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**EVERY SUNDAY**

**SESSION - 4 HANDOUT**

*Sunday*  
**MANZHAN**

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**BANGALORE SCHOOL  
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**Today's Current affairs class, we will be covering the following topics**

Space technology: India's Launch vehicles- with special reference to GSLV and PSLV

International Affairs: middle East crisis with special reference to Iran

Disaster management: With special reference to 2015 Sendai disaster framework and the cause behind the Chennai floods

Government programmes: Pradhanmantri fasal bima yojana

**INDIAN SPACE PROGRAMME-1**

Q. GSLV is a 3 stage satellite launch vehicle. Select the correct order with respect to the fuel used in 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> stage of GSLV

- a. Solid-Liquid-cryogenic
- b. Solid-cryogenic-liquid
- c. Cryogenic-liquid-solid
- d. Liquid-solid-cryogenic

Q. Consider the following regarding PSLV and GSLV

1. PSLV are used to place remote sensing satellites to Sun-synchronous polar orbits only while GSLV can place satellites into Geosynchronous Transfer Orbit (GTO)
2. GSLV is more powerful and reliable launch vehicle than PSLV

3. GSLV has four stage cryogenic system while PSLV has three stage solid and liquid propulsion system

Identify the Correct Statement/s

- a. 1, 2 and 3
- b. 2 and 3
- c. 1 and 2
- d. None

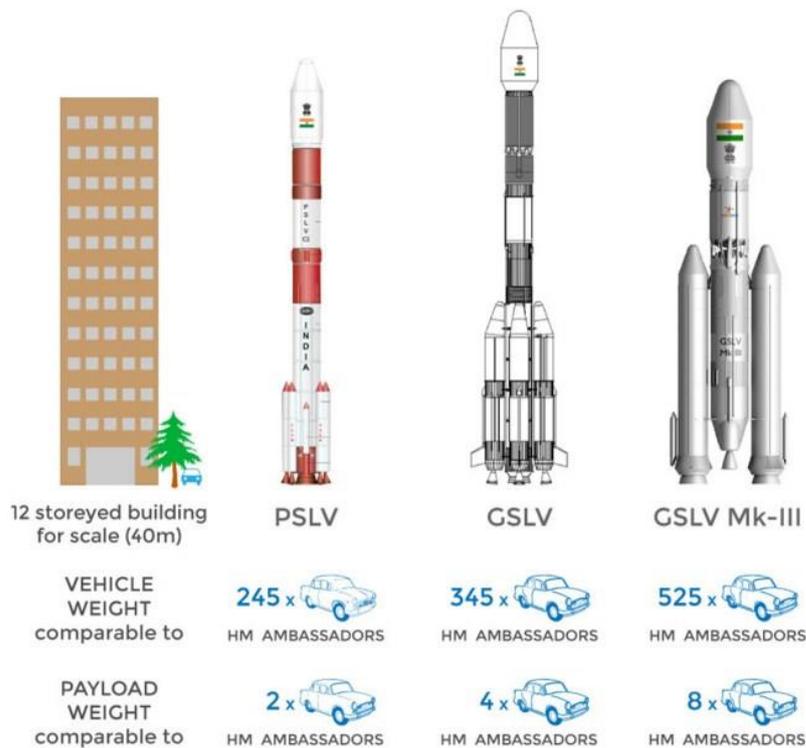
Q. With respect to GSLV-D6 identify the incorrect statement:

- a. It placed GSAT-6 into Polar transfer orbit
- b. It was the second successful consecutive launch of the GSLV series
- c. It used indigenously developed cryogenic engine
- d. It was the 9<sup>th</sup> GSLV launch

**We will be covering Indian Space programme under following head**

1. Communication Satellite: INSAT (Indian National Satellite System), GSAT series: Currently 9 orbiting satellite
2. Earth Observing Satellite: IRS (Indian Remote sensing satellite), RESOURCESAT-1 and 2, CARTOSAT-1, 2, 2A, 2B, RISAT-1 and 2, OCEANSAT-2, Megha-Tropiques and SARAL. Currently 11 orbiting satellite
3. Satellite Navigation system: GPS Aided GEO Augmented Navigation (GAGAN) and Indian Regional Navigation Satellite System (IRNSS)
4. Scientific exploration: Mars Orbiter Mission, Chandrayan
5. Launch Vehicles: SLV, ASLV, PSLV and GSLV

## Launchers - Overview



## GSLV

## In News: GSLV- D6

- Was primarily developed to launch INSAT class of satellites into Geosynchronous Transfer Orbits
- Used for launching GSAT series of satellites.
- Three stage launcher- one solid rocket motor stage, one Earth storable liquid stage and one cryogenic stage.
- The most recent flight of GSLV, the GSLV-D6, placed GSAT-6 into its planned orbit and marked the second successful flight of the indigenous cryogenic stage.
- Payload to GTO: 2,500 kg
- Payload to LEO: 5,000 kg
- The 2,117 kg-weighting GSAT-6 communication satellite is aimed at primarily benefiting the country's strategic users and other specific authorised users
- The cryogenic stage- "technically a very complex system" but "is more efficient and provides more thrust for every kilogram of propellant it burns"
- The cryogenic C25 stage engine operates on Gas Generator Cycle using extremely low temperature propellants Liquid Hydrogen at 20 Kelvin (-253 degree C) and Liquid Oxygen at 80 Kelvin (-193 degree C).
- Applications of Cryogenics: Aerospace-cryogenic engines, Medical Field, Manufacturing field, Electronics Field, and Fuels Research

## In news: PSLV- C31

- PSLV-C31 successfully put into orbit IRNSS-1E, the fifth satellite of the Indian Regional Navigation Satellite System (IRNSS) after its successful launch from the Satish Dhawan Space Centre (SDSC), SHAR, Sriharikota
- PSLV-C31 for the eleventh time used 'XL' version of PSLV.
- IRNSS-1E, with a liftoff mass of 1425 kg, carried navigation payload and ranging payload
- Some 19 minutes after it lifted off from Second Launch Pad of the SDSC at 9.31 am., PSLV-C31 placed the satellite in precise orbit.
- PSLV C-31 rocket has successfully launched IRNSS-1E satellite in orbit
- The configuration of IRNSS-1E is similar to that of IRNSS-1A, 1B, 1C and 1D launched by PSLV-C22, PSLV-C24, PSLV-C26 and PSLV-C27 in July 2013, April 2014, October 2014 and March 2015 respectively.
- The ranging payload of IRNSS-1E consists of a C-band transponder which facilitates accurate determination of the range of the satellite. IRNSS-1E also carries Corner Cube Retro Reflectors for laser ranging.
- Besides the deployment of the constellation of seven satellites, the ground segment comprises 13 Indian Range and Integrity Monitoring Stations, a IRNSS Network Timing Centre, a ISRO Navigation Centre and a Space Control Facility.
- IRNSS, an independent regional navigation satellite system, is designed to provide accurate position information service to users in India as well as the region extending up to 1,500 km from its boundary.
- The system is expected to provide a position accuracy of better than 20 metre in the primary service

Q. Differentiate between GSLV and PSLV. What are the significance of the recent GSLV D-6 launch to Indian space programme?

### Middle east crisis

**You have to focus on- Iran crisis, Israel and Palestine crisis, growing ISIS problem, sectarian war in middle east etc**

**Q. Briefly explain the Iran nuclear crisis. Critically evaluate the impact on India the decision of US to lift sanctions on Iran.**

**In News: U.S. lifts sanctions on Iran**

- The U.S. on Saturday removed a wide range of sanctions against Iran after the International Atomic Energy Agency (IAEA) confirmed that Tehran had met its commitments to roll back its nuclear programme, under an agreement with China, France, Russia, the U.K., the U.S. and Germany on July 14 last year.
- A White House official described the development as "historic."

- The U.S. has only removed secondary sanctions that restrict the dealings of other countries with Iran. Primary sanctions that bar U.S. citizens and companies from business with Iran will remain
- However, the removal of restrictions on its oil, petrochemicals, banking, natural gas and port sectors will hugely benefit Iran and allow it to re-enter the global market. Iran will be able to access the huge amount of cash it has accumulated overseas from restricted oil sales during the sanctions. Most of this money is sitting in China, India, Japan, South Korea and Turkey.

**Significance of this decision:**

- The removal of restrictions on its oil, petrochemicals, banking, natural gas and port sectors will hugely benefit Iran and allow it to re-enter the global market.
- Iran will be able to access the huge amount of cash it has accumulated overseas from restricted oil sales during the sanctions. Most of this money is sitting in China, India, Japan, South Korea and Turkey.
- This has also put out 400 Iranians and entities out of US Blocked Persons List.

**What Iran had to do:**

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- All the excess stockpile and nuclear parts are kept at an IAEA-monitored location.
- Iran has reduced its enriched uranium stockpile.
- It has reduced the number of installed centrifuges by two-thirds.

**How India will Benefit:**

- The lifting of the sanctions on Iran will benefit India with lower oil prices and more opportunities for trade. India reportedly owes Iran \$6.5 billion for crude oil purchases, the payment of which has so far been held up due to the sanctions.
- The lifting of sanctions also removes an important hurdle — U.S. pressure to hold off on the deal — in the proposed India-Iran gas pipeline.
- One of the major construction projects in Iran that India has taken an interest in is the development of the Chabahar Port. Now Indian companies will be able to get contracts for this project.

## Disaster Management

**Focus on: India's disaster vulnerability, India's Disaster management mechanism, Global initiatives and any recent disaster.**

Q. What are the priorities and global targets of- 'Sendai framework for Disaster risk reduction 2015-30'. Explain how international agreements and collaborations are helpful in reducing disaster risk.

**In news: Sendai Framework for Disaster Risk Reduction**

The “Sendai Framework for Disaster Risk Reduction 2015-2030” was adopted during the Third UN World Conference on Disaster Risk Reduction held in Sendai, Japan in March, 2015.

It is the first major agreement of the post-2015 development agenda, with seven targets and four priorities for action.

It was endorsed by the UN General Assembly following the 2015 Third UN World Conference on Disaster Risk Reduction (WCDRR).

The Framework is for 15-year. It is a voluntary and non-binding agreement which recognizes that the State has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government, the private sector and other stakeholders.

The new Framework is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters.

The implementation of the Sendai Framework involves adopting integrated and inclusive institutional measures so as to work towards preventing vulnerability to disaster, increase preparedness for response and recovery and strengthen resilience.

The Seven Global Targets:

1. Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality rate in the decade 2020-2030 compared to the period 2005-2015.
2. Substantially reduce the number of affected people globally by 2030, aiming to lower average global figure per 100,000 in the decade 2020 -2030 compared to the period 2005-2015.
3. Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.
4. Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.
5. Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.
6. Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this Framework by 2030.
7. Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

The Four Priorities for Action under the Framework:

1. Understanding disaster risk
2. Strengthening disaster risk governance to manage disaster risk
3. Investing in disaster risk reduction for resilience

4. Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction

### **In News: Chennai Floods**

Q. What are the reasons for increase in urban flooding with special focus on the recent Chennai flooding.

### **What are the underlying causes?**

#### **El Nino**

- The El Niño is a weather phenomenon resulting in warmer than expected ocean temperatures in the central and eastern parts of the tropical belt of the Pacific Ocean.
- Parts of this oceanic zone have already hit record temperatures this year, setting the 2015-16 El Niño well on its way to a record intensity, with potential impacts across the world encompassing the range of events, including searingly high temperatures, droughts and intense rainfall.
- The World Meteorological Organisation has been producing regular updates on the scale of this year’s El Niño, and its expected impact was a significant contributor to the India Meteorological Department’s forecast of a deficient south-west monsoon, a forecast that was spot on.
- The same weather system was also expected to have an opposite impact on the north-east monsoon — the one that southern India experiences in its winter months — but the impact on the southern monsoon is much less clearly established

#### **Indian Ocean Dipole**

- A positive Indian Ocean Dipole — warmer sea temperatures in the western Indian Ocean and a cooler eastern Indian Ocean — kept ocean temperatures high in the south Bay of Bengal resulting in strong weather systems in the South Andaman Sea

#### **Upper air divergence**

- What happened on December 1, however, when clouds dumped up to 490 mm of rain on parts of Chennai over 24 hours went beyond El Niño.
- El Niño affects the whole season and is not responsible for individual episodes of intense rain
- An individual episode like that on December 1 is a combination of several factors and in every such episode, the combination changes.
- On December 1, the lower-level moisture supply was high and upper air evacuation of the moisture was also strong. We call this phenomenon **upper air divergence**, and the effect is that the cloud becomes very intense. Both coincide very rarely

#### **Temperature**

- At the same time, 2015 is on course to being the hottest-ever year recorded both globally, and as was recently confirmed by the IMD.
- The same holds for ocean temperature. The United States' National Oceanic and Atmospheric Administration has established that the Indian Ocean's temperature in October 2015 was the record hottest.
- One of the most confidently predicted consequences on warming land and oceans is an increase in evaporation that could provide more fuel for more intense rainstorms on land. The recent extreme rains in Chennai surely seem to fit that trend

### **Climate change**

- Such episodes of intense episodic rainfall are only going to become more frequent. In 2009, an Indian Institute of Tropical Meteorology study found an alarming rise in the number and intensity of "extreme point rainfall events".
- The 2011 Intergovernmental Panel on Climate Change, too, predicted an increase in the probability of extreme weather events as a result of climate change.

### **Anthropogenic factors or local civic infrastructure**

- If these phenomena explain to some extent the intensity of the rainfall, the flooding is also substantially explained by the civic disrepair that has left nowhere for the water to go, and little means of conveying information.

### **Release of water from reservoir**

- On December 2, PWD officials were releasing 30,000 cusecs from the Chembarambakkam reservoir. PWD officials insist that the discharge was necessary as they could not afford to risk the safety of the reservoir.
- Consequently, the Adyar was in spate, flooding most parts of the southern and even central parts of the city.
- While the flooding of the southern parts is recurring during winter, the flooding in the heart of the city exposed the government's unpreparedness in anticipating the floods based on water release into the Adyar and in disseminating information in advance for the residents to act.

### **Unplanned urbanisation**

- The worst affected were the southern suburbs that witnessed an unplanned real estate boom in the last decade with unapproved layouts springing up adjacent to wetlands and water bodies.
- Since the panchayats are unable to regulate unauthorised construction, residential development in low-level areas has mushroomed.
- Since the channels are also blocked, the inundation lasts longer.
- Some time ago, there was talk of delineating river corridors and mapping of flood plain zones to enable the residents to know the flood risk factor of their localities but it did not materialise.

**Storm water drains**

- Added to this was the inadequacy of drains. Most parts of the old city were relatively safe from flooding this time.
- Of the Corporation's area, the 172 sq. km of the old city have storm water drains while the remaining 254 sq. km have no storm water drains but only drains constructed by the local bodies that are not connected to the rivers.
- As of now, civic officials say the storm water drains could handle only 3 cm of rainfall an hour. With expertise from the Netherlands and other European nations, they are working on a design to handle 6.8 cm of rainfall.
- The city is also getting World Bank funding to the tune of Rs. 1,000 crore for developing watersheds in the Adyar and Cooum basins. Thirty-nine packages have been finalised, and work orders issued.

### Agricultural scheme

You will have to focus on- Flag ship scheme, any new schemes- its impact and over all relevance to agricultural situation in India

#### **PRADHAN MANTRI FASAL BIMA YOJANA – A BOOST TO THE FARMING SECTOR**

Q. Discuss the salient features of Pradhan Mantri Fasal Bima Yojana and examine how will this scheme is better than the earlier insurance schemes.

#### **The highlights of this scheme**

- There will be a uniform premium of only 2% to be paid by farmers for all Kharif crops and 1.5% for all Rabi crops. In case of annual commercial and horticultural crops, the premium to be paid by farmers will be only 5%. The premium rates to be paid by farmers are very low and balance premium will be paid by the Government to provide full insured amount to the farmers against crop loss on account of natural calamities.
- There is no upper limit on Government subsidy. Even if balance premium is 90%, it will be borne by the Government.
- Earlier, there was a provision of capping the premium rate which resulted in low claims being paid to farmers. This capping was done to limit Government outgo on the premium subsidy. This capping has now been removed and farmers will get claim against full sum insured without any reduction.
- The use of technology will be encouraged to a great extent. Smart phones will be used to capture and upload data of crop cutting to reduce the delays in claim payment to farmers. Remote sensing will be used to reduce the number of crop cutting experiments.
- The new Crop Insurance Scheme is in line with One Nation – One Scheme theme. It incorporates the best features of all previous schemes and at the same time, all previous shortcomings/weaknesses have been removed.
- It is farmers' welfare scheme that aims to reduce the premium burden on farmers and ensure early settlement of crop assurance claim for the full insured sum

### Significance

- Robust cushion to our farmers
- Encourage them to consider investing more on inputs and crop protection solutions thereby adding to overall yield and production.
- The contribution of farmers in premiums will be substantially reduced between 1.5 and 5 per cent – and the government will bear the remaining financial burden even if the share of the government increases beyond 90 per cent. Under the PMFBY, there will be only one premium rate for each season for all foodgrain, oilseeds and pulses.
- Under the PMFBY, farmers would pay only 2 per cent premium for all kharif, 1.5 for rabi and 5 per cent for horticulture crops. Previous premiums ranged between 8 and 12 per cent
- Old systems lacked transparency and systemic inefficiencies which will now be addressed.
- Under earlier scheme Compensation took a long time and process of claims and disbursement was riddled with corruption, which will be addressed by the new scheme
- It also assumes significance as the government has been working towards spreading financial literacy by providing access to the common man to insurance products. Starting a new crop insurance scheme can be viewed as an extension of the same ideology.
- For the first time, inundation and post harvest losses arising out of cyclone and unseasonal rains have been included under localised risk cover, major improvements over the previous schemes.
- The scheme is also likely to rationalise government spends – as against its current annual spend of about Rs 5,000 crore on disaster relief, the new scheme is likely to cost Rs 8,000-9,000 crore, which shall only mean an incremental addition.

### Areas of concern

1. We have to ensure the land records are in place and digitised including their linkages with the Aadhaar card number of the farmers.
2. The assessments of crop losses have to be done in a time bound manner, and using high-end technologies such as automatic weather stations (AWS), drones, Low Earth Orbits (leos) and satellites.
3. Payment to farmers should be done directly into their accounts.
4. Insurance companies and government departments dealing with this must be geared to deal with high volumes
5. Weather data of all regions should be adequately captured so that forecasts and assessments are done expeditiously
6. Creating awareness among farmers, and especially the small peasants who are more vulnerable, is going to be vital for the spread of the programme.
7. Those assigned the task of making crop loss assessment should be adequately trained.