Science & Tech CLASS-7

24-07-20

Topics - 1. Jet Engine Tech.
2. UNOOSA & Space law
3. Space Mission → Indian → Successful → Chandryan-I, Mangalyan-I, Astrosat, Chandryan-II
Indian → future → Chandryan-III, Mangalyan-II, Shukaryan
Indian → International Space Mission → ISS
4. GPS
5. Telescope

Jet Engine Technology

Conventional Plane	Jet Plane
• Troposphere + stratosphere	• Stratosphere.
• Horizontal & Vertical winds flow.	• Horizontal
• O_2 available here	• O_2 available here
• Oxidiser not required	• Oxidiser not require.

Mach No. at 0°C temp, speed of sound in air.

1 mach no ⟶ 332 m/s

(2)

Subsonic — < 1 mach
Supersonic — 1>, ≤ 5 mach
Hypersonic — More than 5 Mach.

Brahmos
I — 2.5–2.8 Mac
II — 8 Mach

Types of Jet Engine

- Turbojet (15 km height → subsonic (< 1 mach)
  Ranjet (25 km height) → supersonic (3–6 Mach)
  Scramjet (35 km height) → Hypersonic (upto 24 Mach)

Scramjet
Supersonic combustion Ranjet Engine
→ India has a successful test on Scramjet Engine – 2016

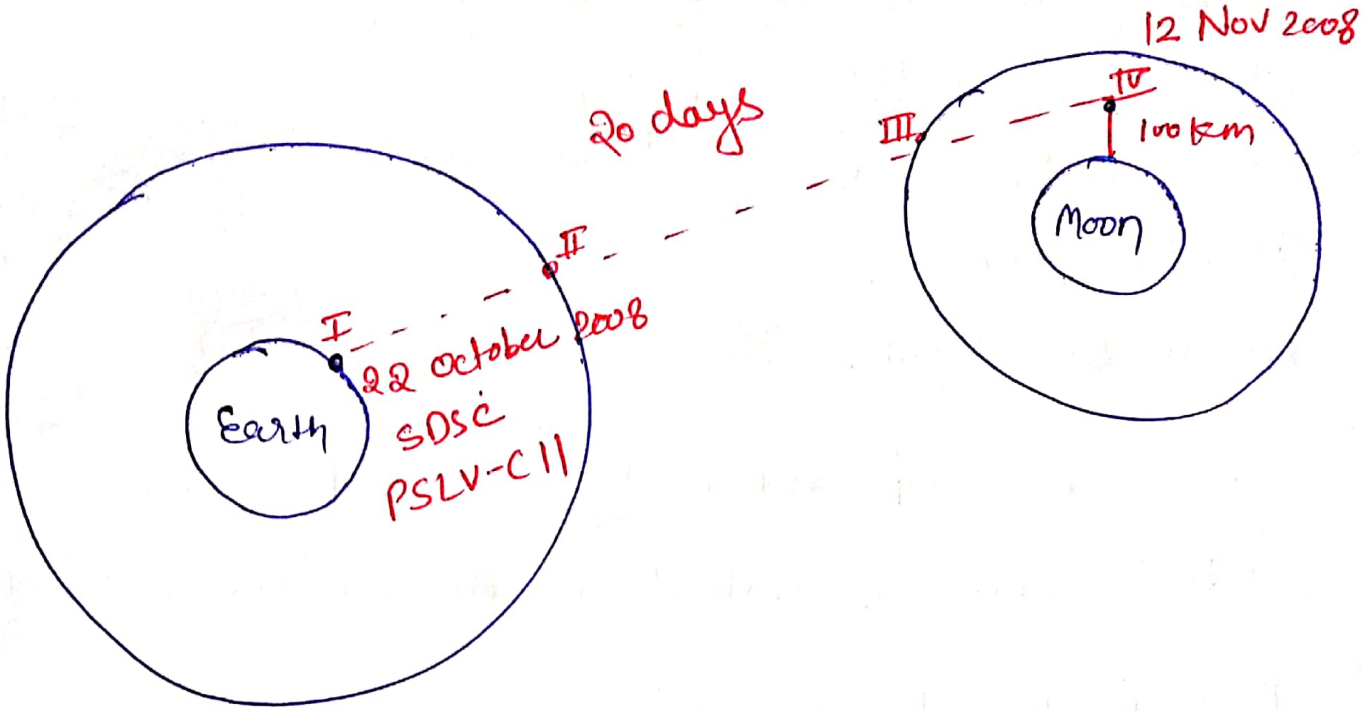
UNOOSA (United Nation office for Outer Space Affair)

2016 – Scramjet → TD.

→ It is a body to solve the dispute problem related to space.
→ Space Laws

Space Mission of India

CHANDRAYAN -I



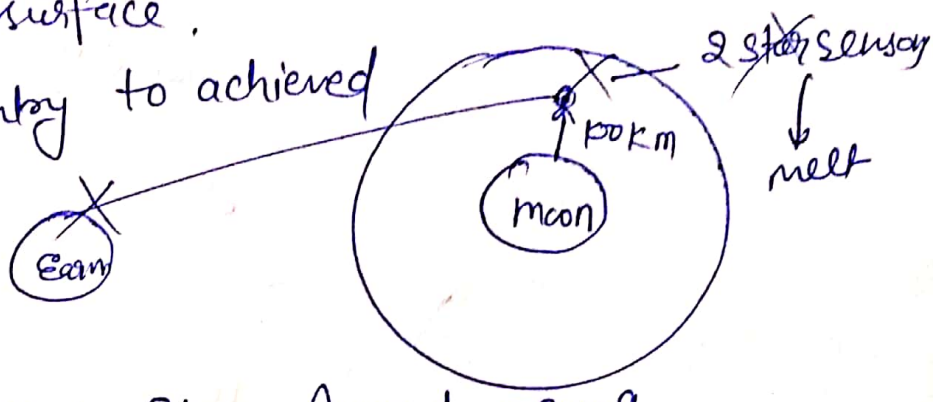
→ 1st interspace mission of India
→ Unmanned lunar mission.

→ Launch mass → 1380 kg
→ Expenditure → ₹ 380 Coore
→ Lifespan → 2 years.
→ Total pay load → 11
→ Total Countries → 20
- EU (17)
- NASA
- Bulgaria
- India

→ Life span → 2 year
↳ 312 days / ISRO official → 90% achieved
- 80,000 photographs.
- More than 3000 times orbital moon.

④

- Iron bearing minerals ie- Pyroxene
- Presence of water also detected by Chandryan - NASA Payload.
- 100 km from the surface.
- India is the 5th country to achieved it after USA, Russia, EU, Japan.



- India Received AIAA Space Award - 2009.

AIAA (American Institute of Aeronautics & Astronautics)

Mangalyan - I

Why Mars = ?
- Similarity
- Seasonal Variation
- Oceans - Salinity

Factual Data of Mars Mission

- 5th Nov 2013 → Martian transfer orbit Sep 2014.
- launched from SDSC
- launched by PSLV-C25
- Called as MoM (Mars orbital Mission)
- Payloads - 6

5 year done

Sep-2019

- 1st Indigenous Mission
- After Success → Space Pioneer Award (USA) achieved.
  → ISRO received Indira Gandhi Prize for Peace Disarmament & Development.

→ India – 4th [1. USA, 2. Russia, 3. European Union]

Better – ?

→ In 1st attempt India successful

→ Our mission is cheapest among all earlier mission. (₹ 450 Crore)

Astrosat

→ Multiwavelength observatory (MWO)

→ launched in 2015 with the help of PSLV-C30 at SDSC in LEO 650 km

→ launched mass – 1513 kg.

Chandrayaan-II

Chandrayaan – I

→ 22 oct 2008, SDSC, PSLV-C11

→ Launch Mass – 1380 kg

→ Orbiter – (100 km)

→ Total 20 Country

Chandrayaan – II

22 July 2019, SDSC, GSLV-MK-III

Launch mass – 3877 kg

Orbiter – (100 km Height)

Lander → Vikram

Rover → Pragyan

→ It is totally Indigenous

⑥ (Geology)
↑
"Biosignature" → Soil sample of moon,
(Past life & Present life)
↑
Chemical testing
↑
Soil Sample → Rover (Pragyan)

Southern side
↙
Dark Region ① → Water possibility ③ → ④
No (not much effect to Sun light ②

Future Missions of India

Chandrayaan-3 and Lunar Polar Exploration Mission → 2019-20 & 2020

Aditya Mission → 2020-2021
Gaganyaan → 2022
SHUKRAYAAN → 2023
MOM-2 → 2024
India's Space Station → 2025 + 2030