



Current Affairs - December 2017 to May 2018

Month Type



- ▶ [155 Current Affairs were found in Last Six Months for Type - Science and Technology.](#)

(Showing **112** Important Ones)

Science

- ▶ 2 new ant species *Tetramorium krishnani* and *Tetramorium jarawa* discovered in islands of Andaman, named after late scientist K.S. Krishnan of NCBS, and Jarawas – indigenous people of Andaman.
- ▶ Government launched Noxeno, a nasal foreign body removal device developed by start-up InnAccel Technologies, under Biodesign program. Noxeno is first dedicated tool for anterior nasal foreign body (NFB) removal that allows doctors in any setting to quickly and safely remove objects that people (mostly children aged 2 to 10 years) put into their noses.
- ▶ *IceCube*, a small NASA satellite has developed first global map of ice clouds. Ice clouds start as tiny particles high in atmosphere. They absorb moisture, and become heavier. This make them to fall to lower altitudes. Ice clouds affect Earth's energy budget by absorbing Sun's energy and by affecting emission of heat from Earth into space. IceCube will operate for a year, and then it will reenter Earth's atmosphere and burn up.
- ▶ A long-lost NASA satellite - *Imager for Magnetopause-to-Aurora Global Exploration (IMAGE)* has been spotted back.
 - ▶ Engineers from NASA's Goddard Space Flight Center used NASA's Deep Space Network which consists of a series of ground-based radio telescopes to study signals, only to discover that these signals were from IMAGE satellite.
 - ▶ IMAGE satellite was launched in March 2000, and exceeded its initial 2 year mission by operating through 2005. NASA lost contact with It in December 2005.
- ▶ A new LIGO (Laser Interferometer Gravitational-Wave Observatory) gravitational wave detector will be built in India by 2025 (world's 3rd after 2 in USA).
 - ▶ In 2016, LIGO detectors discovered gravitational waves produced by two giant merging blackholes. LIGO detector in India will help to pinpoint origin of gravitational waves that are detected in future.
- ▶ A new endangered flowering plant species named 'Primula Zhui' has been discovered by scientists in Yunnan Province of China, known in Chinese as Zhu Hua Baochun.
- ▶ A new research at Bhopal's Indian Institute of Science Education and Research (IIS) has proved D - 29 virus as capable of destroying cancer cells. The research is led by Scientist Soumya Kamilla. Now challenge is to transmit this virus to cancerous cells in body. Upon success in this, the method can be much more successful than Chemotherapy in eliminating cancer.
- ▶ A new species of Himalayan Butterfly named *Eucyclodes gavissima* discovered in Papikonda National Park in Andhra Pradesh.
- ▶ According to a new study by Swedish scientists, small molecules that specifically restrain a selenium-containing enzyme in the human body may become an important tool to fight cancer. Researchers at Karolinska Institute (Sweden) treated cancer in mice with these molecules and observed rapid tumor-killing effects.
 - ▶ Selenium is a chemical element that is an essential micronutrient. A selenium-containing enzyme, called TrxR1, can be used to support growth of various cells and protect them from oxidative stress (*imbalance between production of free radicals, which are highly reactive with other molecules, and body's ability to counteract or repair resulting damage*).
- ▶ According to study based on data from India's Chandrayaan-1 mission and NASA's Lunar Reconnaissance Orbiter (LRO), Moon's water may be widely distributed across its surface and not confined to particular region. It contradict earlier studies that suggested that more water was detected at Moon's polar latitudes.
 - ▶ Researchers after analyzing data from Moon Mineralogy Mapper spectrometer onboard Chandrayaan-1 spacecraft, suggested that water may be present primarily as OH, a more reactive form of normal water (H₂O). OH also called hydroxyl does not stay in its form

for long, and attaches itself chemically.

11. ▶ American Space Exploration Firm SpaceX launched twin NASA satellites GRACE-FO (Follow-On) that will track Earth's water cycle i.e. water movement and ice melt.
 - ▶ GRACE-FO (Gravity Recovery and Climate Experiment Follow-On) is a joint project between NASA and German Research Center for Geosciences (GFZ), as a follow-on mission to GRACE mission, which mapped Earth's water and ice by measuring changes in Earth's gravity field from 2002 to 2017.
 - ▶ To measure Earth's gravity, 2 GRACE-FO satellites will orbit around Earth together, with one trailing behind the other at a distance of 220 km.
12. ▶ An international team of scientists provided the first proof of an exotic new state of matter, known as Rydberg polarons. It can be created, by essentially putting atoms inside other atoms.
 - ▶ *Rydberg polarons* basically involves making use of the space between an electron and nucleus inside an atom, enough to fit other atoms inside. The goal was to hit it in precisely the right way to boost one or more of its electrons into an orbital far from the nucleus, creating an excited state called a Rydberg atom.
13. ▶ Andhra Pradesh Government notified its new state symbols, after bifurcation of undivided Andhra Pradesh in 2014 that led to the formation of New State Telangana. New state symbols -
 - ▶ State bird - Rose-ringed parakeet (*Psittacula krameri*). Locally known as Rama Chiluka.
 - ▶ State tree - Neem (*Azadirachta indica*). Locally known as Vepa Chettu.
 - ▶ State animal - Black-buck (*Antelope cervicapra*). Locally known as Krishna Jinka.
 - ▶ State flower - Jasmine (*Jasminum officinale*).
 - ▶ State symbols of Telangana - Bird - Indian Roller (It is also the state bird of Odisha and Karnataka), Tree: Jammi Chettu, Animal - Spotted deer. Flower - Tangidi Puvvu.
14. ▶ As per a recent study, 26% of nitrogen on Earth comes from the weathering of the planet's bedrock, as against the current belief that all of the nitrogen on Earth available to plants comes from the atmosphere. Ecosystems need nitrogen and other nutrients to absorb carbon dioxide (CO₂) pollution and there is a limited amount of it available from plants and soils.
 - ▶ Geology and carbon sequestration - Rock-derived nitrogen may fuel the growth of forests and grasslands, and allow them to sequester more CO₂ than previously thought.
 - ▶ This discovery can improve climate change projections, which rely on understanding the carbon cycle. Mapping nutrient profiles in rocks for their carbon uptake potential can help drive conservation efforts. For decades, scientists recognized that more nitrogen accumulates in soils and plants than can be explained by input from the atmosphere alone, but they couldn't find the missing sources of Nitrogen.
15. ▶ As per a new study at the University of Colorado (USA) based on 25 years of satellite data, it is found that the global sea level rise rate is accelerating a little every year.
 - ▶ Sea level rise is increasing by about 0.08 millimeters per year (mm/year). It means the annual rate of sea level rise will reach 10 mm/year by 2100, mainly driven by rapid melting in Antarctica and Greenland.
 - ▶ If oceans keep on growing at this pace, sea level will rise 65 cm by 2100, causing trouble for several coastal cities.
16. ▶ Astronomers from Arizona State University (USA) discovered signals from the period when the universe's earliest stars emerged, named *Cosmic Dawn*. It could provide insights into elusive 'dark matter', believed to form a fundamental part of our universe. A radio telescope called *Experiment to Detect the Global Epoch of Reionization Signature (EDGES)* based in the Western Australian desert, was used in this research.
17. ▶ Australian researchers discovered a new water-adapted species of spiders named 'Desis bobmarleyi' in Queensland, named after the noted singer and songwriter Bob Marley.
18. ▶ Australian scientist of Indian origin Veena Sahajwalla launched the world's first microfactory that can transform components from electronic waste items into valuable materials for re-use. It uses green manufacturing technologies to turn many types of consumer waste such as glass, plastic and timber into commercial materials and products. Transformed materials from the micro-factory include metal alloys and a range of micromaterials.
19. ▶ Australian scientists of the University of New South Wales (UNSW) discovered a new species of marsupial lion which has been extinct for at least 19 million years. Named *Wakaleo schouteni*, it was a predator about the size of a border collie dog.
20. ▶ Bhabha Atomic Research Centre (BARC) developed Bhabha Kavach, a next-generation cheaper and lighter bulletproof jacket, named after Dr. Homi J. Bhabha, father of the Indian nuclear programme.
 - ▶ Bhabha Kavach is made of boron carbide and carbon nanotube polymer composite and weighs just 6.6 kg, reducing weight by 50%.
 - ▶ It will cost Rs 60,000-70,000, compared to imported bulletproof jackets costing around Rs 1.5 lakh.

21. ▶ Botanical Survey of India (BSI) scientists discovered two new species of Ginger - *Hedychium chingmeianum* (Nagaland) and *Caulokaempferia dinabandhuensis* (Manipur).
22. ▶ CSIR - National Institute of Oceanography Goa announced discovery of methane gas flares and active cold seeps from seabed in Krishna Godavari basin in Bay of Bengal, distributed over water depth of 900 - 1900 metres. Gas hydrates are a potential source of alternate energy.
23. ▶ California Institute of Technology, USA (CALTECH) scientists made world's smallest recreation of Leonardo da Vinci's Mona Lisa, through a technique dubbed as *DNA origami*. Scientists folded DNA into desired self-assembling structures using 64 tiles, which were 100 nanometers wide.
24. ▶ China launched relay satellite *Queqiao (Magpie Bridge)* to establish communication with its planned Chang'e-4 lunar probe (rover) that will explore dark side of moon.
 - ▶ Queqiao (meaning bridge of magpies) will serve as communications relay for future Chang'e-4 rover that will explore in South Pole-Aitken Basin in moon's far side. It will be world's first communication satellite operating in halo orbit - Earth-moon Lagrange point L2, a gravitationally stable spot located 64,000 kilometers beyond lunar far side.
 - ▶ Need for relay Satellite -
 - ▶ Moon is tidally locked to Earth, it always shows same face (near side) to Earth. So, relay link is necessary to communicate with spacecraft on far side, which will otherwise have to send their signals through moon's rocky bulk.
 - ▶ Under China National Space Administration (CNSA)'s Chang'e program (Chinese Lunar Exploration Program), Chang'e 1 and Chang'e 2 probes already have reached lunar orbit in 2007 and 2010 respectively. Chang'e 3 mission is in process to put lander and rover on moon's near side.
25. ▶ China launched world's largest human genome research project to document genetic makeup of 1 lakh people, to detect genetic links between health and sickness and use that information to generate precision medicines for future.
26. ▶ China tested its first photovoltaic (solar) highway in Shandong province, becoming 2nd country (after France) to construct a photovoltaic highway.
 - ▶ China's photovoltaic highway is constructed using solar panels with thin sheet of transparent concrete on top of them.
 - ▶ The photovoltaic panels of the highway are built to transfer energy to electric vehicles passing on top of them.
 - ▶ Tested 1 KM segment of solar highway can generate 817.2 KW of electricity and can generate 1 million KW hours of electricity yearly.
27. ▶ China's Three Gorges Corp. started building world's biggest floating solar power plant in Anhui Province, expected to be launched by May 2018.
28. ▶ China's AG600n (also known as Kunlong), world's largest amphibious aircraft took off its first flight from Zhuhai City. It has huge wingspan of 38.8 metres and can land and take off from water.
29. ▶ Chinese Researchers developed a new 3D conic device that can greatly increase solar-thermal conversion efficiency, Named *Artificial Transpiration* and inspired by transpiration process of trees. It is fixed with a special 1D water path which can reduce energy loss in conduction.
 - ▶ As 10 to 50 % of sunlight is diffusive, the cone structure of the device could collect more sunlight throughout the day, compared with a flat device. It can enhance solar-thermal conversion rate to 85 percent (up from 40% Currently).
 - ▶ It will also open new possibilities to utilise solar energy in several sectors, which was discontinued due to its low conversion rate caused by losses in radiation, convection and conduction.
30. ▶ Chinese scientists for first time have successfully cloned two identical long-tailed macaques (monkeys), named Zhong Zhong and Hua Hua using same technique that produced Dolly sheep two decades ago. This makes them world's first primates (*order of mammals that includes monkeys, apes and humans*) to be cloned from non-embryonic cell.
 - ▶ These identical long-tailed macaques were cloned using process called somatic cell nuclear transfer (SCNT), that involves transferring the nucleus of cell, which includes its DNA, into egg whose nucleus is removed.
 - ▶ Similar work in primates earlier, had always failed, leading some scientists to wonder if primates were resistant.
31. ▶ ISRO successfully launched GSAT-6A Satellite, onboard Geosynchronous Satellite Launch Vehicle (GSLV-F08). This is 5th consecutive successful launch achieved by GSLV carrying indigenously developed Cryogenic Upper Stage. GSAT-6A is a communication satellite built to provide mobile communication services through multi beam coverage, equipped with S and C band transponders.
32. ▶ ISRO's Liquid Propulsion Systems Centre (LPSC) is developing environment-friendly propellant blend based on hydroxylammonium nitrate (HAN) to power satellites and spacecrafts, aiming to replace conventional hydrazine fuel, Which has dominated space industry as choice of propellant for over six decades despite hazards.
 - ▶ HAN-based monopropellant formulation consists of HAN, ammonium nitrate, methanol and water. Monopropellant is chemical propulsion fuel which does not require separate oxidizer. It is used extensively in satellite thrusters for orbital correction and orientation control.

- ✎ Pratyush has 6.8 PF computational power installed at two MoES Institutes. 4.0 Peta Flops HPC facility at IITM, Pune and 2.8 Peta Flops facility at NCMRWF, Noida.
- ✎ Pratyush is fourth fastest supercomputer in world for weather and climate research, after supercomputers in Japan, US and UK.
- ✎ It will enable mapping regions in India at resolution of 3 km and globe at 12 km.
- ✎ Fastest Supercomputers in world -

Supercomputer	Peak speed (Rmax)	Location
TaihuLight (<i>Sunway</i>)	93.01 PFLOPS	China
Tianhe-2 (<i>NUDT</i>)	33.86 PFLOPS	China
Piz Daint (<i>Cray</i>)	19.59 PFLOPS	Switzerland
ZettaScaler (<i>Gyokou</i>)	17.14 PFLOPS	Japan
Titan (<i>Cray</i>)	17.59 PFLOPS	USA

- 44. ▶ Japan Aerospace Exploration Agency (JAXA) launched world's smallest rocket with ability to put a tiny satellite into orbit. It carried a microsatellite TRICOM-1R, a three-unit CubeSat weighing about 3 kilograms.
- 45. ▶ Mainstream space agencies in world proposed creation of a climate observatory to combine acquired data and share it with scientists around globe, during *One Planet Summit* in Paris (France).
- 46. ▶ NASA discovered a special kind of neutron star outside the Milky Way galaxy for first time. Neutron stars are highly dense cores of massive stars that collapse and go through a supernova explosion. It was spotted via NASA's Chandra X-ray Observatory and European Southern Observatory's Very Large Telescope (VLT) in Chile.
- 47. ▶ NASA partnered with space launching firm SpaceX to launch Transiting Exoplanet Survey Satellite (TESS) to search for exoplanets using transit method. TESS is designed to carry out first spaceborne all-sky transiting exoplanet survey. It is planned to be launched in April 2018 on board of SpaceX's Falcon 9 rocket.
 - ✎ Primary objective of TESS is to survey brightest stars near Earth for transiting exoplanets over 2 years. It will use array of wide-field cameras to perform all-sky survey. It will create catalog of thousands of exoplanet candidates using transit photometry method.
- 48. ▶ NASA successfully conducted Advanced Supersonic Parachute Inflation Research Experiment (ASPIRE) to test supersonic parachute that will help its space exploration missions to land on Mars.
 - ✎ NASA's Mars rover mission is set to launch in 2020 to deploy six-wheeled vehicle on martian surface to study rocks on site and cache samples for eventual return to Earth. It will rely on special parachute to slow spacecraft down when it is entering Martian atmosphere at over speed of 12,000 mph (5.4 kilometers per second).
- 49. ▶ NASA will launch Parker Solar Probe in 2018 to explore sun's outer atmosphere, onboard Delta IV Heavy launch vehicle. It aims at Tracing how energy and heat move through solar corona and what accelerates solar wind as well as solar energetic particles.
- 50. ▶ NASA will launch SuperTIGER Balloon in Antarctica, to study heavy cosmic particles, collect information on cosmic rays that enter Earth's atmosphere every day.
 - ✎ SuperTIGER stands for Super Trans-Iron Galactic Element Recorder (SuperTIGER) and is balloon-borne instrument to study rare heavy nuclei, which hold clues about where and how cosmic rays attain speeds up to nearly the speed of light.
- 51. ▶ NASA will launch humanity's first mission Parker Solar Probe (PSP) to Sun on July 31, 2018. After launch, probe will orbit directly through solar atmosphere (the corona), closer to surface than any human-made object has ever gone.
 - ✎ It has been designed and built by Johns Hopkins University Applied Physics Laboratory. It is named after solar astrophysicist Eugene Parker, first spacecraft of NASA to be named after living person.
 - ✎ Probe will be fitted with thermal protection system (TPS) or heat shield made of reinforced carbon-carbon composite that will allow it to survive temperatures in Sun's corona.
- 52. ▶ NASA will launch mission InSight (Interior Exploration using Seismic Investigations, Geodesy and Heat Transport) to study deep interior of Mars on May 5, 2018. Rocket will also launch two mini-spacecraft called Mars Cube One (MarCO), NASA's technology experiment. InSight is stationary lander that will be first NASA mission since Apollo moon landings to place seismometer, a device that measures quakes on soil of another planet.
- 53. ▶ NASA will send first-ever mission named as InSight (Interior Exploration using Seismic Investigations, Geodesy and Heat Transport) dedicated to exploring deep interior of Mars, in May 2018. It will be first NASA mission since Apollo moon landings to place seismometer, a device that measures quakes on the soil of another planet.
- 54. ▶ NASA's Hubble Space Telescope discovered most distant star ever seen named 'Icarus, officially named *MACS J1149+2223 Lensed Star 1*. It took nine billion years for Icarus' light to reach Earth, captured through a phenomenon called 'Gravitational Lensing' that enormously intensifies star's feeble glow.

55. ▶ National Aeronautics and Space Administration (NASA) announced its plan of creating a manned supersonic aircraft with no ear-shattering sonic boom. NASA will grant \$247.5 million contract to American aerospace Firm Lockheed Martin, to build the new plane called X-plane.
- ✍ X-Plane is expected to cruise at an elevation of more than 16,700 meters, at a speed of more than 1,500 km per hour but not make a sonic boom.
 - ✍ Under NASA's plan, beginning mid-2022, It will fly X-plane over select US cities and collect data about community responses to flights.
56. ▶ National Aeronautics and Space Administration (NASA) demonstrated that Its Kilopower portable nuclear fission reactor could enable crewed missions to Moon, Mars and beyond.
- ✍ Kilopower Reactor Using Stirling Technology (KRUSTY) experiment was conducted by NASA at in November 2017 - March 2018, established that this system can create electricity with fission power.
 - ✍ KRUSTY is a small, lightweight fission power system which is capable of providing up to 10 kilowatts of electrical power continuously for at least 10 years. This prototype uses a solid uranium-235 reactor core.
57. ▶ National Aeronautics and Space Administration (NASA) launched Colorado High-resolution Echelle Stellar Spectrograph (CHES 4) from Kwajalein Atoll in Marshall Islands, onboard a NASA Black Brant IX sounding rocket to study interstellar medium (matter between stars).
- ✍ Space between distant stars contains drifts of vast clouds of neutral molecules and charged plasma particles called interstellar medium, which may evolve into new stars and even planets with time.
 - ✍ CHES mission will focus on these floating interstellar reservoirs or translucent clouds of gas, which provide fundamental building blocks for stars and planets.
 - ✍ CHES 4 will study interaction of stellar wind with surrounding interstellar medium to study excitation of atoms and molecules in interface region. It will enable researchers to study catalysts of galactic chemistry and raw materials for future generations of stars and planets.
58. ▶ National Aeronautics and Space Administration (NASA) launched Transiting Exoplanet Survey Satellite (TESS), a new planet-hunting spacecraft onboard of SpaceX's Falcon 9 rocket. TESS is designed to find potential planets orbiting stars close to Earth. It will identify such planets by spotting decreased brightness of stars after planet passes in front of it.
59. ▶ National Aeronautics and Space Administration (NASA) will launch 2 new satellite missions and conduct an array of field research in 2018 to enhance understanding of Earth's ice sheets, glaciers, sea ice, snow cover and permafrost (collectively called cryosphere).
- ✍ Changes in cryosphere have shown impact on people all around world like sea level rise affects coastlines globally and melting of snowpack affects billions of people who rely on the water.
 - ✍ Missions Include -
 - ✍ *Gravity Recovery and Climate Experiment Follow-On (GRACE-FO)* which would be launched by NASA along with the German Research Centre for Geosciences. Twin satellites will continue original GRACE mission's legacy of tracking fluctuations in Earth's gravity field in order to detect changes in mass, including the mass of ice sheets and aquifers.
 - ✍ *Ice, Cloud, and land Elevation Satellite-2 (ICESat-2)*, which will use a highly advanced laser instrument to measure changing elevation of ice around the world, providing a view of the height of Earth's ice with greater detail than previously possible.
 - ✍ Together, two missions will make critical, complementary measurements of Earth's glaciers and ice sheets. GRACE-FO will also measure groundwater reserves and deep ocean currents and ICESat-2 will measure sea ice thickness and vegetation height.
60. ▶ National Aeronautics and Space Administration (NASA) will soon launch two missions - GOLD (*Global-scale Observations of the Limb and Disk*) and ICON (*Ionospheric Connection Explorer*), to explore ionosphere (96 km above Earth's surface).
- ✍ ICON will launched in low-Earth orbit (LEO) located at 560 km above Earth and GOLD will be launched in geostationary orbit over Western Hemisphere (about 35,398 km above earth).
 - ✍ It will help in full-disk view of ionosphere and upper atmosphere beneath it every half hour.
61. ▶ New species of blind fish "Schistura larketensis" has been discovered in East Jaintia Hills district of Meghalaya. The fish had lost its pigments and eye sight after living in darkness of the cave.
62. ▶ Oil and Natural Gas Corporation (ONGC) will introduce carbon dioxide (CO₂) injection technology in its Gandhar oil field in Gujarat, as first large scale CO₂-injected project in Asia. It aims to recover extra 20 million barrels of crude oil under enhanced oil recovery (EOR) programme.
- ✍ CO₂ injection technology is a proven concept in West, especially USA and Canada. Under it, CO₂ gas is injected with residual oil in ageing field in which total oil production has been declining. It reduces its viscosity and makes it easier to displace oil from rock pores.

63. ▶ Paleontologists from Chinese Academy of Sciences discovered approx 300 fossilised eggs of Pterosaurs, a group of extinct winged dinosaur. It is world's first such mass dinosaur egg discovery.
64. ▶ RH-300 MKII sounding rocket developed by IRSO's Vikram Sarabhai Space Centre (VSSC) has been launched from Thumba Equatorial Rocket Launching Station in Thiruvananthapuram (Kerala), under Sounding Rocket Experiment (SOUREX) programme for atmospheric studies.
- ▶ Objective is to measure neutral wind in dynamo region (80-120 km) of equatorial ionosphere using indigenously developed Electron Density and Neutral Wind Probe (ENWi).
 - ▶ It will also perform cross-validation using an independent Tri Methyl Aluminium (TMA) release technique.
65. ▶ Researchers at Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) Bengaluru have developed silver copper telluride (AgCuTe), a novel compound that exhibits poor thermal conductivity but shows good electrical conductivity.
- ▶ AgCuTe has good thermoelectric properties and is made from silver, copper, and tellurium. It exhibits poor thermal conductivity in 25-425 degree C range but shows good electrical conductivity.
 - ▶ Due to this property, one end of 8 mm-long AgCuTe rod which is contact with waste heat remains hot while other end maintains cold temperature. This temperature difference results in generation of electrical voltage.
 - ▶ This compound shows ideal promise as thermoelectric material for converting waste heat into electricity. Its applications are in automobile, thermal, chemical and steel power plants where large quantities of heat are wasted.
66. ▶ Researchers discovered new grass-like plant species named *Fimbristylis agasthyamalaensis* in Ponmudi hills within Agasthyamala Biosphere Reserve in Western Ghats biodiversity hotspot (Spread across Kerala and Tamilnadu). New species of plant belongs to Cyperaceae family.
67. ▶ Researchers from Bombay Natural History Society (BNHS) discovered a new species of moth, scientifically named *Elcysma Ziroensis* in Talley Wildlife Sanctuary in Arunachal Pradesh.
68. ▶ Researchers from Britain's University of Portsmouth and US Department of Energy's National Renewable Energy Laboratory (NREL) developed a plastic-eating enzyme. Called *Ideonella sakaiensis* 201-F6, this enzyme is able to eat polyethylene terephthalate (PET), which was patented as plastic in 1940s. It can be used to fight one of world's biggest pollution problems, called Plastic.
- ▶ Enzyme can also degrade polyethylene furandicarboxylate (PEF), a bio-based substitute for PET plastics that is being called as a replacement for glass beer bottles.
 - ▶ Though PEF plastics are bio-based, they are not biodegradable and end up as a waste.
69. ▶ Researchers from Northumbria University (UK) found out mountain ranges and three vast, deep sub-glacial valleys hidden under Antarctica ice. This is first finding observed from ice penetrating radar data collected in Antarctica as part of European Space Agency PolarGAP project. Largest valley, named Foundation Trough, is over 350 kilometres long and 35 kilometres wide. Other 2 are Patuxent Trough and Offset Rift.
70. ▶ Researchers from Surat's Veer Narmad South Gujarat University discovered world's smallest land fern in Ahwa forests of the Western Ghats in Gujarat's Dang district. New Malvi's adder's-tongue fern *Ophioglossum malviae* is just one centimetre in size.
71. ▶ Researchers from University of California and University of Illinois confirmed existence of new form of matter called excitonium, made up of excitons and exhibits macroscopic quantum phenomena just like a superconductor.
- ▶ Technique called momentum-resolved electron energy-loss spectroscopy (M-EELS) was used by researchers to prove existence of excitonium.
72. ▶ Researchers identified a new shark species in Atlantic Ocean, named *Atlantic sixgill shark*. They are very different from ones in Indian and Pacific Oceans on a molecular level. New species of sharks have six-gill slits, while most sharks have five-gill slits.
73. ▶ Rotavac became first Indigenously developed vaccine from India to be pre-qualified by World Health Organisation (WHO), enabling selling it internationally. Rotavac is first vaccine entirely developed in India to get this WHO status in safety and efficacy.
- ▶ Rotavac is developed by Hyderabad-based Bharat Biotech Limited and protects against childhood diarrhoea caused by rotavirus. It was developed under collaboration between India and USA.
74. ▶ Samsung developed world's smallest 8-gigabit DRAM chip, with improved energy efficiency and data processing performance. In these chips, only 1 transistor and a capacitor are required per bit, compared to 4 to 6 in SRAM.
75. ▶ Scientists at University of California (USA) stated that increase in warmer global temperatures and dryer weather conditions could pose a threat to survival of fragile cocoa plant, leading to disappearance of chocolate by 2050. To avoid this, gene-editing technology CRISPR must be used to evolve crops that can survive environmental challenges.
76. ▶ Scientists discovered 4 new balsam species from various locations in Eastern Himalayas in Arunachal Pradesh. They are - *Impatiens haridasanii*, *Impatiens pseudocitrina*, *Impatiens nilalohitae* and *Impatiens roingensis*.

77. ▶ Scientists discovered a giant mosquito with a wingspan of 11.15 centimetres in China's Sichuan province, belonging to world's largest mosquito species *Holorusia mikado*. This species was first found in Japan and normally has wing span of 8 centimetres.
78. ▶ Scientists discovered massive reserves of mercury hidden in permafrost (*thick subsurface layer of soil that remains below freezing point throughout the year, occurring primarily in polar regions*).
- ✎ Study says that that all frozen and unfrozen soil in northern permafrost regions contain a combined 1656 gigagrams of mercury, making it largest known reservoir of mercury on planet.
 - ✎ This discovery may have significant implications on human health and ecosystems worldwide as exposure to mercury can cause serious health problems. There would be severe environmental problems if these reservoirs do not remain frozen, as evident by Warming temperatures. Melting permafrost could release a large amount of mercury that could potentially affect ecosystems around the world.
79. ▶ Scientists discovered new frog species named *Microhyla kodial* or Mangaluru narrow-mouthed frog in a region in coastal Karnataka. It is seen only in small industrial region which was former timber dumping yards surrounded by seaport, petrochemical, chemical and refinery industries. It is small in size measuring just 2 cm long.
80. ▶ Scientists discovered new organ in human body and have named it as 'interstitium', as 80th organ in human body.
- ✎ It might be might be also the biggest organ in human body. It was discovered while doctors were investigating patient's bile duct, searching for signs of cancer. Discovery of interstitium will help to explain how cancer spreads in body and pave way for new ways to detect and treat the disease.
 - ✎ Interstitium is network of interconnected, fluid-filled spaces all over the body. It is found everywhere in human bodies, acting as shock absorber in all places where tissues are moved or subjected to force. It is made up of both flexible (elastin) and strong (collagen) connective tissue proteins, with interstitial fluid moving throughout.
 - ✎ It also acts as fluid 'highway' i.e. thoroughfares to transport critical fluids within organs and around body. It also plays important role in carrying lymph, a fluid that supports immunity and also travels through lymphatic vessels.
 - ✎ It lies beneath top layer of skin, but is also in tissue layers lining gut, lungs, blood vessels, and muscles.
81. ▶ Scientists discovered new scorpion species named Schaller's wood scorpion (*Liocheles schalleri*) from at Trishna Wildlife Sanctuary, Tripura. It has been named in honour of celebrated wildlife biologist George Schaller who has studied wildlife across world.
82. ▶ Scientists discovered new species of frog named Mewa Singh's night frog (*Nyctibatrachus mewasinghi*) in Kozhikode's Malabar Wildlife Sanctuary, Kerala in Western Ghats.
83. ▶ Scientists discovered world's second oldest grain of magmatic zircon (mineral that contains traces of radioactive isotopes) from Champua from Singhbhum rock sample in Odisha's Kendujhar district. It is oldest magmatic zircon on earth.
- ✎ Isotopic analysis of Singhbhum rock sample with magmatic zircon was done used Sensitive High Resolution Ion Microprobe (SHRIMP) at Chinese Academy of Geological Sciences. It confirmed presence of two zircon grains that aged 4240 million and 4030 million years.
 - ✎ Oldest zircon on earth was found in Jack Hill (Western Australia), which is 4400 million years old. It is metamorphosed sedimentary rock.
84. ▶ Scientists from Botanical Survey of India (BSI) identified new plant species named *Drypetes kalamii* from Buxa and Jaldapara National Parks in West Bengal, named after former President Dr. APJ Kalam. It is close relative of medicinal plant known in Sanskrit as *Putrajivah*.
85. ▶ Scientists from Britain and USA for first time grew human eggs in laboratory from earliest stages in ovarian tissue all way to full maturity. This is first time human eggs have been developed outside human body. It can widen scope of available fertility treatments and can help in developing regenerative medicine therapies and new infertility treatments.
86. ▶ Scientists from China Academy of Launch Vehicle Technology (CALT) developed artificial heart using rocket technology, currently being tested on animals. The artificial heart uses magnetic and fluid levitation from rocket system. This technology can reduce friction in device to increase working efficiency and extend life span of power generator. It can reduce damage to the blood and enable blood pump to work longer.
87. ▶ Scientists from Duke University in North Carolina (USA) for first time have developed working human skeletal muscle from stem cells in lab.
- ✎ Stem cells are undifferentiated biological cells that can differentiate into specialized cells and can divide to produce more stem cells, found in multicellular organisms.
 - ✎ Scientists developed human skeletal muscle using adult skin or blood cells that were reprogrammed into a juvenile, versatile state. This may benefit several people suffering of degenerative muscular diseases. It will allow scientists to grow endless amount of functioning muscle in lab to test to test drugs and gene treatments for degenerative diseases.

88. ▶ Scientists from Indian Institute of Science (IISc) Bengaluru indigenously developed country's first super critical carbon dioxide (S-CO₂) Brayton Test Loop facility. It is first test loop technology coupled with solar heat source in world that will generate clean energy from power plants, including solar thermal, as part of Indo-US consortium- Solar Energy Research Institute for India and United States (SERIUS).
- ✎ It uses supercritical CO₂ (SCO₂) instead of steam to generate more power. Supercritical refers to state of CO₂ above its critical temperature of 31 C and critical pressure of 73 atmospheres, which makes it twice as dense as steam.
 - ✎ This Next generation and waterless super critical CO₂ Brayton cycle test loop for power generation will be useful for meeting energy needs. It has potential to replace steam based nuclear and thermal power plants, reducing carbon foot print significantly.
89. ▶ Scientists from Massachusetts Institute of Technology (USA) found a novel way to induce plants to give off dim light by embedding specialised nanoparticles into their leaves.
- ✎ It has great significance as it will make plants function as a desk lamp, powered by energy metabolism of the plant itself and not by electricity connection.
 - ✎ To create glowing plants, scientists has used to luciferase, an enzyme that gives fireflies their glow. Luciferase acts on molecule called luciferin, causing it to emit light.
90. ▶ Scientists from Newcastle University (UK) created world's first 3D printed human corneas that could solve problem of shortage of available eye donors and help millions of blind people gain sight again.
- ✎ Cornea is outermost layer of the human eye. Its key function is to focus vision. It also barricades eyes against harmful dirt and bacteria.
 - ✎ 3D printed human corneas were produced using bio-ink solution consisting of healthy corneal stem mixed together with alginate and collagen.
91. ▶ Scientists from Pennsylvania State University (USA) discovered signs of life in a massive cave in Italy, located about 1300 feet below ground. It may help detect life on other planets like Mars. Identification was made by researchers while exploring Frasassi Caves in central Italy. Scientists found variations in isotopic content of atoms in mineral gypsum, a weathering product of cave's formation.
- ✎ Study stated that not all gypsum is formed by microbes, but gypsum formed by microbes will have a different ratio of isotopes in atoms. • This isotopic variation indicates that life played an active role in producing gypsum.
92. ▶ Scientists from Rockefeller University (USA) discovered of a new class of antibiotics called malacidins, produced by microorganisms living in soil and dirt and is capable of killing off several antibiotic-resistant pathogens.
- ✎ Malacidins are distinctive class of antibiotics that are commonly encoded in soil microbiomes. They have never been reported in culture-based NP (Natural Products) discovery efforts. This discovery could be a useful weapon in field of medicines.
93. ▶ Scientists from Tohoku University in Japan found mineral called moganite in lunar (Moon's) meteorite that points presence of abundant hidden reserves of water ice under surface of moon. The mineral discovered in a desert in northwest Africa could be potentially useful for future human exploration of moon.
- ✎ Moganite is a crystal of silicon dioxide (SiO₂), known to form on earth in specific circumstances in sedimentary settings from alkaline fluids.
 - ✎ Researchers believe that mineral formed on surface of moon in area called Procellarum Terrane as water was present in lunar dirt, that evaporated due to strong sunlight. But in subsurface, water remains in form of ice.
94. ▶ Scientists from USA's Lawrence Berkeley National Laboratory discovered a new material for next-generation smart windows that will not only get a tinted look when Sun is too bright but will also convert solar energy into electricity. Researchers discovered a form of perovskite that works well as a stable and photoactive semiconductor material that can reversibly switch between transparent and non-transparent state, without degrading its electronic properties.]
95. ▶ Scientists from University of Michigan (USA) developed a new type of neural network chip using reservoir computing system to improve efficiency of teaching machines to think like humans.
- ✎ Network developed using this system can predict words before they are said during conversation and help predict future outcomes based on present.
96. ▶ Scientists from University of Minnesota (USA) discovered that chemical element ruthenium (Ru(44)) is fourth element to have unique magnetic properties (ferromagnetism) at room temperature, after Iron (Fe), Cobalt (Co), and Nickel (Ni). The discovery will help to improve sensors, devices in computer memory and logic industry or other devices using magnetic materials. It was discovered in 1844 by Russian-born scientist Karl Ernst.
97. ▶ Scientists from Zoological Survey of India (ZSI) discovered 3 new species of eel along northern Bay of Bengal coast - *Gymnothorax pseudotile*, *Gymnothorax visakhaensis* and *Enchelycore propinqua*.
- ✎ There are about 1,000 species of eels identified so far across the world. In India, there are around 125 species of eels identified.

98. ▶ Scientists from Zoological Survey of India (ZSI) discovered new frog species in the fast flowing streams in Talle Valley Wildlife Sanctuary (WLS) in Lower Subansiri district of Arunachal Pradesh. It is named *Odorrana arunachalensis*.
99. ▶ Scientists from Zoological Survey of India (ZSI) discovered new species of water strider named *Ptilomera nagalanda* Jehamalar and Chandra in Nagaland. It was found in river Intanki in Peren district of Nagaland. This newly discovered species belongs to *Ptilomera agriodes* genus.
100. ▶ Scientists identified a new species of frog called *Fejervarya goemchi*, in highland plateaus of Western Ghats parts of Goa. It was identified using combination of morphology, geographic distribution range and molecular methods to distinguish from other *Fejervarya* species found in South and South-East Asia.
101. ▶ Sudan, the last surviving northern white male rhinoceros of the world, died in Laikipia national park of Kenya. He was 45 years old and was only surviving male northern white rhin. Now, only 2 female rhinoceros of that sub-species are living. Genetic material from Sudan was collected when he was healthy. Through advanced cellular technologies, this sub-species might be prevented from extinction.
102. ▶ Tapanuli Orangutan, the rarest ape species on Earth, is on verge of extinction with only approx 800 members of the species alive. This species was discovered in 2017 in Sumatra (Indonesia).
103. ▶ US Food and Drug Administration (FDA) approved use of Acuvue Oasys Contact Lenses with Transitions Light Intelligent Technology, world's first contact lens that automatically darkens when exposed to bright light. These contact lens are soft contact lenses indicated for daily use to correct vision of people with non-diseased eyes who are nearsighted (myopic) or farsighted (hyperopic).
104. ▶ USA based National High Magnetic Field Laboratory tested world's strongest superconducting magnet 32 T, producing 32 teslas (a unit of magnetic field strength), 33% stronger than previous record.
- ▶ 32 T will allow physicists studying materials to explore how electrons interact with each other and their atomic environment.
105. ▶ USA space flight company SpaceX launched the world's most powerful operational rocket 'Falcon Heavy' into space, carrying a red Tesla Roadster car belonging to SpaceX and Tesla founder Elon Musk.
- ▶ The car was outfitted with a mannequin dressed in a spacesuit, a high-data storage unit containing Isaac Asimov's science fiction book series, Foundation Trilogy, and a plaque bearing names of 6000 SpaceX employees.
106. ▶ USA's NASA discovered 8th planet in Our Solar System, circling Kepler-90, a Sun-like star which is 2545 light-years far from Earth.
- ▶ Newly-discovered planet Kepler-90i was discovered in data from NASA's Kepler Space Telescope, using Machine Learning from Google.
107. ▶ *Uropeltis bhupathyi*, a new snake species has been discovered in the Anaikatty hills, Coimbatore, Tamil Nadu. It has been named after late herpetologist S. Bhupathy. They are non-venomous, burrowing, mostly earthworm-eating.
108. ▶ Vodafone Germany, Nokia and Audi are jointly working to support project to implement first mobile phone network on Moon by 2019. PTScientists, a Berlin-based company, is also working on this project.
109. ▶ Weather scientists predicted normal monsoon in June-September 2018 monsoon season as prevailing conditions as well as neutral ENSO were favourable for good monsoon rainfall.
- ▶ India receives 89 cm of rainfall during four-month monsoon season, which is almost 75% of its annual rainfall.
 - ▶ Most important favourable condition for good monsoon is near-neutral to neutral ENSO (El Nino Southern Oscillation) in equatorial Pacific Ocean, off coast of South America.
 - ▶ Moreover, La Niña conditions are present and equatorial sea surface temperatures (SSTs) are below average across central and eastern Pacific Ocean. Transition from La Niña to ENSO-neutral is likely during March-May season, with neutral conditions to continue in second half of year.
110. ▶ World Health Organisation (WHO) has given its pre-qualification to Typbar Typhoid Conjugate Vaccine (TVC) developed by Hyderabad based Bharat Biotech for global use.
- ▶ Typbar TCV is world's first typhoid vaccine clinically proven to be administered to children from six months of age to adults, and confers long-term protection against typhoid fever.
111. ▶ World's biggest flooded cave has been discovered in Mexico, after researchers connected 2 underwater caverns in eastern Mexico to reveal biggest flooded cave on planet. It is significant discovery as it could shed new light on ancient Maya civilization. The total length of cave is 347-kms, after connecting cave system named Sac Actun (262 km) with 83-km long Dos Ojos cave system.
112. ▶ World's heaviest bony fish ever caught weighing 2,300 kilograms has been identified in Japan, confirmed by researchers from Hiroshima University. Bony fish have skeletons made of bone rather than cartilage.

