sexual transmission of Zika virus is also possible.
- Zika virus is a cause of microcephaly and Guillain-Barré syndrome.

**Microcephaly** - It is a condition where a baby is born with a small head or the head stops growing after birth.

**Guillain-Barre syndrome** - the body's immune system attacks part of the peripheral nervous

- system muscle weakness and loss of sensation in the legs and/or arms.

### National AIDS Control Organisation (NACO) released the report HIV Estimations 2017.

- The HIV Estimations 2017 is the 14th round in the series of HIV Estimations under National AIDS Control Programme (NACP).
- India had around 21 lakh people living with HIV (PLHIV) with adult prevalence of 0.22%.
- Around 87000 new HIV infections and 69000 AIDS related deaths happened in 2017.
- The impact of the NACP has been significant with more than 80% decline in estimated new infection from peak of epidemic in 1995. Similarly, estimated AIDS related death declined by 71% since its peak in 2005.
- goal of attaining the 'End of AIDS' by 2030.



**World's first human case of Rat Hepatitis E has been detected in Hong Kong.**

- Hepatitis E is a liver disease caused by the hepatitis E virus (HEV): a small virus, with a positive-sense, single-stranded ribonucleic acid (RNA) genome.

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**India-US 2+2 Dialogue**

- India hosted inaugural 2+2 Dialogue with United States in New Delhi.
- US defence secretary Jim Mattis and secretary of state Mike held talk with Indian Foreign minister and defence minister.

**G-4 Summit**

- India hosted summit meeting of the G-4 nations (Brazil, Germany, India and Japan) at India's Permanent Mission to the UN.
- The summit aimed at pushing for early UN Security Council reforms.
- They restated their support for Africa's appropriate representation in a reformed and expanded
- Council, which bears primary responsibility for the maintenance of international peace and security.

**Saudi Arabia to join CPEC Project**

- Saudi Arabia is set to join the multibillion-dollar project China Pakistan Economic Corridor (CPEC) as a third major economic partner.

**CPEC**

- The \$46-billion China Pakistan Economic Corridor (CPEC) project focuses on road building and
- energy infrastructure to end chronic power shortages in Pakistan and to link China's landlocked
- north-west with the deep-water port Gwadar on the Arabian Sea.
- The ambitious project is a part of China's "One Belt and One Road" or new Silk Road project. It is being built from the restive Xinjiang province in China to Gwadar in southwestern Pakistan.

**India's four more nuclear facilities under IAEA Safeguards**

- The four reactors included under IAEA are - two Russian-designed Pressurised Light Water Reactors and two Pressurised Heavy Reactors being built with Indian technology.



### India's Nuclear Programme

- India plans to build 21 reactors by 2030 for power generation as well as to promote Cancer research.
- In power generation, a notable achievement was one of the longest run of reactor Unit-1 of Kaiga plant. It has become the third longest running plant in the world.

### IAEA (International Atomic Energy Agency)

- It is the world's central intergovernmental forum for scientific and technical co-operation in the nuclear field.
- Headquarters: Vienna, Austria
- Awarded the Nobel Peace Prize on 7 October 2005.

### 4<sup>th</sup> International Ayurveda Congress in The Netherlands.

- The congress was organized jointly by The International Maharishi AyurVeda Foundation, The Netherlands; the All India Ayurvedic Congress, New Delhi; and the International Academy of Ayurveda, Pune.

### Germany has rolled out World's First Hydrogen Train

- Nicknamed Hydrail, these trains are called Coradia iLint trains and have been manufactured by Alstom, one of Europe's largest railway manufacturers.
- The train has batteries made of lithium-ion that is used in mobile phones and home appliances.
- the train is equipped with fuel cells that produce electricity through a combination of hydrogen and oxygen, a process that leaves steam and water as the only emissions. Excess energy is stored in lithium ion batteries on board the train.

### International Center for Transformative Artificial Intelligence

- NITI Aayog, Intel and the TIFR have come together to setup a model International Center for Transformative Artificial Intelligence (ICTAI) towards developing and deploying AI-led application-based research projects.
- It will be located in Bengaluru, Karnataka.



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### Dickinsonia - ancient fossil of the earliest animal

- Scientists have discovered an ancient fossil of the earliest animal on geological record -Dickinsonia - that lived on Earth 558 million years ago.

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### Apsara U Reactor, India's first and oldest atomic reactor

- The Bhabha Atomic Research Centre (BARC) has set in motion a higher capacity version Apsara-upgraded (U).
- Radioisotopes generated via power generation in nuclear reactors, research reactors, accelerators and spent fuel are used in agriculture, healthcare, industry and even municipal waste management.
- Apsara reached criticality in August 1956, was also the first in Asia.

### Oneer - innovative technology for Drinking Water Disinfection System

- Council of Scientific and Industrial Research, Indian Institute of Toxicology Research (CSIR-IITR), Lucknow has developed an innovative technology for Drinking Water Disinfection System with trade name Oneer.

### Train 18 - India's First Engine-less train

- A 16-coach prototype known as Train 18 or T18, Indian Railways' first engine-less train, made its inaugural trial run recently.
- Capable of running at a speed of up to 160 kmph, it is being referred to as a successor to the Shatabdi Express.
- The fully air-conditioned semi-high speed train has been manufactured by the Integral Coach Factory (ICF) in Chennai.

### 2018 Nobel Prize in Physiology/Medicine

- jointly awarded to **James P. Allison** and **Tasuku Honjo**.
- for their discovery of cancer therapy by inhibition of negative immune regulation.

### 2018 Nobel Prize in Chemistry

- **Frances H. Arnold** "for the directed evolution of enzymes" half of the prize and other half of the prize to **George P. Smith** and **Sir Gregory P. Winter** "for the phage display of peptides and antibodies."

### 2018 Nobel Prize in Physics

- one half to **Arthur Ashkin** "for groundbreaking inventions in the field of laser physics" and other half jointly to **G rard Mourou** "for the optical tweezers and their application to biological systems"

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### Nobel Prize

- Nobel Prize is awarded annually from a fund bequeathed by the Swedish inventor and industrialist Alfred Nobel.
- The prize is widely regarded as the most prestigious award given for intellectual achievement in the world.
- The prize is awarded for Physics, Chemistry, Physiology or Medicine, Literature, and Peace.
- The first distribution of the prize took place in 1901. An additional award in Economic Sciences was established in 1968 and was first awarded in 1969.
- The Royal Swedish Academy of Sciences confers the prizes for physics, chemistry, and economics.
- The Karolinska Institute confers the prize for physiology or medicine and the Swedish Academy confers the prize for literature.
- The Norwegian Nobel Committee based in Oslo confers the prize for peace.

### Gaganyaan

- A MoU was signed between ISRO and the Federal Space Agency of Russia ROSCOSMOS on joint activities in the field of the human spaceflight programme Gaganyaan.
- If successful, India would be the fourth nation to send a human in space after the US, Russia and China.
- Gaganyaan is India's maiden human spaceflight programme scheduled for completion by 2022.
- GSLV Mk-III launch vehicle, which has the necessary payload capability for this mission, will be used to launch Gaganyaan.



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### China's Artificial Moon

- China has planned to launch an artificial moon over the city of Chengdu, in Sichuan province, by 2020 to provide an alternative means of street lighting and save on electricity.
- As per preliminary reports the artificial moon would be a mirror orbiting Chengdu at a height of 500 km. It would reflect the sun's light at night, and supplement street lighting in Chengdu, which has a population of 1.6 million.
- China is not the first country to try beaming sunlight back to Earth. In the 1990s, Russian scientists reportedly used giant mirrors to reflect light from space in an experimental project called Znamya or Banner.

### Andhra, West Bengal withdraws CBI power to investigate

- Section 5 of the Delhi Special Police Establishment Act (DSPEA) gives powers to the CBI over all areas in the country, but Section 6 states that without the consent of the state concerned, it cannot enter that state's jurisdiction.
- Apart from Mizoram, West Bengal and Andhra Pradesh, the agency has consent in one form or the other for carrying out investigations across the country.

### Kilogram re-defined

- At the 26th CGPM, **General Conference on Weights and Measures**, in Versailles, Paris more than 60 nations came together to vote unanimously for a new system that redefines the kilogram.
- kilogram, the ampere (electrical current), the kelvin (thermodynamic temperature) and the mole (amount of a substance) were redefined at the conference.
- The kilogram has been defined since 1889 by a shiny piece of **platinum-iridium** kept in a special glass case, the International Prototype of the Kilogram (IPK), also known as **Le Grand K** (The Big K). It is housed at the headquarters of the **International Bureau of Weights and Measures (BIPM)**, just outside Paris.
- Now the kilogram will be defined by the **Planck Constant**, denoted as  $h$ , is a physical constant that is the quantum of action, which relates the energy carried by a photon with the frequency of its electromagnetic wave.

### SpiNNaker (Spiking Neural Network Architecture) Supercomputer

- designed and built to work in the same way a human brain does, has been fitted with its landmark one-millionth processor core and has been switched on for the first time.
- The SpiNNaker is capable of completing more than 200 million actions per second, with each of its chips having 100 million transistors.
- **Biological neurons** are basic brain cells present in the nervous system that communicate primarily by emitting spikes of pure electro-chemical energy.
- **Neuromorphic** computing uses large scale computer systems containing electronic circuits to mimic these spikes in a machine.
- One billion neurons is one per cent of the scale of the human brain, which consists of just under 100 billion brain cells, or neurons, which are all highly interconnected via approximately one quadrillion synapses.

### European Human Brain Project

- The HBP Flagship was launched by the European Commission's Future and Emerging Technologies (FET) scheme in October 2013

### HysIS (Hyper Spectral Imaging Satellite)

- ISRO has successfully launched the PSLV-C43 mission that carried HysIS (Hyper Spectral Imaging Satellite) as part of its payload.

### GSAT 29 launched

- ISRO's GSAT-29 communication satellite recently launched successfully by the second developmental flight of Geosynchronous Satellite Launch Vehicle Mark III (GSLV Mk III-D2) from the Satish Dhawan Space Centre, Sriharikota.

**GSAT 29** - weighing 3,423 kg at lift-off, GSAT-29 is the heaviest satellite to be launched from India.

**GSLV Mk III** - three-stage heavy lift launch vehicle developed by ISRO. The vehicle has two solid strap-ons, a core liquid booster and a cryogenic upper stage.



### Earth BioGenome Project

- with an ambitious objective was recently announced to map the entire genome of every known animal, plant, fungus and protozoan on earth.
- A decade-long experiment to map the genomes of roughly 1.5 million species — all the complex life forms known to man

### China unveils heavenly palace space station 'Tiangong'

- a replica of its first permanently crewed space station, which would replace the international community's orbiting laboratory and symbolises the country's major ambitions beyond Earth.

**The International Space Station** - a collaboration between the US, Russia, Canada, Europe and Japan, has been in operation since 1998 but is due to be retired in 2024.

### INS Arihant

- INS Arihant, India's first nuclear ballistic missile submarine, has completed its first deterrence patrol.
- With the induction of INS Arihant, India is ready with its **nuclear triad** - the capability of firing nuclear weapons from land, air and sea.
- India has now become part of an elite club of countries - Russia, the US, China, France and the UK that possess nuclear ballistic missile submarines - the **only non-Permanent member of UNSC having a sea-based nuclear deterrent**.

### India's Nuclear Doctrine

- made in 2003.
- The basic principle of India's nuclear doctrine is "No First Use".
- Nuclear weapons will only be used in retaliation against a nuclear attack on Indian Territory or on Indian forces anywhere.

### 10th Indian Ocean Naval Symposium

- 26 of the 32 countries that constitute the membership of the Indian Ocean Naval Symposium (IONS) are participating in the 10th edition of the event that commenced in Kochi

### CCRAS Developed AYUSH Drug QOL-2C for Cancer Patients



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