NSD – 2018 PHOTO GALLERY

MESSAGE

Dear Students and Teachers,

National Science Day is celebrated all over India on 28th February every year with great passion and enthusiasm to commemorate the discovery of the “Raman Effect” by the eminent Indian Physicist Sir C. V. Raman in the year 1928, which fetched him the prestigious Nobel Prize in Physics in the year 1930.

We at ISRO Satellite Centre, Bangalore, celebrate the National Science Day, every year, by encouraging students and teachers from various schools to participate in various events held at our centre. Every year there is a theme associated with NSD and various events at our centre have been organised linking to this theme.

NSD celebrations at ISAC on the 28th Feb 2018 was inaugurated by Director, ISAC with lighting of the lamp. There were two exhibits, one was the Mobile science exhibition by M/s Agastya International Foundation and the other was the Mobile Planetarium by M/s Varnum Technologies, both been set up at the entrance of the Main Building. The students were entertained with both these exhibits largely. In addition, the students and teachers from various schools visited the space exhibition at our centre which has displays of various satellite models right from Aryabhata to Mars Orbiter Mission and exhibits related to space and satellite technology.

The events for the students held at ISRO Satellite Centre, this year have seen a very wide participation of about 1000 students from about 100 schools from various parts of Bangalore. To start with, on the 17th Feb 2018, we had two events “Essay Competition” and “Test of Scientific Temper” held for the students. Essay Competition had about 150 students participating from about 30 schools who wrote excellent essays on two topics “Solar energy for sustainable future” and “Electric vehicles for a sustainable future: Bane or Boon”. The event “Test of Scientific Temper” kept all the participating students engrossed into the depths of science for about 90 minutes with various inquisitive questions for them to think through and bring out scientific reasoning.

On the 24th Feb 2018, we had three events: The “Teacher’s Event,” “Innovative Ideas” and “Extempore Science Education”. The “Teacher’s Event” had about 15 presentations selected from the teachers speaking on “Science and Technology for sustainable future”, with about 30 teachers and students participating in the event.

The event “Innovative Ideas” had a good number of participants with about 30 students bringing out very innovative and thought provoking ideas on two topics: “Life is confirmed on an extraterrestrial planet, what will you plan for space missions” and “Application of artificial intelligence in space industry”. It was very impressive to listen to the young and energetic minds bringing out exciting ideas on these topics.

The event “Extempore Science Education” also had a very overwhelming participation from about 70 students from various schools talking on topics related to the theme of NSD-2018. It was indeed very amazing to listen to the extempore ideas of the young kids bringing out very informative points on various topics. It was also a very tight competition and the judges had a tough time in selecting the prize winners.

Today, the final day of the celebrations of NSD-2018, we had three other competitions in the forenoon: Science Quiz, Spot Painting and Science in Action. We had about 300 students participating in these competitions. The Science Quiz competition comprised of questions on topics related to science and technology, which were of real life relevance. The Spot Painting competition tested the depth of knowledge in the young minds, the “Science in Action” made them realize the level of understanding of the fundamentals of science in them. “Spot Painting” brought the artists in the young and energetic students, who amazed all of us with their glory.

The valedictory function was conducted on 28th Feb, 2017 in the afternoon. Dr. M. Annadurai, Director ISAC presided over the function. The highly inspirational NSD lecture was presented by our Chief Guest Dr. B. S. Sathyavatma, from the Jawaharlal Nehru Planetarium on the entertaining topic “Binary Stars and Gravitational Waves”. The programme concluded with the distribution of prizes for the winners by the Director Chief Guest and Chairman-NSD. NSD-2018 at ISAC was very well organized with a number of events and competitions by a number of Convener and Members of the organizing committee, NSD-2018, with a overwhelming response of various students and in and around Bangalore.

Dr. Anil Agarwal
Chairman, Organizing committee, NSD-2018
Asteroids

Asteroids, also called minor planets, are rocky objects in orbit around the sun. Most asteroids orbit the sun between Mars and Jupiter, moving in the same direction as the planets. Asteroids range in size from Ceres, which has a diameter of about 1000 km, down to the size of pebbles. Sixteen asteroids have a diameter of 240 km or greater. Some asteroids, called Apoapsis Asteroids, cross the orbit of Earth. It has been estimated that there are around 1000 Earth-crossing asteroids with a diameter of a kilometer or more.

Comets

Most comets are believed to be composed of rocky material and water ice. A few have highly elliptical orbits that bring them very close to the sun and swing them deeply into space, often beyond the orbit of Pluto. The most widely accepted theory of the origin of comets is that there is a huge cloud of comets called the Oort Cloud (after the Dutch Astronomer Jan H. Oort who proposed the theory), of perhaps 1001 comets orbiting the sun at a distance of about 50,000 AU (just under a light year). These comets are near the sun and have orbital periods of thousands of years. The gravitational forces of other stars with the sun can cause interstellar proximity every several thousand years. According to the theory, these stellar passages perturb the orbits of the comets within the solar system and can cause some of them to swing into closer, and possibly more than 1 interstellar space, and some may begin to “fall” toward the sun. Actually, the comet is still in orbit around the sun as it “falls.” However, the orbit has been modified from a relatively circular orbit to an eccentric orbit, and sometimes we can see comets with a very elongated orbital path.

As many comets approach the sun they develop enormous tails of luminous material that extend for millions of kilometers from the head, away from the sun. As the comet absorbs ultraviolet light, chemical processes release hydrogen, which escapes from the comet, and forms a hydrogen envelope. This envelope cannot be seen from Earth because its light is absorbed by our atmosphere, but it has been detected by spacecraft. Each time a comet visits the sun, it loses some of its volatiles. Eventually, the comet becomes a small, solid mass in the solar system. For this reason, comets are said to become a meteoroid, and a meteor if its mass is large enough to burn up upon re-entry to the upper atmosphere.

Meteoroids

Meteoroids are small, often microscopic, solid particles that are in orbit around the sun. We see meteoroids as bright meteors when they enter Earth's atmosphere at high speed as they burn up from frictional heating of the atmosphere. Each time the earth passes through a cloud of meteoroids, the earth gets a meteor shower. Meteoroids boil off from comets as they carry small solid particles with them. Particles released from comets in this way become a source for meteoroids, causing meteor showers as Earth passes through them.

Moon

The Moon was formed about 4.5 billion years ago Earth and Moon were born. The current theory says it was a giant impact! A Mars size body collided with young Earth and Moon formed mostly from the material of the impactor. A lot of heat melted the Moon and its surface was uniformly covered by the brecciated material called highlands. Volcanic activity following the impact sometimes covered the highlands and molten material from inside the Moon filled the craters. These are the dark areas we can see with our eyes.

LAPX-ast on the Indian Space Research Organisation X-ray Astronomy Satellite, AstroSat, which was successfully launched by ISRO on 18th August 2018, is designed to study the heavens in hard X-ray, soft X-ray and gamma-ray region.

LAPX-ast on board AstroSat has demonstrated its unique capability of detecting high energy gamma rays (Gamma Ray Bursts), and soft X-ray (Spectroscopy and Optical Imaging) region. This is a first of its kind mission in the world to study the heavens in hard X-ray, soft X-ray and gamma-ray region.

AstroSat – Three Years of Astronomical Exploration

India's 1st multi wavelength observatory, AstroSat was launched on 28th September, 2015 with five unique packages: LAXPC, HUT, SST, UVI, and LAXPC on X-ray Astronomy Satellite. This observatory has the unique capability of studying the nervous system of the universe in the X-ray, soft X-ray, ultraviolet, visible, and gamma-ray spectrum to study the heavenly bodies of the Cosmos. At present, the space observatory is in its 3rd year of operations.

Nearly 1000 proposals have been submitted for observations with AstroSat by Astronomers from India and abroad. A total of 310 proposals (research articles) have been approved for this year and these are being reviewed by the AstroSat’s Scientific Advisory Committee.

One of the 30 co-passenger satellites carried by PSLV-C38 was the 15 kg NIUSAT, a University/Academic satellite along with 30 co-passenger satellites today (June 23, 2017) from Satish Dhawan Space Centre SHAR, Sriharikota. This is the thirty-ninth consecutively successful mission of PSLV.

PSLV-C38 Successfully Launches 31 Satellites in a Single Flight

PSLV-C38 successfully launched the 712 kg Cartosat-2 Series Satellites along with 30 co-passenger satellites today (June 23, 2017) from Satish Dhawan Space Centre SHAR, Sriharikota. This is the thirty-ninth consecutively successful mission of PSLV.

PSLV-C38 lifted off at 0929 hrs (9:29 am) IST, as planned, from the First Launch Pad. After a flight of about 16 minutes, the satellites achieved a polar Sun Synchronous Orbit of 505 km inclined at an angle of 97.44 degree to the equator (very close to the intended orbit) and in the succeeding seven and a half minutes, all the 31 satellites successfully separated from the PSLV fourth stage in a pre-planned sequence beginning with Cartosat-2 series satellite, followed by NIUSAT and 29 customer satellites. The total number of customer satellites from abroad launched by India's workhorse launch vehicle PSLV has now reached 59.

After separation, the two solar arrays of Cartosat-2 series satellite were deployed automatically and the spacecraft was placed in its correct orbit.

With successful launch, the total number of customer satellites from abroad launched by India's workhorse launch vehicle PSLV has reached 100.

Moon

I like to keep secrets

One of the most reliable sources of our information about the universe is a beautiful object called the Moon. For centuries, we have looked into the moon's surface with simple telescopes and have seen craters, mountains, valleys, and maria. In recent years, however, telescopes with much higher resolution have been used to reveal new details about the Moon. Today, many different kinds of telescopes provide information about the Moon.

Excellent telescopes in X-ray and gamma-ray regions of the electromagnetic spectrum are needed to study the Moon's magnetic field and the location of hot spots on the Moon. These telescopes are called X-ray and gamma-ray telescopes.

LAXPC onboard AstroSat has demonstrated its unique capability of detecting high energy gamma rays (Gamma Ray Bursts), and soft X-ray (Spectroscopy and Optical Imaging) region. This is a first of its kind mission in the world to study the heavens in hard X-ray, soft X-ray and gamma-ray region.

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PSLV-C37 Successfully Launches 104 Satellites in a Single Flight

PSLV-C37 successfully launched the 104 customer satellites together with the 712 kg Cartosat-2 Series Satellites along with 30 co-passenger satellites today (June 23, 2017) from Satish Dhawan Space Centre SHAR, Sriharikota. This is the thirty-ninth consecutively successful mission of PSLV.

PSLV-C37 lifted off at 0928 hrs (9:28 am) IST, as planned, from the First Launch Pad. After a flight of about 16 minutes 48 seconds, the satellites achieved a polar Sun Synchronous Orbit of 506 km inclined at an angle of 97.46 degree to the equator (very close to the intended orbit) and in the succeeding 12 minutes, all the 104 satellites successfully separated from the PSLV fourth stage in a pre-planned sequence beginning with Cartosat-2 series satellite, followed by INS-1 and INS-2. The total number of Indian satellites launched by PSLV now stands at 46.

With successful launch, the two solar arrays of Cartosat-2 series satellite were deployed automatically and the spacecraft was placed in its correct orbit.

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