

SCIENCE AND TECHNOLOGY❖ **How the maiden flight of ISRO's SSLV went awry**

❖ **CONTEXT:** On August 7, ISRO got ready for the first developmental flight of the SSLV-D1/EOS-2 mission. The launch took place from the Satish Dhawan Space Centre at Sriharikota. The Small Satellite Launch Vehicle (SSLV) D1/EOS-2 mission, was carrying two satellites — the Earth Observation Satellite-2 (EOS-2) which weighed about 135 kg and AzadiSAT which weighed about eight kg. The mission aimed to place the EOS-2 in a circular low-Earth orbit at a height of about 350 km above the Equator and inclined at an angle of 37 degrees. The initial part of the story was successful with the launch vehicle operating smoothly. However, the mission failed to place the satellites in their required orbits, and the satellites, as they were already detached from the launch vehicle, were lost.

❖ **What was the purpose of the SSLV-D1/EOS-2 mission?**

- The purpose of this mission was to place the two satellites in circular low-Earth orbits at a height of about 350 km above the Equator. The larger one, the EOS-2 which was designed and developed by ISRO, offered advanced optical remote sensing operations. It would have operated in the infrared region and could have served many purposes, from imaging for climate studies to simply keeping an eye on Earth.
- AzadiSAT, on the other hand, was a collective of 75 tiny payloads weighing around 50 grams each, which were integrated by students. It carried tiny experiments which would have measured the ionising radiation in its orbit and also a transponder which worked in the ham radio frequency to enable amateur operators to access it.

❖ **Which part of the mission succeeded and where did it fail?**

- The SSLV was composed of three stages powered by solid fuels and these three performed their function as planned. However, when it came to the stage when the satellites had to be set in orbit, there was a glitch which resulted in the satellites being lost forever.
- With a degree of openness that is unprecedented in ISRO, it was announced that there was a malfunctioning of a sensor which resulted in placing the satellites in an elliptical orbit, rather than a circular orbit.
- The ellipse or oval shape of the elliptical orbit is elongated in one direction and compressed in another (the so-called major and minor axes, which are like two radii of the ellipse). The shortest height above the Earth of this oval orbit was only about 76 km.

❖ **Why were the satellites lost?**

- If the closest distance to the Earth is only 76 km, as it happened this time, there is an atmospheric drag experienced by the object at that height. Thereafter, unless adequate thrust is applied to overcome the drag, it will lose height and fall towards the Earth because of gravity and may eventually burn up due to friction.

❖ **What went wrong with the launch?**

- Today rocket technology has progressed to such a stage that even if the course of the rocket is altering from its planned course, there will be sensors that feed back this information to a system. This will immediately trigger a course correction which will restore the trajectory of the rocket.
- There are many sensors as well as a built-in redundancy. That is, even if one or two sensors fail, there will be others that take over and effect the course correction.
- In the present case, the announcement was that “failure of a logic to identify a sensor failure and go for a salvage action caused the deviation.” This could possibly imply that either redundancy was not built in, which is highly unlikely, or perhaps that it was built in but did not kick off due to a technical glitch.

❖ **Why do we need to develop an SSLV when we have successfully used PSLV and GSLV?**

- The PSLV (Polar Satellite Launch Vehicle) and GSLV (Geosynchronous Satellite Launch Vehicle) are quite powerful and can carry huge loads.
- To place an Earth Orbiting Satellite in a low Earth orbit, one does not need such power horses. The SSLV can easily carry small-to-medium loads from 10 kg to 500 kg. It is less expensive.
- The three stages being powered by solid fuel is another advantage. Solid fuel is easier to handle, whereas handling the liquid propellants used in the PSLV and GSLV is more complex.

❖ **What is the difference between circular and elliptical orbits?**

- Mostly objects such as satellites and space crafts are put in elliptical orbits only temporarily. They are then either pushed up to circular orbits at a greater height or the acceleration is increased until the

trajectory changes from an ellipse to a hyperbola and the spacecraft escapes the gravity of the Earth in order to move further into space — for example, to the Moon or Mars or further away.

- Satellites that orbit the Earth are mostly placed in circular orbits. One reason is that if the satellite is used for imaging the Earth, it is easier if it has a fixed distance from the Earth. If the distance keeps changing as in an elliptical orbit, keeping the cameras focussed can become complicated.

POLITY AND GOVERNANCE

❖ **On guardianship and adoption of minors**

❖ **CONTEXT:** A Parliamentary panel has recommended conferring equal rights on mothers as guardians under the Hindu Minority and Guardianship Act (HMGA), 1956 instead of treating them as subordinates to their husband, and has called for joint custody of children during marital disputes. It has also proposed allowing the LGBTQI community to adopt children.

❖ **What are the recommendations of the Parliamentary panel on guardianship and child custody?**

- The department-related Parliamentary Standing Committee on Personnel, Public Grievances, Law and Justice tabled its report on August 8, 2022, in both Houses of Parliament on the ‘Review of Guardianship and Adoption Laws’. In its report the committee has said that there is an “urgent need to amend the HMGA (Hindu Minority and Guardianship Act, 1956) and accord equal treatment to both mother and father as natural guardians as the law violated the right to equality and right against discrimination envisaged under Articles 14 and 15 of the Constitution.”
- In cases of marital dispute, the panel says there is a need to relook at child custody which is typically restricted to just one parent where mothers tend to get preference. It says courts should be empowered to grant joint custody to both parents when such a decision is conducive for the welfare of the child, or award sole custody to one parent with visitation rights to the other.
- On adoption, the Committee has said that there is a need for a new legislation that harmonises the Juvenile Justice (Care and Protection of Children) Act, 2015 and the Hindu Adoptions and Maintenance Act (HAMA), 1956 and that such a law should cover the LGBTQI community as well.

❖ **What does the law say on guardianship? How do courts grant child custody?**

- Indian laws accord superiority to the father in case of guardianship of a minor. Under the religious law of Hindus, or the Hindu Minority and Guardianship Act, (HMGA) 1956, the natural guardian of a Hindu minor in respect of the minor’s person or property “is the father, and after him, the mother: provided the custody of a minor who has not completed the age of five years shall ordinarily be with the mother.”
- According to the Muslim Personal Law (Shariat) Application Act, 1937 the Shariat or the religious law will apply in case of guardianship according to which the father is the natural guardian, but custody vests with the mother until the son reaches the age of seven and the daughter reaches puberty though the father’s right to general supervision and control exists. The concept of Hizanat in Muslim law states that the welfare of the child is above all else. This is the reason why Muslim law gives preference to the mother over the father in matters of custody of children in their tender years.

- The Supreme Court’s landmark judgment in Githa Hariharan vs Reserve Bank of India in 1999 challenged the HMGA for violating the guarantee of equality of sexes under Article 14 of the Constitution of India and the court held that the term “after” should not be taken to mean “after the lifetime of the father”, but rather “in the absence of the father”. But the judgment failed to recognise both parents as equal guardians, subordinating a mother’s role to that of the father. Though the judgment sets a precedent for courts, it has not led to an amendment to the HMGA.

- The panel’s proposals on guardianship have been made by the Law Commission of India in its 257th report on "Reforms in Guardianship and Custody Laws in India" in May 2015 as well as its 133rd report in August, 1989 on "Removal of discrimination against women in matters relating to guardianship and custody of minor children and elaboration of the welfare principle"

❖ **What about cases of marital disputes?**

- In cases of marital disputes, some courts such as the Punjab and Haryana High Court and Bombay High Court have framed rules to grant joint custody or shared parenting. But according to senior lawyer instead of this “patchwork” there is a need to amend the law, including the Guardians and Wards Act, 1890 to introduce concepts such as joint custody.

❖ **Can queer and transgender people adopt children in India?**

- The Adoption Regulations, 2017 is silent on adoption by LGBTQI people and neither bans nor allows them to adopt a child.

- Its eligibility criteria for prospective adoptive parents says that they should be physically, mentally and emotionally stable, financially capable and should not have any life-threatening medical condition. Single men can only adopt a boy while a woman can adopt a child of any gender.
- A child can be given for adoption to a couple only if they have been in a marital relationship for at least two years. The HAMA which applies to Hindus, Sikhs, Jains and Buddhists allows men and women to adopt if they are of sound mind and are not minors.
- Activists say LGBTQI people who seek adoption face institutional discrimination because of stigma. Therefore, the law should be amended to include them as eligible candidates including when they apply as non-single parents such as when they are in civil unions or married for which there is no legal recognition in the country as yet even though the Supreme Court legalised gay sex in 2018.

PRELIMS**1. What is AGM-88 HARM, the new anti-radar missile supplied to Ukraine by the US?**

❖ **CONTEXT:** United States Under Secretary of Defence for Policy Colin Kahl confirmed on Monday (August 8) that Washington has supplied some “anti-radiation missiles” to Ukraine, which could be fired from some Ukrainian Air Force aircraft. The statement has put meat on Russian allegations that an American anti-radar missile, AGM-88 HARM, which is part of NATO’s inventory, has been used in the theatre of conflict. What kind of missile is this and what impact can it have in the ongoing war in Ukraine?

❖ What is the AGM-88 HARM missile?

- The acronym ‘HARM’ in the AGM-88 HARM air-to-surface missile stands for High-Speed Anti-Radiation Missile. It is a tactical weapon fired from fighter aircraft, and has the capability to detect and home into radiation emitted by hostile radar stations that have surface-to-air detection capabilities.
- The missile was originally developed by the Dallas-headquartered Texas Instruments, but is now produced by the major American defence contractor Raytheon Corporation.
- The AGM-88 HARM is 14 metres in length, but only 10 inches in diameter. It weighs around 360 kg and carries a fragmentation type warhead that is optimised for radar targets. It also has an anti-radar homing seeker broadband RF antenna and receiver, and a solid state digital processor. The missile has a range of more than 100 km.

❖ How do we know that it was being used against Russia?

- For the past several days, Russian social media users have been sharing open-source information on Telegram to the effect that remnants of the AGM-88 HARM have been found near a Russian surface-to-air missile site. The pictures of the seeming remnants of the missile appeared to show genuine serial numbers, which were traced to AGM-88 HARM by open source intelligence analysts. The statement by the US has now confirmed these deductions.

❖ Do the Ukrainians have a platform to use these missiles?

- It would appear that only Western military groups have the required fighter aircraft to use these missiles, and that the AGM-88 HARM cannot be fitted and used on the Russian-origin aircraft that Ukraine has in its fleet. Several NATO aircraft in Europe — including the Tornado ECR, F-16CM Block 50, and F/A-18-EA-18G — can fire the AGM-88 HARM missiles.
- The Russia-Ukraine war is the first in which the weapon has been confirmed to have been used by a military other than the US. However, its usefulness, considering the limited number of aircraft in the Ukrainian Air Force, remains in question. According to some report Ukraine does not have aircraft known to be compatible with the missile, there is speculation that the missiles may have been fired by NATO aircraft secretly supporting the Ukraine military in combat roles.

❖ Is there no way the missile can be used by Ukraine’s Russian-origin aircraft?

- Theoretically, it is possible to use the AGM-88 HARM in a limited mode in a Russian-origin aircraft. However, this would have required a lot of fast-moving research and development which may not have been possible in Ukraine itself due to the extended conflict. Northrop Grumman had tested a land-based version of the missile, but it did not achieve the required parameters.

2. Foreigners' Tribunals

❖ **CONTEXT:** The Gauhati High Court has asked the Centre and the Assam government to decide collectively whether the ministerial staff for 200 additional Foreigners' Tribunals would be appointed.

- Foreigners' Tribunals (FT) are quasi-judicial bodies established as per the Foreigners' Tribunal Order, 1964 and the Foreigners' Act, 1946.
- It is unique to Assam (due to Assam's National Register of Citizens).

- Establishment - In the beginning, the powers to constitute tribunals were vested only with the Centre.
- The Ministry of Home Affairs (MHA) has amended the 1964 Order to empower district magistrates in all States and UTs to set up tribunals to decide whether a person staying illegally in India is a foreigner or not.
- Powers of Tribunal - According to the Foreigners' Tribunal Order, 1964 the Foreigners' Tribunal,
 - Shall have the powers of a civil court while trying a suit under the Code of Civil Procedure, 1908.
 - Can summon and ask for the attendance of any person and examine him/her on oath.
 - Can ask anyone to produce the required documents,
 - Can commission examining any witness, as and when required.
- Working - Under the provisions of Foreigners' Act, 1946 and Foreigners Tribunal Order, 1964, only Foreigner Tribunals have the right to declare a person as a foreigner.
- The FT is for those who have been left out in the final NRC list or have been marked as 'D' ('doubtful'). The ones falling under this category have the right to appeal to the Foreigners Tribunal.
- Thus, non-inclusion of a person's name in the NRC does not by itself amount to him/her being declared a foreigner.
- However, if declared a foreigner or placed under the doubtful category 'the burden of proof lies with the accused'.
- If a person allegedly fails to prove their citizenship before the Foreigners' Tribunal after the State police's Border wing marks him or her as an illegal immigrant, they will be marked as a declared foreigner (DF).

❖ Res judicata

- In law, there is a principle known as res judicata, which (barring exceptional circumstances) prevents anyone from reopening an issue that has been decided by a court.
- The purpose behind res judicata is to prevent the continuous harassment of ordinary people by powerful authorities, such as the State.
- This principle protects individuals against State impunity.
- However, the Gauhati high court (HC) in 2018 held that foreigners' tribunals were not bound by the principle of res judicata.
- In this judgment, the HC noted that technically, FTs did not render judgments, but opinions, about whether or not a specific individual was a foreigner or an Indian citizen.
- It was then for the government to decide - based on this opinion - what action to take (detention or deportation of a "declared foreigner").

3. One District One Product (ODOP)

- ❖ **CONTEXT:** The Ministry of Commerce and Industry unveiled a digital version of ODOP gift catalogue.
- ❖ **ODOP initiative:** It was launched by the Ministry of Food Processing Industries, to help districts reach their full potential, foster economic and socio-cultural growth, and create employment opportunities, especially in rural areas. The scheme aims to turn every district in India, into an export hub through promotion of the product in which the district specialises. The Department for Promotion of Industry and Internal Trade is an important stakeholder. In the scheme, the ODOP product is identified by the state for a district. ODOP was first launched in Uttar Pradesh to create product-specific traditional industrial hubs across 75 districts of the state.

- ❖ **Benefits to Districts:** Existing micro-enterprises would be supported through capital investment. Enterprises producing ODOP products are given preference. In case of capital investment by groups, predominantly those involved in ODOP products would be supported. New units, whether for individuals or groups, would only be supported for ODOP products.

4. Goods and Services Tax Appellate Tribunal (GSTAT)

- ❖ **CONTEXT:** The high-level ministerial panel on Goods and Services Tax Appellate Tribunal (GSTAT) may decide on inclusion of state representation and ease qualifications for technical members of the appellate tribunal.

- In 2019, the Union Cabinet has approved the creation of National Bench of the Goods and Services Tax Appellate Tribunal (GSTAT) at New Delhi.
- However, the process could not move further due to stay order by the Madras High Court.
- The Central Goods and Services Tax (CGST) Act 2017 empowers the Central Government to constitute the GSTAT, on the recommendation of the GST Council.

- The GSTAT is the forum of second appeal in GST laws and the first common forum of dispute resolution between Centre and States.
- The appeals against the orders in first appeals issued by the Appellate Authority or the Revisional Authority under the Central and State GST Acts lie before the GSTAT.
- The GSTAT is common under the Central as well as State GST Acts.
- Being a common forum, GST Appellate Tribunal will ensure that there is uniformity in redressal of disputes arising under GST, and therefore, in implementation of GST across the country.
- Originally, it was decided that the GSTAT shall be presided over by its President and shall consist of
 - One Judicial Member and
 - Two Technical Members (one each from the Centre and States).
- According to the amendments proposed in the CGST Act, 2017, the GSTAT should have a President and consist of a technical member -either from the Centre or from a state.
- In addition to the principal Bench at New Delhi, the government would constitute a number of Benches at locations as may be recommended by the council.
- It would be based on the request of a state government, where applicable, the draft amendment proposed.

Problems

- The states at loggerheads with the Centre as they seek equal representation in the GSTAT.
- The GST Council, chaired by Finance Minister, had decided to constitute a Group of Ministers (GoM) to address various concerns raised by States in relation to constitution of the GSTAT.
- The panel is learnt to be in favour of easing the qualification criteria for technical members (state).

ANSWER WRITTING**Q. Under what circumstances can the Financial Emergency be proclaimed by the President of India? What consequences follow when such a declaration remains in force?**

The rationality behind the incorporation of Emergency provisions in the Constitution is to safeguard the sovereignty, unity, integrity and security of the country, the democratic political system, and the Constitution. During an Emergency, the central government becomes all powerful and the states go into the total control of the Centre. It converts the federal structure into a unitary one without a formal amendment of the Constitution. This kind of transformation of the political system from federal during normal times to unitary during Emergency is a unique feature of the Indian Constitution

Grounds of Declaration

Article 360 empowers the president to proclaim a Financial Emergency if he is satisfied that a situation has arisen due to which the financial stability or credit of India or any part of its territory is threatened. The 38th Amendment Act of 1975 made the satisfaction of the president in declaring a Financial Emergency final and conclusive and not questionable in any court on any ground. But, this provision was subsequently deleted by the 44th Amendment Act of 1978 implying that the satisfaction of the president is not beyond judicial review.

Consequences of Financial Emergency

The consequences of the proclamation of a Financial Emergency are as follows:

1. The executive authority of the Centre extends (a) to directing any state to observe such canons of financial propriety as are specified by it; and (b) to directions as the President may deem necessary and adequate for the purpose.
2. Any such direction may include a provision requiring (a) the reduction of salaries and allowances of all or any class of persons serving in the state; and (b) the reservation of all money bills or other financial bills for the consideration of the President after they are passed by the legislature of the state.
3. The President may issue directions for the reduction of salaries and allowances of (a) all or any class of persons serving the Union; and (b) the judges of the Supreme Court and the high court.

Thus, during the operation of a financial emergency, the Centre acquires full control over the states in financial matters. H N Kunzru, a member of the Constituent Assembly, stated that the financial emergency provisions pose a serious threat to the financial autonomy of the states. Explaining the reasons for their inclusion in the Constitution, Dr BR Ambedkar observed in the Constituent Assembly:

"This Article more or less follows the pattern of what is called the National Recovery Act of the United States passed in 1933, which gave the president power to make similar provisions in order to remove the difficulties, both economic and financial, that had overtaken the American people, as a result of the Great Depression."

MCQs

1. With reference to SSLV-D1/EOS-2 mission consider the following statements
 1. EOS-02 is an earth observation satellite designed and realised by ISRO
 2. SSLV is capable of launching Mini, Micro, or Nanosatellites (10 to 500 kg mass) to a 500 km planar orbit.Which of the above statement/s is or are correct?
a) 1 only b) 2 only c) **Both 1 and 2** d) Neither 1 nor 2
2. Consider the following statement with regards to GST Appellate Tribunal
 1. Goods and Services Tax Appellate Tribunal is the forum of first appeal in GST laws and the second common forum of dispute resolution between Centre and States.
 2. It is a statutory body created under GST Act 2017.Choose the correct statement using the codes given below?
a) 1 only b) 2 only c) Both 1 and 2 d) **Neither 1 nor 2**
3. One district one product is associated with which of the following ministry?
 - a) Ministry of Rural Development
 - b) **Ministry of food processing Industry**
 - c) Ministry of commerce and industry
 - d) Ministry of Small and Medium Enterprises
4. Consider the following with reference to foreigner's Tribunal
 1. Each Foreigner's Tribunal member is appointed under the Foreigners Tribunal Act, 1941
 2. A member can be a retired judicial officer only
 3. There is no foreigner's Tribunal in other states except AssamWhich of the above statement is or are correct?
a) 1 and 2 only b) **1 and 3 only** c) 2 and 3 only d) All of the above
5. AGM-88 HARM missile recently seen in news belongs to which of the following country?
 - a) Russia
 - b) Ukraine
 - c) Taiwan
 - d) **USA**
6. Which of the following statements is/are correct regarding the Panchayat Extension to Scheduled Areas (PESA) Act 1996?
 1. All states are mandated to implement all provisions under this act.
 2. PESA conferred extensive powers to Gram Sabha, whereas state legislature was given an advisory role to ensure the proper functioning of Panchayats and Gram Sabhas.
 3. The power delegated to Gram Sabha cannot be curtailed by a higher level.Select the correct option answer using the code given below:
a) 1 and 2 only b) 1 and 3 only c) **2 and 3 only** d) All of these
7. 'PARVAZ' a scheme recently launched in which of the following state?
 - a) **Jammu and Kashmir**
 - b) Uttarakhand
 - c) Himachal Pradesh
 - d) Haryana
8. The Ross Sea is the world's largest Marine Protected Area (MPA) associated with
 - a) North Pacific Ocean
 - b) North atlantic ocean
 - c) **Southern ocean**
 - d) Indian ocean
9. In India, the term "Public Key Infrastructure" is used in the context of
 - a) **Digital security infrastructure**
 - b) Food security infrastructure
 - c) Health care and education infrastructure
 - d) Telecommunication and transportation infrastructure
10. With reference to Indian economy, consider the following:
 1. Bank rate
 2. Open market operations
 3. Public debt
 4. Public RevenueWhich of the above is/are component/components of Monetary Policy?
a) **1 and 2 only** b) 2 and 3 only c) 3 and 4 only d) 1 and 4 only