IAS WITH DR RAVI
AIM. PREPARE. ACHIEVE

Day 11 | English edition | Topics 101-110

Study Notes and Sources

Practice questions and explanations:
download the separate MCQ Practice PDF.

Topics in this booklet

101	Mughal administration: mansabdari and land revenue
102	Chandragupta Maurya and Bindusara
103	National Human Rights Commission and the Protection of Human Rights Act
104	Amendment procedure: Article 368
105	Special Category Status and Special Assistance for Andhra Pradesh
106	Rainfall: types and world distribution
107	Climate change agreements: UNFCCC, Kyoto Protocol and Paris Agreement
108	Decision making: types and steps
109	BODMAS and simplification
110	Current affairs: LVM3-M6 and the BlueBird Block-2 satellite (December 2025)

PART 1 · STUDY NOTES · TOPIC 101

Mughal administration: mansabdari and land revenue

History & Culture | Unit A-3

1. Concept in one line

The Mughal emperor ruled through ministers with separate duties and parallel officers in every province, gave every officer a rank (mansab) that fixed his status, pay and troops, and drew his income mainly from land revenue, which in the core provinces was assessed by measuring the land (the zabt system). The examination asks which officer did what, what the terms of the mansab and jagir system mean, and how the land revenue was fixed.

2. Revision notes

2.1 The emperor and the central ministers

- The emperor appointed, promoted and dismissed the ministers, whose duties were well defined (Britannica).
- **The wakil and why the post faded:** the wakil was the highest officer next to the emperor. Bairam Khan held the post as Akbar's regent from 1556 to 1560, with the title Khan-i-Khanan (Topic 91). Akbar's experience with Bairam Khan warned him against giving all powers to one minister. After Bairam Khan's fall the work of the wakil was divided among separate ministers. The post was still given to great nobles from time to time, but they played little part in administration.
- **Where books differ:** Britannica names four central departments: the wakil, the diwan, the mir bakhshi and the sadr. Ikram puts the mir saman in place of the wakil, whose post he treats as mainly an honour.

Office	Duty	Points to note
Wakil	Prime minister, the highest officer next to the emperor	Its powers were divided after Bairam Khan's fall in 1560
Wazir or diwan (diwan-i-ala or diwan-i-kul)	Revenue and finance: all income and expenditure, and control over the jagir and inam lands	NCERT calls the diwan-i-ala the finance minister. Raja Todar Mal, a Khatri, held this charge under Akbar
Mir bakhshi	Paymaster general of the army. He presented the candidates for mansabs, saw to the branding of horses and the checking of troops, and kept the records of the mansabdars	He was also the head of military intelligence: the reports of the news writers came to him. In open court he stood on the emperor's right (NCERT)
Mir saman (khan-i-saman)	The imperial household, its stores and its workshops (karkhanas)	The title was rarely used under Akbar
Sadr-us-sudur	Religious grants (madad-i-maash) to scholars and religious men, charity and education	NCERT says he also appointed the local judges (qazis). Britannica calls the sadr the chief justice and religious official
Qazi-ul-quzat	The chief judge, at the head of the judiciary	He decided cases by Islamic law. One set of university notes says he appointed the qazis of the empire; NCERT gives this to the sadr

Office	Duty	Points to note
Muhtasib	Censor of public morals	He enforced the rules of the market and tried to prevent gambling and the use of intoxicants

- **The news writers:** the waqia navis was a news writer posted at every suba capital and with the major camps; he reported the events of his area. The sawanih nigar wrote longer reports on incidents and conditions. The khufia navis was a secret letter writer. At court the mir bakhshi supervised the waqia navis, who recorded all applications, documents and imperial orders (farman) (NCERT).

2.2 Provinces and local administration

- **Subas (provinces):** the Ain-i-Akbari of Abul Fazl has an "Account of the Twelve Provinces". The Deccan conquests added Berar, Khandesh and Ahmadnagar, so there were 15 subas at Akbar's death (Topic 91; Britannica). Later conquests raised the number to about 21 (sources give 20 to 22) by the end of Aurangzeb's reign.

Level	Head	Other officers
Suba	Subadar (governor). He reported directly to the emperor. Under Akbar he was called sipah salar; later, nazim	Diwan (in independent charge of the revenue of the suba; he reported to the imperial diwan), bakhshi, sadr and qazi, and news writers
Sarkar (district)	Faujdar, a commandant with a contingent of cavalry and musketeers, who kept order	Amalguzar, the revenue collector (NCERT spells it amil-guzar)
Pargana	Shiqdar, the executive officer	Amin (assessor), qanungo (keeper of revenue records), karkun (accountant) and a qazi
Village	Muqaddam (headman)	Patwari (keeper of the village accounts)
Town	Kotwal, the head of the town police	In the provincial capitals and big cities the central government appointed him

- These units are the same as Sher Shah's: sarkars divided into parganas, with a shiqdar and an amin in each pargana (Topic 81).

2.3 The mansabdari system

- **What a mansab was:** mansab means rank. NCERT: all holders of government offices held mansabs, so the same system ranked civil and military officers. The rank fixed the holder's status, his pay and the troops he had to keep. A mansabdar could be transferred anywhere in the empire and from a civil post to a military one.
- **Who made it:** NCERT says Akbar designed the mansab system. Ikram and Banglapedia say he classified the officers into 33 grades, from commanders of 10 to commanders of 10,000 (Ikram dates this to 1573 to 1574). The double rank of zat and sawar came in the later years of the reign (1595 to 1596 in some books).
- **Zat and sawar (NCERT):** the zat showed the officer's position in the imperial hierarchy and his salary. The sawar showed the number of horsemen he was required to maintain. Some older writers read the zat as a number of troops as well; give NCERT's meaning in the examination.
- **Nobles:** NCERT says mansabdars of 1,000 zat or above ranked as nobles (umara, the plural of amir).
- **The range of ranks:** until the middle of Akbar's reign the highest rank an ordinary officer could hold was 5,000. The grades between 7,000 and 10,000 were kept for the royal princes (Banglapedia, Ikram). In Akbar's reign there were 29 mansabdars with a zat of 5,000; by Aurangzeb's reign there were 79 (NCERT).

- **Three classes by the relation of sawar to zat:** first class, sawar equal to zat; second class, sawar half or more of the zat but less than it; third class, sawar less than half of the zat.
- **Dagh and chehra:** the mansabdar's horsemen were registered and their horses branded (dagh) before he received the money to pay them (NCERT). A descriptive roll (chehra) of each trooper was kept. The mir bakhshi's office saw to both.
- **Later changes:** Jahangir introduced du-aspa sih-aspa: for a designated part of a selected mansabdar's sawar rank, the cavalry obligation and corresponding payment were doubled without raising his zat. The term literally refers to two or three horses; it does not mean a general tripling of the sawar rank. Under Shah Jahan pay came to be fixed on a month scale: a mansabdar whose jagir yielded less than a full year's pay was allowed to keep fewer horsemen.
- **Not hereditary:** appointment, promotion and dismissal rested with the emperor; a son did not automatically inherit his father's mansab. On a noble's death, officials could take charge of his estate to settle the State's dues. The remainder could pass to his heirs, often under the emperor's supervision; confiscation of the entire estate was not an invariable rule.
- **Pay:** some mansabdars were paid in cash (naqdi), while the majority were paid through assignments of revenue (jagirs) (NCERT). Ikram adds that Akbar himself preferred cash salaries to the grant of jagirs.

2.4 Jagirs and khalisa

- **A jagir was an assignment of revenue, not of land.** NCERT: the jagirdars had rights only to the revenue of their assignments, which their servants collected for them. They usually did not live in or administer their jagirs.
- **Transfer:** jagirs were temporary. They were rotated from time to time, so that no jagirdar could build a hereditary base. The watan jagir of a Rajput chief, his own homeland, was the exception: it was hereditary and could not be transferred (Topic 91).
- **Khalisa:** land whose revenue went directly to the imperial treasury. One estimate puts it at about one-fifth of the total revenue demand under Akbar. A separate officer, the diwan-i-khalisa, was in charge of it.
- **The crisis of jagirs:** under Aurangzeb the number of mansabdars grew, many had to wait long for a jagir, and the revenue actually collected often fell short of the sum granted (NCERT). This comes in Topic 561.

2.5 Land revenue

- **Sher Shah's model (Topic 81):** he measured the land, worked out the average produce, took one-third as the State's share and turned it into cash through a schedule of crop rates (ray).
- **Raja Todar Mal,** a Khatri accountant who had served Sher Shah, was in charge of the imperial revenue from 1574. NCERT: he carried out a careful survey of crop yields, prices and areas cultivated for a 10-year period. On this basis each province was divided into revenue circles, each with its own schedule of revenue rates for individual crops. This is the **zabt** system.
- **Zabt** means fixed assessment: the demand was fixed in cash per unit of measured land. Zabt required land surveys and careful accounts. Under Akbar, it was not applied uniformly; its reach was limited in Gujarat and Bengal.
- **The dahsala (1580):** for each pargana the produce per bigha and the market prices of the ten years 1570-71 to 1579-80 were averaged. The State's share was valued at the average price and entered as a cash rate per bigha for each crop in the schedule of each revenue circle, the dastur (dastur-ul-amal).
- **Units:** the Ilahi gaz of Akbar, a yard of about 33 inches. The bigha was a square of 60 Ilahi gaz on each side, that is 3,600 square gaz. With a gaz of 33 inches this comes to about 0.6 acre (27,225 square feet). Some books give a lower figure, about 0.55 acre, which would need a gaz of about 31 inches. The measuring line (jarib) had been a rope; under Akbar it was made of pieces of bamboo joined by iron rings.

Class of land (Ain-i-Akbari, in NCERT)	Meaning	How it was assessed
Polaj	Cultivated every year for each crop in turn; never left fallow	Full rate. Good, middling and bad land was graded
Parauti	Left out of cultivation for a time to recover its strength	Full rate in the years it was sown. Good, middling and bad land was graded, as for polaj
Chachar	Fallow for three or four years	Lower rate at first, rising to the full rate
Banjar	Uncultivated for five years and more	Lowest, concessional rate

- **The share of the State:** the Ain says the produce of good, middling and bad land was added together and one-third of it taken as the medium produce; one-third of this medium produce was taken as the royal dues. So the State took one-third of the average produce. Habib argues that the share actually taken often came close to one-half.
- **Cash or kind:** Akbar wanted the cultivators to pay in cash, but the option of paying in kind was kept open (NCERT).
- **Jama and hasil:** the jama was the amount assessed; the hasil was the amount actually collected (NCERT).

Other method	How it worked	Where it is described
Batai (also called bhaoli)	The crop was reaped, stacked and then divided between the State and the peasant by agreement	NCERT, from the Ain. Many books call crop-sharing ghalla-bakhshi
Kankut	The crop was estimated (kan means grain, kut means estimate), usually as it stood in the field	NCERT, from the Ain
Nasaq	A rough assessment, fixed by reference to the records of past collections	Habib's account, on Wikipedia

2.6 Zamindars and peasants

- **Zamindars:** the Mughals used this one term for all the intermediaries, whether local headmen of villages or powerful chieftains (NCERT). The revenue was usually collected through them.
- NCERT, Class XII: the zamindars held extensive personal lands called milkiyat (property), led the spread of cultivation to new land and gave cultivators the means of cultivation, including cash loans.
- **Khud-kashta** peasants were residents of the village in which they held their lands.
- **Pahi-kashta** peasants were non-resident cultivators, who belonged to some other village.

3. Extra section: the zabt assessment, step by step

Step	What the officers did
1. Measure	The cultivated land was measured with the bamboo jarib, and its area written in bighas of the Ilahi gaz
2. Classify	Each plot was entered as polaj, parauti, chachar or banjar
3. Find the average	For polaj and parauti, the produce per bigha of good, middling and bad land was added, and one-third of the total taken as the medium produce
4. Take the share	One-third of the medium produce was the State's share

Step	What the officers did
5. Turn it into cash	The share was valued at the average price of the ten years and entered as a cash rate per bigha for that crop in the dastur of the revenue circle
6. Assess and collect	The cash rate multiplied by the area under each crop gave the jama; what was actually collected was the hasil

A worked example (imaginary figures, for practice only):

- Produce per bigha of one crop in a revenue circle: good land 18 maunds, middling land 12 maunds, bad land 6 maunds.
- Step 3: 18 + 12 + 6 = 36 maunds. One-third of 36 = 12 maunds, the medium produce.
- Step 4: one-third of 12 = 4 maunds per bigha, the State's share.
- Step 5: at an average price of 20 dams a maund, the cash rate is 4 × 20 = 80 dams per bigha. At 40 dams to the rupee, that is 2 rupees per bigha.
- Step 6: a peasant with 10 bighas of polaj land under this crop owes 10 × 80 = 800 dams, that is 20 rupees. That is his jama; what the amalguzar actually collects is the hasil.

What the example shows: one-third of one-third is not one-ninth of the good land's produce. It is one-ninth of the total of the three grades added together (36 ÷ 9 = 4), which is the same as one-third of their average.

4. Three common exam traps

1. **What the dahsala was named after, and where zabt ran.** The word refers to the ten years, 1570-71 to 1579-80, whose average produce and prices fixed the cash rates; the settlement was proclaimed in 1580. Todar Mal made it as Akbar's revenue officer; his earlier service was under Sher Shah, whose schedule was the ray. Under Akbar, zabt was not applied uniformly across the empire; its reach was limited in Gujarat and Bengal. Crop-sharing, kankut and nasaq were also used.
2. **The four classes of land go by how long the land lay fallow.** Polaj was never left fallow; parauti rested for a time; chachar lay fallow for three or four years; banjar for five years and more. Do not mix up parauti with chachar. Do not mix up the peasants either: the khud-kashta lived in the village where they held land, and the pahi-kashta came from another village.
3. **The level of each officer, and the number of subas.** The faujdar headed a sarkar; the shiqdar a pargana; the kotwal a town; the muqaddam a village. The Ain-i-Akbari describes twelve provinces; there were 15 at Akbar's death, after the Deccan conquests, and about 21 (sources give 20 to 22) by the end of Aurangzeb's reign.

PART 1 · STUDY NOTES · TOPIC 102

Chandragupta Maurya and Bindusara

History & Culture | Unit A-1

1. Concept in one line

Chandragupta Maurya overthrew the Nanda kings of Magadha around 321 BCE and founded the Mauryan empire, and his son Bindusara succeeded him. The examination asks which source tells us what about them, and about the treaty with Seleucus, Megasthenes and the Greek embassies.

2. Revision notes

2.1 The setting

- **Magadha under the Nandas:** Mahapadma Nanda was the most important Nanda ruler. Brahmanical texts describe him as of low caste, or at least not a Kshatriya. He had a large army and added Kalinga to his kingdom. The last Nanda king, Dhana Nanda, is described as arrogant and oppressive; his heavy taxes made him unpopular, and Chandragupta used this discontent to overthrow him (NIOS). The rise of Magadha is Topic 441.
- **The north-west after Alexander:** Alexander's army refused to go beyond the Beas, and he died at Babylon in 323 BCE. The Latin writer Justin says the Greek governors in India were then killed, and he names Chandragupta as the leader of this revolt. The invasions themselves are Topic 552.

2.2 The sources and how far to trust them

Source	What it is	What it gives	How historians judge it
Arthashastra	A Sanskrit treatise on statecraft in 15 books; its text names its author Kautilya, and a closing verse names Vishnugupta	Rules on the king, ministers, spies, taxes and officials	NCERT (Class XII): parts of it were probably composed by Kautilya or Chanakya, traditionally the minister of Chandragupta. Many scholars now date most of it later (see below)
Indica of Megasthenes	An account of India in four books by a Greek ambassador at Chandragupta's court	Pataliputra, the king, the officials, the "seven castes"	The original is lost. It survives only in quotations by later writers: Strabo, Diodorus, Arrian and Pliny. NCERT: it survives in fragments
Mudrarakshasa	A Sanskrit play by Vishakhadatta	Chandragupta and Chanakya against their chief opponent, Rakshasa	Written centuries later: scholars date it anywhere from the late 4th to the 8th century CE. Creative writing, not a record
Buddhist tradition (Mahavamsa)	A Buddhist chronicle of Sri Lanka	Chandragupta "born of a noble clan, the Moriyas", made king by Chanakya after Dhana Nanda was slain; reigns of 24 years for Chandragupta and 28 for Bindusara	Written many centuries later; NCERT counts it among the "later" Buddhist sources
Jain tradition (Parishishtaparvan)	A work by the Jain scholar Hemachandra, 12th century CE	Chandragupta's birth to the daughter of the chief of a village of peacock tamers; Chanakya's role; Chandragupta's last days	Late and legendary in parts
Junagadh rock inscription of Rudradaman	A Sanskrit inscription in Brahmi script near Girnar hill in Gujarat, dated shortly after 150 CE	The Sudarshana lake was built under Chandragupta by his provincial governor Pushyagupta, a Vaishya; under Ashoka the Yavana Tushaspha added conduits	Direct evidence of Mauryan rule in Gujarat under Chandragupta, though written over four centuries later
Puranas	Brahmanical texts with lists of dynasties	Lists of kings and reign lengths (for example, 25 years for Bindusara)	Later compilations; they treat the Nandas as illegitimate

- NCERT (Class XII) names these sources for the Mauryas: Megasthenes' account; the Arthashastra; the later Buddhist, Jaina and Puranic literature; Sanskrit literary works; and the inscriptions of Ashoka.

- NCERT says a local governor built the Sudarshana lake during the rule of the Mauryas.
- **The date of the Arthashastra:** R. P. Kangle accepted a Mauryan date and the traditional author. Patrick Olivelle places its oldest layer at about 150 BCE to 50 CE and its final form at about 175 to 300 CE. Thomas Trautmann, from the statistics of its words, argues for several authors. The name Chanakya does not occur in the text. The book was thought lost until a palm-leaf manuscript at Mysore was identified by R. Shamasastry, who published it in parts from 1905 to 1909 and in English translation in 1915.
- NCERT (Class VI) puts it simply: many of Chanakya's ideas were written down in the Arthashastra. In a question that follows NCERT, link the Arthashastra with Chanakya or Kautilya.

2.3 Chandragupta Maurya

Origins: the sources do not agree.

- Buddhist texts make him a Kshatriya. The Mahavamsa calls him a youth born of a noble clan, the Moriyas.
- The Mudrarakshasa calls him "Vrishala" and "kula-hina" (not of a recognised clan). Vrishala can mean the son of a Shudra; R. K. Mookerji preferred the reading "best of kings".
- The Jain Parishishtaparvan makes his mother the daughter of the chief of a village of peacock tamers.
- Justin says he was of humble birth.

Rise to power

- **Chanakya:** the tradition makes Chanakya (also called Kautilya) his teacher and later chief minister. Legends link Chanakya with Taxila, as a student and teacher there.
- **The Nandas:** he defeated Dhana Nanda. Buddhist sources say Dhana Nanda was killed; Jain and Hindu accounts speak of a hard campaign in which the Nanda king was deposed.
- **The year:** NCERT gives the accession as c. 321 BCE. Britannica gives his reign as 321 to 297 BCE. Some historians put the conquest of Magadha between about 322 and 319 BCE; others give 324 or 321 BCE for the start of the reign. One recent study (Jansari, 2023) suggests that he may have come to power only between about 311 and 305 BCE. For the examination, give c. 321 BCE.
- **The north-west:** after the Greek governors were killed, he took the Punjab and the Indus region. Whether this came before or after his conquest of Magadha is not settled.
- **The Greek name:** Greek and Latin writers (Strabo, Arrian, Justin) call him Sandrocottus. In 1793 Sir William Jones identified Sandrocottus with Chandragupta. This gave a fixed point for matching Indian dates with Greek ones.

The war with Seleucus Nicator (305 to 303 BCE)

- Seleucus I Nicator, who then held Persia and Bactria (Appian), crossed the Indus and fought Chandragupta. The war ended in a treaty.
- **Territory:** Seleucus ceded territories along the Indus to Chandragupta. Strabo speaks of lands along the Indus that had once belonged to the Persians; historians usually take them to include Arachosia, Gedrosia and the Paropamisadae. Pliny's list adds Aria, but modern scholars generally reject Aria. The exact extent of the cession is not known.
- **Marriage:** Appian and Strabo speak of a marriage alliance ("terms of intermarriage") but do not say who married whom. Later Indian texts speak of a daughter of Seleucus or a Yavana princess, but no Seleucid source mentions an Indian marriage, and the bride may have been the wife of Chandragupta or of Bindusara.
- **Elephants:** Chandragupta gave Seleucus 500 elephants. They later helped Seleucus at the battle of Ipsus.
- **Megasthenes:** Seleucus then sent Megasthenes, an Ionian Greek, as his ambassador to Chandragupta's court at Pataliputra (NCERT Class VI: sent by Seleucus Nicator, the Greek ruler of West Asia). Before this he had lived at the court of Sibyrtius, the governor of Arachosia.

The extent of his empire

- NCERT: he extended his control as far as Afghanistan and Baluchistan in the north-west.
- The Junagadh inscription shows his rule in Gujarat.
- The south is uncertain. By the time of Ashoka the empire reached Karnataka, but whether Chandragupta or Bindusara took the Deccan is not settled.

His end: a Jain tradition

- Digambara Jain accounts say he gave up the throne, went south with the Jain teacher Bhadrabahu, who had foretold a twelve-year famine, and fasted to death (sallekhana) at Shravanabelagola in Karnataka. Chandragiri hill there is shown as the place, and the Chandragupta basadi as his temple. Britannica records his death at Shravanabelagola, c. 297 BCE.
- **Mark it as tradition.** Inscriptions linking Bhadrabahu with Chandragupta begin only about 600 CE. Some historians think the story may belong to a later Chandragupta, Ashoka's grandson Samprati. Greek sources show him hunting and drinking wine. Hemachandra's Svetambara version says he died in meditation, without the journey south.

2.4 Megasthenes' account and its limits

- **Seven classes:** philosophers, farmers, herders, artisans, soldiers, overseers (inspectors) and councillors.
- **Pataliputra:** NCERT (Class VI) quotes him: "This is a large and beautiful city. It is surrounded by a massive wall. It has 570 towers and 64 gates." Other accounts of the same passage say the wall was of wood.
- **Officials of the city:** in Strabo's version, "The city commissioners are divided into six groups of five each." One group looked after the crafts, another looked after foreigners, others dealt with births and deaths, with sales, with goods made by artisans, and with collecting a tenth of the price of things sold.
- **The army:** NCERT says he described a committee with six subcommittees for the army: the navy, transport and provisions, foot soldiers, horses, chariots and elephants.
- **Slavery:** he says no Indian uses slaves.

The cautions historians give:

- The Indica is known only through later writers, and they choose and change what they quote. Strabo called Megasthenes a liar.
- His seven classes do not match the four varnas of Indian texts. Historians suggest that he misunderstood, or that later writers altered his account.
- Indian texts such as the Arthashastra show that slavery existed.
- Britannica: his chief faults were mistakes in detail and an uncritical acceptance of Indian folklore.

2.5 Bindusara

Point	What the sources say
Names	Greek writers call him Amitrochates (Athenaeus) or Allitrochades (Strabo). Both are taken from the Sanskrit Amitraghata, "slayer of enemies" (Britannica: "destroyer of foes"). Jain tradition gives his birth name as Simhasena
Reign	Britannica: he came to the throne about 297 BCE and died in 272 or 273 BCE. Some historians: died about 273 BCE. The Puranas give him 25 years, the Mahavamsa 28
Greek embassies	Deimachus came to his court as the ambassador of the Seleucid king Antiochus I. Pliny says Ptolemy II sent Dionysius to India; some historians place this in Bindusara's reign

Point	What the sources say
Figs, wine and a sophist	Athenaeus, quoting Hegesander, says he asked Antiochus for sweet wine, dried figs and a sophist (a Greek teacher of philosophy). Antiochus agreed to send the wine and figs but replied that Greek law did not allow a sophist to be sold
Religion	Buddhist texts call him a follower of the Brahmanas. A. L. Basham concluded from Ajivika legends that he patronised the Ajivikas. The Ajivika ascetic Pingalavatsa is said to have foretold Ashoka's greatness
Taxila	The Ashokavadana, a Buddhist legend, says he sent the prince Ashoka to put down a revolt at Taxila; Ashoka entered the city without a fight. A second revolt broke out near the end of the reign, and the prince Sushima failed to put it down
The south	The Tibetan monk Taranatha (16th century CE) says Chanakya destroyed the rulers of sixteen towns and made Bindusara master of the land between the eastern and western seas. Historians differ on whether this was conquest of the Deccan or putting down revolts

- Britannica: the name Amitraghata may reflect a successful campaign in the Deccan, which stopped near present Karnataka; the Cholas, Pandyas and Cheras kept good relations with the Mauryas.
- The Sangam poet Mamulanar speaks of a Mauryan invasion of the Tamil country. Other historians think Bindusara only kept what he had inherited.
- Treat Taranatha as a late Tibetan tradition, not as proof of conquest.
- Jain tradition names his mother Durdhara and says Chanakya stayed on as his minister.
- After his death his sons fought for the throne, and Ashoka won (Topic 111).

2.6 Administration in outline

- **The king** stood at the head, advised by a council of ministers (mantriparishad).
- **The centre:** the area around Pataliputra was under the emperor's direct control (NCERT Class VI).
- **The provinces:** NCERT (Class XII) names five major political centres: the capital Pataliputra and the provincial centres Taxila, Ujjayini, Tosali and Suvarnagiri. Taxila was the gateway to the north-west, Ujjain lay on the route from north to south India, and Suvarnagiri was important for the gold mines of Karnataka.
- **Governors:** royal princes were often sent to govern the provinces, and local customs were usually followed (NCERT Class VI).
- **Limits:** NCERT warns that the empire did not cover the whole subcontinent and that control within it was not uniform.
- The details of the administration and the economy are Topics 502 and 631.

3. Extra section: a chronology, with the source for each date

Date	Event	Where the date comes from
323 BCE	Alexander dies at Babylon	Standard date
About 322 to 319 BCE	Chandragupta overthrows Dhana Nanda	Some historians; NCERT gives the accession as c. 321 BCE
305 to 303 BCE	War with Seleucus Nicator and the treaty	Modern reckoning from the Greek and Roman writers (Appian, Strabo)
After the treaty	Megasthenes at Pataliputra as ambassador	Megasthenes' account through later writers

Date	Event	Where the date comes from
About 297 BCE	Chandragupta's reign ends; Bindusara comes to the throne	Britannica; the Jain tradition adds the abdication and death at Shravanabelagola
272 or 273 BCE	Bindusara dies	Britannica; some historians give about 273 BCE
About 268 BCE	Ashoka's coronation, after a struggle for the throne	Topic 71 and Topic 111
Shortly after 150 CE	Rudradaman's Junagadh inscription records the history of the Sudarshana lake	The inscription itself
Late 4th to 8th century CE	The Mudrarakshasa is written	Scholars differ on the date
12th century CE	Hemachandra writes the Parishishtaparvan	Jain tradition
1793	Sir William Jones identifies Sandrocottus with Chandragupta	History of scholarship
1905 to 1909	R. Shamasastry publishes the Arthashastra	History of scholarship

Points to draw from the table:

- Megasthenes was a contemporary of Chandragupta. His lost account survives through quotations and summaries by later Greek and Roman authors; those later authors were not themselves Chandragupta’s contemporaries.
- The Indian literary sources come many centuries later. That is why his origins, his end and Bindusara's southern conquests are "as the sources give them", not settled facts.
- The reign lengths do not all agree. 321 to 297 BCE gives Chandragupta 24 years, the same as the Mahavamsa. For Bindusara, the dates 297 to about 273 BCE give about 24 years, against 25 in the Puranas and 28 in the Mahavamsa.

4. Three common exam traps

1. **Reading the Arthashastra as a plain record of Chandragupta's court.** NCERT links it with Kautilya or Chanakya, and that is the answer to give when a question follows NCERT. But many scholars date most of the text to the first centuries CE, so its picture of the state cannot be taken as a description of Mauryan rule as it stood. The same caution applies to the Mudrarakshasa, a play written centuries later.
2. **Getting the treaty with Seleucus the wrong way round.** It was Seleucus who gave up land, and Chandragupta who gave elephants in return. The marriage alliance is in the Greek sources, but they name no bride, so "Chandragupta married the daughter of Seleucus" goes further than they do; the bride may even have married Bindusara. Aria in the list of ceded lands is doubtful.
3. **Turning traditions into facts.** The abdication, the journey south with Bhadrabahu and the death by sallekhana come from Jain tradition recorded long after. Taranatha's "land between the two seas" is a Tibetan text of the 16th century CE. Megasthenes' "no slaves" and his "seven castes" are a foreigner's account, preserved by later writers.

PART 1 · STUDY NOTES · TOPIC 103

National Human Rights Commission and the Protection of Human Rights Act

Constitution, Polity, Social Justice & IR | Unit B-5

1. Concept in one line

The National Human Rights Commission (NHRC) is a statutory body, set up on 12 October 1993 under the Protection of Human Rights Act, 1993. The examination asks about its composition, the appointment, removal and term of its Chairperson and Members, its functions and powers, and what the amendments of 2006 and 2019 changed.

2. Revision notes

2.1 The Act and the Commission

- **The Act:** the Protection of Human Rights Act, 1993 (PHRA) is Act No. 10 of 1994. It was enacted on 8 January 1994 and is deemed to have come into force on 28 September 1993. It provides for a National Human Rights Commission, State Human Rights Commissions and Human Rights Courts.
- **The Commission:** established on 12 October 1993; it marked its 33rd Foundation Day on 12 October 2026. It is a **statutory body**: it rests on an Act of Parliament, not on any Article of the Constitution. Headquarters: Delhi (section 3(5)).
- **The Paris Principles:** standards for national human rights institutions, adopted at the first International Workshop on National Institutions in Paris in October 1991 and endorsed by the UN General Assembly in resolution 48/134 of 20 December 1993.
- **Two amending Acts:** of 2006 (in force from 23 November 2006) and of 2019 (in force from 2 August 2019).

2.2 What "human rights" means: section 2(1)(d)

- Human rights are the rights relating to the life, liberty, equality and dignity of the individual that are either guaranteed by the Constitution or embodied in the International Covenants, and are enforceable by courts in India.
- **International Covenants (section 2(1)(f)):** the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights, both adopted by the UN General Assembly on 16 December 1966, and any other covenant or convention that the Central Government notifies.

2.3 Composition: section 3, as amended in 2019

Post	Who can hold it	Number
Chairperson	A person who has been Chief Justice of India or a Judge of the Supreme Court	1
Member, judicial	A person who is, or has been, a Judge of the Supreme Court	1
Member, judicial	A person who is, or has been, Chief Justice of a High Court	1
Members with knowledge of human rights	Persons with knowledge of, or practical experience in, matters relating to human rights; at least one must be a woman	3

Post	Who can hold it	Number
Deemed members	The Chairpersons of the National Commissions for Scheduled Castes, Scheduled Tribes, Women, Minorities, Backward Classes and for Protection of Child Rights, and the Chief Commissioner for Persons with Disabilities	7

- So there are six standing posts (the Chairperson and five Members) besides the seven deemed members.
- **Note the tense:** the Chairperson must be a person who **has been** Chief Justice of India or a Supreme Court Judge. The two judicial Members may be serving ("is, or has been") judges.
- **Deemed members** are Members only for the discharge of the functions in clauses (b) to (j) of section 12. Clause (a), inquiry into complaints, is not among them.
- **Secretary-General (section 3(4)):** the Chief Executive Officer. Subject to the Chairperson's control, the Secretary-General exercises all administrative and financial powers, except judicial functions and the power to make regulations. The Central Government provides the Secretary-General, of the rank of Secretary to the Government of India, and police and investigation staff under an officer not below the rank of Director General of Police (section 11).

2.4 Appointment, removal and term: sections 4 to 6

Appointment (section 4). The President appoints the Chairperson and the Members by warrant under his hand and seal, after obtaining the recommendations of a committee of six:

1. the Prime Minister (Chairperson of the committee);
2. the Speaker of the House of the People (Lok Sabha);
3. the Minister in charge of the Ministry of Home Affairs;
4. the Leader of the Opposition in the Lok Sabha;
5. the Leader of the Opposition in the Council of States (Rajya Sabha);
6. the Deputy Chairman of the Rajya Sabha.

- A sitting Judge of the Supreme Court or a sitting Chief Justice of a High Court can be appointed only after consultation with the Chief Justice of India. The Chief Justice of India is consulted; he is not a member of the committee.
- An appointment is not invalid merely because there is a vacancy in the committee.

Resignation and removal (section 5).

- The Chairperson or a Member may resign by writing to the President.
- **Proved misbehaviour or incapacity:** removal only by order of the President, after the Supreme Court, on a reference from the President, has held an inquiry and reported that the person ought to be removed on that ground.
- **Other grounds:** the President may remove the Chairperson or a Member by order, without that inquiry, if the person (a) is adjudged an insolvent; (b) engages during the term in any paid employment outside the duties of the office; (c) is unfit to continue because of infirmity of mind or body; (d) is of unsound mind and stands so declared by a competent court; or (e) is convicted and sentenced to imprisonment for an offence that, in the President's opinion, involves moral turpitude.

Term (section 6).

- Chairperson: three years from entering office or until the age of 70, whichever is earlier; eligible for reappointment.
- Members: three years, eligible for reappointment; no Member holds office after the age of 70.
- After leaving office, the Chairperson and the Members cannot take further employment under the Government of India or a State Government.

2.5 What the 2019 amendment changed

Point	Before 2019	After the 2019 amendment
Chairperson	A person who has been Chief Justice of India	A person who has been Chief Justice of India or a Judge of the Supreme Court
Members with knowledge of human rights	Two	Three, at least one a woman
Deemed members	Chairpersons of the National Commissions for Minorities, Scheduled Castes, Scheduled Tribes and Women	The same four, plus the Chairpersons of the National Commissions for Backward Classes and for Protection of Child Rights, and the Chief Commissioner for Persons with Disabilities
Term	Five years or the age of 70	Three years or the age of 70
Reappointment	A Member could be reappointed for one more term of five years	The Chairperson and the Members are eligible for reappointment, with no five-year limit
Secretary-General	Exercised powers delegated to him	Exercises all administrative and financial powers, except judicial functions and the regulation-making power, subject to the Chairperson's control
State Human Rights Commission Chairperson	A person who has been Chief Justice of a High Court	A person who has been Chief Justice or a Judge of a High Court

- The 2019 amendment also lets the Central Government confer on a State Human Rights Commission the human rights functions of a Union Territory; for Delhi, those functions are dealt with by the NHRC (PRS).
- The 2006 amendment, among other changes, split the joint Commission for Scheduled Castes and Scheduled Tribes in section 3(3) into the two Commissions, rewrote sections 5, 6, 8 and 18, added inquiry on a court's direction to section 12(a), and let the NHRC transfer a complaint to the State Commission that has jurisdiction (section 13(6)).

2.6 Functions: section 12

1. **(a)** Inquire, suo motu (on its own), or on a petition by a victim or any person on his behalf, or on the direction or order of a court, into a complaint of violation of human rights or abetment of it, or of negligence by a public servant in preventing such a violation.
2. **(b)** Intervene in any proceeding pending before a court that involves an allegation of violation of human rights, with the approval of that court.
3. **(c)** Visit any jail or other institution under the control of the State Government where persons are detained or lodged for treatment, reformation or protection, to study the living conditions, and make recommendations.
4. **(d) to (j)** Review constitutional and legal safeguards, and the factors (including terrorism) that inhibit human rights; study international human rights instruments; promote research and human rights literacy; encourage non-governmental organisations; and any other function it considers necessary.

2.7 Powers and procedure: sections 13 to 18 and 36

- **Civil court powers (section 13(1)):** while inquiring into complaints, the Commission has all the powers of a civil court trying a suit under the Code of Civil Procedure, 1908: summoning witnesses and examining them on oath, production of documents, receiving evidence on affidavits, requisitioning public records, and issuing commissions to examine witnesses or documents.

- **Investigation (section 14):** for investigation, the Commission may use the services of any officer or investigation agency of the Central Government or a State Government, with the concurrence of that Government.
- **Steps after inquiry (section 18):** where a violation or negligence by a public servant is disclosed, the Commission may recommend payment of compensation or damages, the initiation of prosecution, or other action. It may approach the Supreme Court or the High Court for directions, orders or writs, and may recommend immediate interim relief at any stage.
- **Report and response:** the Commission sends its inquiry report and recommendations to the Government or authority concerned, which must forward its comments, including the action taken or proposed, within one month or such further time as the Commission allows. The Commission publishes the report with those comments.
- **Recommendatory wording:** section 18 uses the word “recommend”; the NHRC does not itself execute relief as a civil court decree. Section 20(2) requires reasons for non-acceptance in the report laid before the legislature. Judicial decisions on the enforceability of particular recommendations must also be considered; avoid treating every recommendation as legally optional.
- **Limits (section 36):** the Commission cannot inquire into a matter pending before a State Commission or any other duly constituted Commission. Neither the NHRC nor a State Commission can inquire into a matter after one year from the date on which the act constituting the violation is alleged to have been committed.

2.8 Armed forces: section 19

- For a complaint against members of the armed forces, the Commission does not hold its own inquiry. On its own motion or on a petition, it may seek a report from the Central Government. After receiving the report, it may either decide not to proceed or make recommendations to that Government.
- The Central Government informs the Commission of the action taken on the recommendations within three months, or such further time as the Commission allows. The Commission publishes its report, its recommendations and the Government's action.

2.9 Reports, State Commissions and Human Rights Courts

- **Annual and special reports (section 20):** an annual report, and special reports at any time on urgent or important matters, go to the Central Government and the State Government concerned. They are laid before each House of Parliament or the State Legislature with a memorandum of action taken and the reasons for not accepting any recommendation.
- **State Human Rights Commissions (section 21):** a State Government may constitute one; its Chairperson has been Chief Justice or a Judge of a High Court. Their detail is Topic 662.
- **Human Rights Courts (section 30):** for speedy trial of offences arising out of violations of human rights, the State Government, with the concurrence of the Chief Justice of the High Court, may specify a Court of Session in each district as a Human Rights Court.

2.10 The Commission as on 14 October 2026 and its accreditation

- **Office holders, as shown on nhrc.nic.in on 14 October 2026:** Chairperson Justice V. Ramasubramanian (assumed office on 30 December 2024); Members Justice Bidyut Ranjan Sarangi (30 December 2024), Vijaya Bharathi Sayani (28 December 2023) and Priyank Kanoongo (24 December 2024); Secretary-General Piyush Goyal (24 July 2026), an IAS officer, not the Union Minister of the same name. The page lists three Members against the five Member posts.
- **GANHRI accreditation:** GANHRI's Sub-Committee on Accreditation (SCA) assesses national institutions against the Paris Principles. A status means fully compliant; B means partially compliant. The NHRC review was deferred in 2023 and 2024; in March 2025 the SCA recommended a downgrade to B. GANHRI's chart dated 4 June 2026 and its current membership page still list India with A status. Its

published schedule lists India for an alteration-of-accreditation review at the 48th SCA session, 9-20 November 2026. Keep the recommendation, the scheduled review and the effective status distinct. (Status and schedule checked 16 October 2026.)

3. Extra section: chronology of the Act and the Commission

Date	Event
16 December 1966	UN General Assembly adopts the two International Covenants (civil and political; economic, social and cultural)
October 1991	First International Workshop on National Institutions, Paris: the Paris Principles
28 September 1993	Date from which the PHRA is deemed to be in force
12 October 1993	NHRC established
20 December 1993	UN General Assembly endorses the Paris Principles (resolution 48/134)
8 January 1994	PHRA enacted as Act No. 10 of 1994
1999	First entry in the NHRC's review history on GANHRI's accreditation chart
23 November 2006	Amendment Act of 2006 in force
8 July 2019	Amendment Bill of 2019 introduced in the Lok Sabha
19 July 2019 and 22 July 2019	Bill passed by the Lok Sabha and by the Rajya Sabha
2 August 2019	Amendment Act of 2019 in force
March 2023	GANHRI review of the NHRC deferred
30 December 2024	Justice V. Ramasubramanian assumes office as Chairperson
March 2025	SCA recommends downgrading the NHRC to B status
4 June 2026	GANHRI chart still shows the NHRC with A status

- Note the order: the Act is "of 1993" because it is deemed in force from 28 September 1993, though it was enacted in January 1994 and numbered as an Act of 1994.

4. Three common exam traps

1. **"The NHRC is a constitutional body."** It is statutory. It was set up on 12 October 1993 under the Protection of Human Rights Act, 1993, an ordinary Act of Parliament. No Article of the Constitution mentions it.
2. **"Only a former Chief Justice of India can head the NHRC, for five years."** That was the position before 2019. Since the 2019 amendment, a person who has been Chief Justice of India or a Judge of the Supreme Court can be Chairperson, and the term is three years or the age of 70, whichever is earlier, with eligibility for reappointment. The seven deemed members are Members only for the functions in clauses (b) to (j) of section 12; the standing posts are six.
3. **"The NHRC can take up any complaint, whenever the violation happened."** Section 36 bars it from a matter more than one year old (counted from the date of the alleged act) and from a matter already pending before a State Commission or any other duly constituted Commission. Section 18 provides for recommendations and for approaching the Supreme Court or a High Court for appropriate relief.

PART 1 · STUDY NOTES · TOPIC 104

Amendment procedure: Article 368

Constitution, Polity, Social Justice & IR | Unit B-1

1. Concept in one line

Article 368 gives Parliament the power to amend the Constitution and lays down how: a Bill passed in each House by a special majority, ratified by the Legislatures of at least half the States when it touches certain listed matters, and then assented to by the President. The examination asks about these steps, about the changes that can be made by an ordinary law instead, and about the judgments that limit the power.

2. Revision notes

2.1 Article 368 and its clause (1)

- Part XX of the Constitution, "Amendment of the Constitution", has a single Article, Article 368 (Topic 42).
- **Heading.** Today it reads "Power of Parliament to amend the Constitution and procedure therefor". The heading of 1950 was "Procedure for amendment of the Constitution". The Constitution (Twenty-fourth Amendment) Act, 1971 substituted the new heading; that Act came into force on 5 November 1971.
- **Clause (1)**, inserted by the same 24th Amendment: "Notwithstanding anything in this Constitution, Parliament may in exercise of its constituent power amend by way of addition, variation or repeal any provision of this Constitution in accordance with the procedure laid down in this article." A **constituent power** is the power to make or change the Constitution, as distinct from the ordinary power to make laws.

2.2 Clause (2): how a Constitution Amendment Bill is passed

Step	What the text says	Point to note
Start	An amendment "may be initiated only by the introduction of a Bill" "for the purpose in either House of Parliament"	Only in Parliament, in either House. A State Legislature cannot start an amendment
Passing	The Bill must be passed "in each House by a majority of the total membership of that House" "and by a majority of not less than two-thirds of the members of that House present and voting"	This double condition is the **special majority**. Both parts must be met in each House, separately
Ratification	Only for the matters in the proviso (2.3)	By the Legislatures of not less than one-half of the States
Assent	The Bill "shall be presented to the President" "who shall give his assent to the Bill and thereupon" "the Constitution shall stand amended in accordance with the terms of the Bill"	The President cannot refuse. NCERT: the President has no power to send such a Bill back for reconsideration

- **Before 1971** the Bill was presented to the President "for his assent". The 24th Amendment substituted the words "who shall give his assent to the Bill and thereupon", which made assent obligatory.

- The two parts of the special majority are measured on two different bases. "Total membership" counts every member of the House, whether present or not. "Present and voting" counts only those who actually vote on the Bill. So a Bill can have the votes of more than half the whole House and still fail, if it does not also have two-thirds of those voting (Section 3 works an example).

2.3 The proviso: matters that also need ratification by the States

The proviso begins: "Provided that if such amendment seeks to make any change in" the matters below, the amendment must also be ratified by the Legislatures of not less than one-half of the States before the Bill is presented to the President.

Item of the proviso	What it covers
(a) Article 54	Election of President
(a) Article 55	Manner of election of President
(a) Article 73	Extent of executive power of the Union
(a) Article 162	Extent of executive power of State
(a) Article 241	High Courts for Union territories
(a) Article 279A	Goods and Services Tax Council (added to the proviso by the 101st Amendment, which brought in GST)
(b) Chapter IV of Part V	The Union Judiciary (Articles 124 to 147)
(b) Chapter V of Part VI	The High Courts in the States (Articles 214 to 232)
(b) Chapter I of Part XI	Legislative Relations (Articles 245 to 255)
(c) Any of the Lists in the Seventh Schedule	The Union, State and Concurrent Lists
(d) The representation of States in Parliament	How the States are represented
(e) The provisions of this article	Article 368 itself

- Ratification is required when an amendment changes a matter specified in the proviso, either in its wording or significantly in its effect. Merely amending a provision outside the list does not avoid this safeguard. In Union of India v. Rajendra N. Shah (2021), the Court applied it to Part IXB because of its effect on State legislative power. An amendment confined to Article 280 ordinarily needs Parliament's special majority, provided it does not also change an entrenched matter.
- The proviso asks for ratification "by resolutions to that effect passed by those Legislatures before the Bill" is presented to the President. The Lok Sabha Secretariat's account adds that there is no time limit for the State Legislatures to ratify.

2.4 Clauses (3), (4) and (5)

Clause	Words	Added by	Status
(3)	"Nothing in article 13 shall apply to any amendment made under this article."	24th Amendment, 1971 (with clause (4) of Article 13; Topic 62)	In force

Clause	Words	Added by	Status
(4)	"No amendment of this Constitution (including the provisions of Part III)" made or purporting to have been made under this Article "shall be called in question in any court on any ground."	42nd Amendment Act, 1976 (the clause itself refers to section 55 of that Act)	Declared invalid in Minerva Mills (1980)
(5)	"there shall be no limitation whatever on the constituent power of Parliament to amend" the Constitution under this Article	42nd Amendment Act, 1976	Declared invalid in Minerva Mills (1980)

2.5 The three kinds of amendment

Kind	What it needs	Where the rule is	Examples
1. By an ordinary law of Parliament, outside Article 368	A law passed by a simple majority, like any other law	The Article itself says such a law "shall not be deemed to be an amendment of this Constitution for the purposes of article 368"	Article 4(2): laws under Article 2 (admitting new States into the Union) and Article 3 (formation of new States, alteration of areas, boundaries or names); Article 169(3): abolition or creation of Legislative Councils; Article 239A(2): local Legislatures or Councils of Ministers for certain Union territories; paragraph 7(2) of the Fifth Schedule and paragraph 21(2) of the Sixth Schedule
2. By special majority of Parliament	The special majority in each House (2.2)	Article 368(2)	Most provisions, for example the Fundamental Rights in Part III and the Finance Commission (Article 280)
3. By special majority with ratification by the States	The special majority, and ratification by the Legislatures of not less than one-half of the States	Proviso to Article 368(2)	The matters in the table in 2.3, for example the election of the President and the GST Council

- **Conditions that come before such a law.** Under Article 169(1), Parliament may abolish or create a State's Legislative Council only "if the Legislative Assembly of the State passes a resolution to that effect" "by a majority of the total membership of the Assembly" and by not less than two-thirds of the members present and voting: the same double majority as in 2.2. Under the proviso to Article 3, a Bill to form a new State or alter the boundaries of a State can be introduced only "on the recommendation of the President", and he must first refer it to the Legislature of the State concerned "for expressing its views thereon" within a period he fixes. Articles 2 to 4 are taught in Topic 512.
- Guidebooks often add other items to the first kind, such as citizenship. Article 11 does leave citizenship to a law of Parliament, but it has no "shall not be deemed" clause. When a question asks for an Article that says so in its own words, keep to Articles 4, 169 and 239A and the two Schedules.

2.6 Other points of procedure

- **No joint sitting.** Each House must pass the Bill separately. If the Houses disagree, there is no joint sitting: Article 108 ("Joint sitting of both Houses in certain cases") is not available for a Constitution Amendment Bill (NCERT; the Lok Sabha Secretariat's account).
- **The President's recommendation.** Article 368 does not require the President's recommendation for introducing the Bill. Compare the proviso to Article 3 (2.5), which does.
- **A private member may introduce it.** A Constitution Amendment Bill may be a Government Bill or a Private Member's Bill.
- How an ordinary Bill becomes law is taught in Topic 153.

2.7 Limits on the amending power: the judgments in a line each

Case	Year	What it held on the amending power
Shankari Prasad	1951	Upheld the First Amendment. Article 13(2) does not affect amendments made under Article 368, which are made in exercise of constituent power
Sajjan Singh	1965	Upheld the 17th Amendment and repeated Shankari Prasad
Golak Nath	27 February 1967	Eleven judges, 6 to 5: an amendment is "law" under Article 13, so Parliament could not amend Part III to take away or abridge the Fundamental Rights
Kesavananda Bharati	24 April 1973	Thirteen judges. Golak Nath was overruled, and the 24th Amendment was held valid. But by 7 to 6 the Court held that Article 368 "does not enable the Parliament to alter the basic structure or framework of the Constitution"
Indira Nehru Gandhi v. Raj Narain	7 November 1975	Struck down clause (4) of Article 329A, inserted by the 39th Amendment to protect the election of the Prime Minister, as violating the basic structure (free and fair elections)
Minerva Mills	31 July 1980	Struck down clauses (4) and (5) of Article 368 and the widening of Article 31C by the 42nd Amendment. "A limited amending power is one of the basic features of our Constitution"
Waman Rao	1981	Amendments adding laws to the Ninth Schedule on or after 24 April 1973, the date of Kesavananda Bharati, can be tested against the basic structure
I.R. Coelho	11 January 2007	Nine judges: laws placed in the Ninth Schedule after 24 April 1973 do not get full protection; they can be tested against the basic structure
Supreme Court Advocates-on-Record Association (the NJAC case)	16 October 2015	Five judges, 4 to 1: struck down the 99th Amendment Act, 2014 and the National Judicial Appointments Commission Act, 2014, as against the independence of the judiciary, a part of the basic structure, even though 16 State Legislatures had ratified the amendment

- The basic structure doctrine is taught in Topic 123, and the Ninth Schedule in its own topic.

2.8 Sources of the procedure, and amendments so far

- **Sources.** Lists of borrowed features, such as the table of influences in Wikipedia's article "Constitution of India", name South Africa as the source of the procedure for amending the Constitution. NCERT does not speak of borrowing here: it says only that the constitutions of the U.S., South Africa and Russia also use special majorities. In a question on borrowed features, the expected answer is South Africa.
- **How many amendments.** The official text of the Constitution as on 1 May 2024 includes every amendment up to the Constitution (One Hundred and Sixth Amendment) Act, 2023: 106 amendments as of that date. NCERT gives the same count, 106, as on 26 January 2024.
- Bills and Acts are numbered separately. A Bill can carry a higher number than the latest Act: the Constitution (One Hundred and Thirty-first Amendment) Bill, 2026 was introduced in the Lok Sabha on 16 April 2026 and defeated there on 17 April 2026, so no Amendment Act followed from it.

3. Extra section: the path of a Constitution Amendment Bill, step by step, with two worked examples

Step	Who acts	Rule
1. Introduction	A Minister or a private member, in either House of Parliament	Article 368 does not require the President's recommendation; never in a State Legislature
2. Passing in the first House	That House	A majority of its total membership and two-thirds of its members present and voting
3. Passing in the second House	The other House	The same special majority; no joint sitting if the Houses disagree
4. Ratification (only for the matters in the proviso)	The Legislatures of the States	Not less than one-half of the States; no time limit, but before the Bill goes to the President
5. Assent	The President	"shall give his assent"; the Constitution then stands amended in the terms of the Bill
6. Review	The Supreme Court	The amendment can be struck down if it damages the basic structure (Kesavananda Bharati, Minerva Mills)

Worked example 1: a Bill that failed in the Lok Sabha. On 17 April 2026 the Constitution (One Hundred and Thirty-first Amendment) Bill, 2026 was put to the vote in the Lok Sabha. 298 members voted for it and 230 against, so 528 members were present and voting.

- First condition: a majority of the total membership. With a total membership of 543 (Topic 82), a majority is 272. 298 is more than 272, so this condition was met.
- Second condition: two-thirds of those present and voting. Two-thirds of 528 is 352. 298 is less than 352, so this condition failed, by 54 votes.
- The Bill was therefore defeated, although more than half of the whole House had voted for it.

Worked example 2: ratification. With 28 States (Topic 82), "not less than one-half" means at least 14 State Legislatures. 14 is enough: one-half is enough; more than half is not needed.

4. Three common exam traps

1. **"Special majority means two-thirds of the total membership."** It does not. Article 368(2) asks for two things in each House: a majority of the total membership of the House, and a majority of not less than two-thirds of the members present and voting. Even some well-known secondary summaries get this wrong. Do not mix it with Article 249 either, where a Rajya Sabha resolution needs only two-thirds of the members present and voting.
2. **"Ratification means a majority of the States, or of their people."** The proviso asks for ratification by the Legislatures of not less than one-half of the States; exactly half is enough. It applies only to the matters the proviso lists, not to every amendment. The two-thirds and three-fourths figures that NCERT mentions belong to other countries' constitutions.
3. **Crediting the clauses of Article 368 to the wrong amendment.** The 24th Amendment (1971) gave Article 368 its present heading, clause (1) on constituent power and clause (3), which keeps Article 13 away from amendments. The 42nd Amendment (1976) added clauses (4) and (5), which barred all court review and declared the power unlimited. Minerva Mills (1980) struck down both of these, though the text still prints them.

PART 1 · STUDY NOTES · TOPIC 105

Special Category Status and Special Assistance for Andhra Pradesh

Indian & AP Economy and Planning | Unit C-5

1. Concept in one line

Special Category Status was a classification under which the National Development Council gave certain States priority in central plan assistance; Andhra Pradesh was promised it in 2014 but received a special assistance measure in its place. The examination asks who granted the status and on what features, what the Fourteenth Finance Commission changed, and what the special assistance measure for Andhra Pradesh contains.

2. Revision notes

2.1 What Special Category Status was

- **Who granted it:** in the past the National Development Council (NDC) granted Special Category Status to some States "for plan assistance". This is how the Union Government described it in its replies in the Lok Sabha in 2019 and 2022.
- **Where it came from:** the Gadgil formula of 1969, approved by the NDC and named after D.R. Gadgil, then Deputy Chairman of the Planning Commission, was used to share central assistance for State plans. Under it the needs of special category States such as Assam, Jammu and Kashmir and Nagaland were met first from the total pool of central assistance. The formula was revised as the Gadgil-Mukherjee formula, approved by the NDC on 11 October 1990.
- **A common coaching line** says the status began in 1969 "on the recommendation of the Fifth Finance Commission". The official replies in Parliament name only the NDC as the body that granted it. In the examination, give the NDC.
- The status did not come from the Andhra Pradesh Reorganisation Act, 2014, which does not use the words "Special Category Status" (Topic 14).

The features the NDC considered (Lok Sabha reply of 6 February 2019):

Feature	What it points to
Hilly and difficult terrain	High cost of building and running services
Low population density or a sizeable share of tribal population	A thin base for revenue and markets
Strategic location along borders with neighbouring countries	Security needs and remoteness
Economic and infrastructural backwardness	A low starting point for development
Non-viable nature of State finances	The State cannot meet its needs from its own resources

- The reply adds that the status was granted on "an integrated consideration" of these features, not on any one of them alone.

The eleven States that the same reply lists as having Special Category Status: Arunachal Pradesh, Assam, Himachal Pradesh, Jammu and Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura and Uttarakhand. Of these, eight are in the North East (with Sikkim) and three are Himalayan States in the north (Himachal Pradesh, Jammu and Kashmir, Uttarakhand). Jammu and Kashmir has been a Union Territory since 31 October 2019, so this list gives the position in the February 2019 reply, not the present one.

2.2 What the status was worth

- **In plan assistance:** special category States had the first claim on the pool of central assistance for State plans under the Gadgil formula.
- **In centrally sponsored schemes:** the official statements on Andhra Pradesh measure what the status would have been worth by one yardstick: centrally sponsored schemes funded in the ratio of 90 to 10 between the Union and the State. The special assistance measure was built to make up this "additional central share" (see 2.5).
- **The 90 to 10 pattern itself:** on 3 August 2016 the Union Cabinet approved the recommendations of the Sub-Group of Chief Ministers on Rationalisation of Centrally Sponsored Schemes. In the core schemes, the Centre and the State share the cost 90 to 10 in the 8 North Eastern States and 3 Himalayan States, and 60 to 40 in the other States. This release is of 2016, when Jammu and Kashmir was still a State (see 2.1).

2.3 What changed from 2015

- **The Planning Commission:** on 15 August 2014, the Prime Minister announced that it would be replaced by a new institution. NITI Aayog formally replaced it through the Cabinet resolution of 1 January 2015.
- **The Fourteenth Finance Commission (award period 2015-20):** it made no distinction between general category and special category States when it shared the Union's taxes among the States. The States' share of central taxes rose from 32 per cent to 42 per cent for 2015-20. Where tax devolution alone could not cover a State's needs, it recommended post-devolution revenue deficit grants.
- **The Union Government's reading:** in a Lok Sabha reply of 9 July 2019 the Ministry of Home Affairs said that, following the Fourteenth Finance Commission's recommendations, the special category class no longer exists.
- **The Fifteenth Finance Commission** set the States' share at 41 per cent (Lok Sabha reply of 2 February 2022).

Point	Up to 2014-15	From 2015-16
Body behind central plan assistance	Planning Commission, with formulas approved by the NDC	Planning Commission replaced by NITI Aayog (1 January 2015)
Distinction between general and special category States	Made in plan assistance	Not made by the Fourteenth Finance Commission in sharing taxes
States' share of central taxes	32 per cent	42 per cent (2015-20); 41 per cent under the Fifteenth Finance Commission
Help for States with a gap	Plan assistance on the Gadgil-Mukherjee formula	Post-devolution revenue deficit grants

No new grants of the status. In a Lok Sabha reply of 2 February 2022 the Union Government said there was no proposal to grant Special Category Status to any State, including Bihar. On 22 July 2024 the Minister of State for Finance told the Lok Sabha that Bihar's request had been examined by an Inter-Ministerial Group in March 2012, which found that "the case for Special Category Status for Bihar is not made out" under the NDC's criteria.

2.4 Andhra Pradesh: the promise of 2014

- On 20 February 2014, during the Rajya Sabha debate on the Andhra Pradesh Reorganisation Bill, Prime Minister Manmohan Singh said that Special Category Status would be extended to the successor State of Andhra Pradesh for a period of five years.
- This was an oral statement in Parliament. It is not a provision of the Act, which received the President's assent on 1 March 2014 (Topic 14).
- The Union Government itself later listed the Prime Minister's statement to Parliament of 20 February 2014 among the bases of its commitments to the State, along with the Act, the Fourteenth Finance Commission's report and a report of the Vice Chairman of NITI Aayog dated 1 December 2015 (Lok Sabha reply of 4 April 2018).

2.5 The special assistance measure in place of the status

- **Announcement:** in September 2016 the Union Finance Minister, Arun Jaitley, announced a special assistance measure for Andhra Pradesh in place of Special Category Status, citing the constraints of the Fourteenth Finance Commission's report. It was made on Wednesday, 7 September 2016; the official replies in Parliament give only the month.
- **Cabinet approval:** the Union Cabinet approved the measure on 15 March 2017, for Andhra Pradesh as a successor State.

Part of the measure	What the Union Cabinet approved on 15 March 2017
Special assistance through externally aided projects	The Union makes up the additional central share the State might have received in 2015-16 to 2019-20 had centrally sponsored schemes been funded in the ratio 90 to 10. It pays this by repaying the loan and interest of externally aided projects signed and disbursed by the State in those years
Polavaram irrigation component	The Union funds 100 per cent of the remaining cost of the irrigation component of the Polavaram project for the period from 1 April 2014, to the extent of the cost of that component on that date. The State executes the project on behalf of the Union

- Under the measure, the Polavaram Project Authority handles coordination, quality control, design and monitoring, and the cost is assessed in consultation with the Department of Expenditure.
- Polavaram had already been declared a national project by Section 90 of the Andhra Pradesh Reorganisation Act, 2014 (Topic 14). That Section says the Central Government shall execute the project; under the 2017 measure the State executes it on behalf of the Union. Its construction and present status are in Topics 74 and 143.
- **Releases to the State** (Lok Sabha reply of 22 July 2019), in Rs crore, 2014-15 to 2018-19:

Head	Released up to 2018-19
Resource gap, Section 46(2)	3,979.50
Development grant for backward districts	1,050.00
New capital city	2,500.00
Polavaram, as a national project	6,764.70
Interest repaid on externally aided projects (special assistance)	15.81
Total	14,310.01

- The first four heads flow from the Act, not from the special assistance measure. Only the last line is the measure itself; it was released in 2018-19.

2.6 The demand and the present position

- The State's demand for the status continued. On 26 May 2019 the Chief Minister of Andhra Pradesh sent the Union a charter of demands that included Special Category Status; the Union forwarded these demands to the Fifteenth Finance Commission (Lok Sabha reply of 22 July 2019).
- **Politics, in two lines:** the Telugu Desam Party (TDP) left the National Democratic Alliance (NDA) on 16 March 2018, citing the failure to grant special status to Andhra Pradesh and to fulfil the promises of the Reorganisation Act. It rejoined the NDA on 9 March 2024.
- **The Union's stated position in Parliament:** in 2019 the Ministry of Home Affairs said the special category class no longer exists after the Fourteenth Finance Commission; in 2022 the Union said there was no proposal to grant the status to any State; in 2024 it said Bihar's case was not made out under the NDC's criteria.
- **Finance Commissions and Andhra Pradesh:** the Fourteenth Finance Commission recommended a revenue deficit grant of Rs 22,112 crore to Andhra Pradesh for 2015-20. The grants of the Fifteenth and Sixteenth Finance Commissions are taught in Topics 234 and 535.

3. Extra section: chronology

Date	Event
1969	Gadgil formula for central assistance to State plans, approved by the NDC; special category States such as Assam, Jammu and Kashmir and Nagaland given the first claim
11 October 1990	NDC approves the revised Gadgil-Mukherjee formula
20 February 2014	Prime Minister Manmohan Singh tells the Rajya Sabha that the successor State of Andhra Pradesh will get Special Category Status for five years
1 March 2014	The Andhra Pradesh Reorganisation Act, 2014 receives the President's assent, without the words "Special Category Status"
15 August 2014	Prime Minister announces that a new institution will replace the Planning Commission
1 January 2015	NITI Aayog replaces the Planning Commission
2015-20	Award period of the Fourteenth Finance Commission: States' share of central taxes 42 per cent, no distinction between general and special category States
7 September 2016	Finance Minister announces the special assistance measure in place of the status (official replies say "September 2016")
15 March 2017	Union Cabinet approves the special assistance measure
16 March 2018	TDP leaves the NDA over special status
26 May 2019	Chief Minister's charter of demands, including the status; forwarded to the Fifteenth Finance Commission
9 July 2019	Ministry of Home Affairs tells the Lok Sabha the special category class no longer exists
2 February 2022	Union Government tells the Lok Sabha there is no proposal to grant the status to any State
9 March 2024	TDP rejoins the NDA
22 July 2024	Lok Sabha reply on Bihar: case "not made out" under the NDC's criteria

How to read it: the promise (2014) came before the Fourteenth Finance Commission's award (2015-20). The Union's reply to the demand (2016 and 2017) was money equal to the benefit, not the status itself.

4. Three common exam traps

1. **"Andhra Pradesh was granted Special Category Status by the Reorganisation Act."** The Act does not contain the words. The promise of five years was an oral statement by the Prime Minister in the Rajya Sabha, made before the President's assent to the Act. The status itself was always a decision of the National Development Council, not of Parliament through a statute.
2. **Treating the special assistance measure as the status under another name.** The measure gave the State money equal to a benefit; it did not make Andhra Pradesh a special category State. Its Polavaram part, too, is limited: it covers the irrigation component only, and only up to that component's cost as on 1 April 2014.
3. **Mixing up the dates.** The Prime Minister's statement came in February 2014, the Finance Minister's announcement in September 2016 and the Cabinet's approval in March 2017. The TDP left the NDA in March 2018, a year after the Cabinet decision, and rejoined it in March 2024.

PART 1 · STUDY NOTES · TOPIC 106

Rainfall: types and world distribution

Geography | Unit D-1

1. Concept in one line

Rainfall comes when moist air rises, cools and condenses, and NCERT names its types by what makes the air rise: convectional, orographic and cyclonic. The examination asks for the mechanism and typical region of each type, the world pattern of wet and dry regions with its reasons, and the record places.

2. Revision notes

2.1 Precipitation, and what rain needs

- After the condensation of water vapour, the release of moisture is called precipitation. Precipitation in the form of water is rainfall; below 0°C it falls as fine flakes of snow. Sleet and hailstones are frozen forms (Day 8, Topic 75).
- **The steps to rain:**
  - Air must rise. As it rises it expands and cools (the adiabatic cooling of Day 8, Topic 75).
  - It cools to its dew point and becomes saturated.
  - The vapour condenses on hygroscopic nuclei (dust, smoke, sea salt) into cloud droplets or ice crystals.
  - The droplets must grow. A cloud droplet falls at only about 1 cm per second, so it must grow a great deal before it can reach the ground (Britannica).
- **Collision-coalescence process:** cloud droplets are of different sizes. A larger droplet falls faster and merges with the smaller ones in its path. In deep clouds with strong updrafts this can build raindrops. This warm-rain process is especially important in tropical clouds; it can produce rain in clouds whose tops are too warm for ice, while deeper tropical clouds may also contain ice.

- **Ice-crystal process (the Wegener-Bergeron-Findeisen or Bergeron process):** in a cloud whose top is colder than 0°C, ice crystals form among supercooled droplets (droplets still liquid below 0°C). The saturation vapour pressure over ice is lower than over water, so the crystals grow at the expense of the droplets. They fall, and melt into raindrops in warmer air below (Britannica; American Meteorological Society glossary).
- Raindrops rarely exceed about 6 mm across, because larger drops break up as they fall. Drizzle drops are about 0.2 to 0.5 mm across (Britannica).

2.2 The three types of rainfall (NCERT)

NCERT gives three main types of rainfall. What differs is how the air is lifted.

Point	Convectional	Orographic (relief)	Cyclonic
How the air is lifted	Air heated at the surface becomes light and rises in convection currents	A saturated air mass meets a mountain and is forced to ascend	Air is lifted in cyclones: along the fronts of temperate cyclones, and round the eye of tropical cyclones
What happens next	It expands, cools and condenses; cumulus clouds form	It expands, cools and condenses on the windward slope	In temperate cyclones, warm air is lifted over colder air at fronts; in tropical cyclones, moist air rises strongly in the eyewall and rainbands
Kind of rain	Heavy but of short duration, often with thunder and lightning	Heavy on the windward slope; little on the leeward slope	Precipitation from the clouds that form along a front; very heavy rain in tropical cyclones
Where and when typical	Summer, or the hotter part of the day; equatorial regions and the interiors of the continents, particularly in the northern hemisphere	Wherever a range lies across the path of moist winds	Middle and high latitudes (temperate cyclones); warm tropical oceans (tropical cyclones)
Example	Afternoon thunder showers in the equatorial belt	Windward side of the Western Ghats; the Khasi Hills of Meghalaya	The polar front of the middle latitudes
Fact to remember	The rain comes from cumulus clouds that build up during the day	The drier leeward side is the rain-shadow area	NCERT's water chapter refers cyclonic rain back to its chapter on circulation, where it describes fronts and cyclones

- **Convectional rain:** in the equatorial belt, NCERT's tropical wet climate has rain in every month, mostly as afternoon thunder showers. Britannica adds that thunderstorms are most frequent over tropical land.
- **Orographic rain:** its main feature is that the windward slope receives greater rainfall. After the air has given its moisture on the windward slope, it descends the other slope and gets warmed. Its capacity to take in moisture increases, so the leeward slope remains rainless and dry. This leeward area is the rain-shadow area. NCERT also calls this type relief rain.
- **Cyclonic rain:** a front is the boundary zone between two air masses. At a warm front, warm air glides up over the colder air, and a sequence of clouds ahead of the front causes precipitation. At a cold front, the cold air pushes the warm air up, and cumulus clouds form along it. Air masses and fronts come on Day 12 (Topic 115). In a tropical cyclone, the strong spiralling ascent of air in the eye wall gives very heavy rainfall; cyclones come on Day 13 (Topic 125).

2.3 Orographic rain in India

- The windward side of the Western Ghats gets very heavy rain, more than 250 cm, from the Arabian Sea branch of the monsoon (NCERT, Class 9). The Deccan Plateau and parts of Madhya Pradesh lie in the rain-shadow area, yet they get some rain (Day 9, Topic 86).
- Rainfall is low in the interior of the Deccan Plateau and east of the Sahyadris (NCERT, Class 9).
- The Bay of Bengal branch strikes the Garo and Khasi hills of Meghalaya (Day 9, Topic 86). **Mawsynram**, in the southern ranges of the Khasi Hills, receives the highest average rainfall in the world (NCERT, Class 9).
- NCERT's Class 11 book on India adds that Cherrapunji and Mawsynram in the Khasi Hills of Meghalaya receive over 1,080 cm of rain in a year.
- Parts of the western coast and north-eastern India receive over about 400 cm of rainfall a year. Western Rajasthan and Ladakh receive less than 10 cm (NCERT, Class 9).

2.4 Monsoon rainfall: a seasonal form

- Monsoon rainfall is not a fourth way of lifting air. It is rain tied to the seasonal reversal of winds (Day 9, Topic 86).
- In NCERT's tropical monsoon climate, heavy rainfall occurs mostly in summer, and the winter is dry.
- In summer the south-west monsoon brings heavy rain to India and South-East Asia. The rain is heavier where the air is forced up the Western Ghats and the Himalayas. In winter, cool and dry air from the interior of the continent brings little rain to the land (Britannica).
- So monsoon rain is often orographic where it meets a range, and the depressions of the season add more (Day 9, Topic 86).

2.5 World distribution of rainfall (NCERT)

- In general, rainfall goes on decreasing steadily from the equator towards the poles.
- The coastal areas receive more rainfall than the interiors of the continents.
- Rainfall is more over the oceans than over the landmasses, as the oceans are great sources of water.
- Between about 35° and 40° N and S of the equator, rain is heavier on the eastern coasts and goes on decreasing towards the west.
- Between about 45° and 65° N and S, the westerlies bring rain first to the western margins of the continents, and it goes on decreasing towards the east.
- Wherever mountains run parallel to the coast, rain is greater on the coastal plain on the windward side and decreases towards the leeward side.
- Britannica puts the global average at about 100 cm a year. Heavy rain marks the regions of rising air; deserts form where air descends, warms and dries.

Annual total (NCERT)	Regions
Over 200 cm (heavy)	The equatorial belt; the windward slopes of the mountains along the western coasts in the cool temperate zone; the coastal areas of the monsoon lands
100 to 200 cm (moderate)	The interior continental areas. NCERT adds that the coastal areas of the continents receive a moderate amount, without giving a figure for them
50 to 100 cm	The central parts of the tropical lands; the eastern and interior parts of the temperate lands
Under 50 cm (very low)	The rain-shadow zones of the interiors of the continents; the high latitudes

- NCERT gives these regions in prose; there is no table or map of them in the chapter.

- The bands do not sit neatly beside the general statements above. NCERT says the coasts get more rain than the interiors, yet it puts the interior continental areas at 100 to 200 cm and says only that the coastal areas receive a moderate amount. Learn the bands as NCERT gives them.
- **Polar regions:** precipitation is low because the air subsides in the high-pressure belts, and cold air holds little moisture (Britannica).

2.6 The dry belts and why they are dry

- **The subtropical high:** NCERT places the subtropical deserts and steppes between about 15° and 35°. From 15° to 30° they lie in the area of the subtropical high, where subsiding air and a temperature inversion do not let rain form (Day 5, Topic 44).
- **The western side of the continents:** the trade winds bring rain to the eastern coasts of the continents, while the west coasts and the interiors are very dry (Britannica).
- **Cold currents:** on the western margins, next to cold ocean currents, these dry climates reach nearer the equator along the coast, notably in western South America. Fog is common in these coastal deserts (NCERT, Class 11).
- **Two cold currents:** NCERT says cold currents are usually found on the west coasts of the continents in the low and middle latitudes. Britannica gives two examples. The Peru Current (also known as the Humboldt Current) flows north along the west coast of South America and helps keep that coast one of the most arid areas in the world. The Benguela Current flows north along the west coast of southern Africa, and the coast beside it is desert-like in its aridity.
- **Rain shadow:** on the lee side of a range, air descends and warms, so deserts form there too.

Desert	Where	Main reason it is dry
Sahara	North Africa	Subtropical high; the USGS calls it a trade wind desert and the largest of them
Atacama	West coast of South America, mainly northern Chile	A coastal desert beside a cold ocean current; it lies under the South Pacific subtropical high, and the Andes shut out the rain-bearing winds from the Atlantic. The USGS calls it the Earth's driest desert
Namib	West coast of southern Africa	A coastal desert beside a cold ocean current (USGS)
Kalahari	Interior of southern Africa: much of Botswana, parts of Namibia and South Africa	A semi-desert rather than a true desert; a high-pressure cell, the Kalahari High, dominates it in winter
Australian deserts	Australia	Subtropical high (Britannica)
Thar	North-west India and Pakistan	The USGS classes it as a monsoon desert: the monsoon winds lose their moisture before reaching it
Patagonia	Southern Argentina, east of the Andes	Rain shadow: the Andes shelter it from the Pacific westerlies
Great Basin	Utah and Nevada, in the United States	Rain shadow of the Sierra Nevada and the Cascades

2.7 The seasonal pattern

The total is only half the story: NCERT says the seasonal distribution decides how effective the rainfall is.

Region	When the rain falls	Point to remember
Equatorial	In every month, mostly as afternoon thunder showers	NCERT: rainfall is evenly distributed through the year here

Region	When the rain falls	Point to remember
Mediterranean	Hot, dry summers; mild, rainy winters	NCERT gives 35 to 90 cm a year
Monsoon	Heavy rain mostly in summer; winter dry	Tied to the reversal of winds
West European (marine west coast)	Throughout the year	NCERT: 50 to 250 cm, evenly distributed in the western parts of the cool temperate regions. Britannica: the western coasts of North America and Europe get more rain in winter

- If a question speaks of a winter maximum in the west European type, that is Britannica's point; NCERT says only "throughout the year".

2.8 Measuring rainfall

- A rain gauge is an instrument for measuring the quantity of rain that has fallen. An isohyet is a line joining points of equal precipitation (US National Weather Service glossary).

3. Extra section: rainfall records, and the measure behind each

The World Meteorological Organization (WMO) keeps an archive of weather and climate extremes. Its table of 31 July 2025 gives these rainfall records. A "wettest place" or "driest place" means nothing until the measure is named.

Measure	Place	Value	Period
Greatest average annual precipitation, Asia	Mawsynram, India	11,872 mm (about 1,187 cm)	Average of 38 years
Greatest rainfall in 12 months, world	Cherrapunji, India	26,470 mm (26.47 m)	August 1860 to July 1861
Greatest rainfall in 48 hours, world	Cherrapunji, India	2,493 mm	15 to 16 June 1995
Greatest rainfall in 24 hours, world	Foc-Foc, La Réunion (France)	1,825 mm	7 to 8 January 1966, in Tropical Cyclone Denise
Least average annual precipitation, South America	Arica, Chile	0.76 mm	Average of 59 years
Longest dry period, world	Arica, Chile	172 months	October 1903 to January 1918
Least average annual precipitation, Africa	Wadi Halfa, Sudan	Less than 2.54 mm	Average of 39 years

How to read the table:

- Mawsynram's record is an average over many years; Cherrapunji's is a single 12-month spell. The two places are both in India, and the two records are of different kinds.
- NCERT's sentence on Mawsynram, "the highest average rainfall in the world", is about the average. The WMO table lists average-annual records region by region, and Mawsynram's is the record for Asia.
- Arica holds two records of dryness: the lowest average annual precipitation in South America, and the world's longest dry period, 172 months (14 years and 4 months).
- The 24-hour record came from a tropical cyclone, the cyclonic type of rain at its most intense.

4. Three common exam traps

1. **"A rain-shadow area gets no rain."** It gets less rain, not none. The Deccan Plateau lies in the rain shadow of the Western Ghats and still gets some rain. Remember which side is which: the windward side faces the moist wind and is wetter; the leeward side lies beyond the crest and is drier. Patagonia is a rain-shadow desert because it lies east of the Andes, on the lee side for the westerlies.
2. **"Cyclonic rain means only the rain of tropical cyclones."** NCERT's cyclonic rain also covers the rain along the fronts of the temperate cyclones of the middle latitudes, where warm air is lifted over cold air. And monsoon rainfall is not a fourth way of lifting air: it is a seasonal form of rain tied to the reversal of winds, and much of it falls where the air is forced up a range.
3. **"Mawsynram and Cherrapunji hold the same record."** They do not. Mawsynram is known for the highest average annual rainfall (11,872 mm, the WMO's record for Asia). Cherrapunji holds the world records for 12 months (26,470 mm in 1860 to 1861) and for 48 hours. In the same way, Arica's records are for the lowest average annual precipitation in South America and for the longest dry period; they are not the same measure.

PART 1 · STUDY NOTES · TOPIC 107

Climate change agreements: UNFCCC, Kyoto Protocol and Paris Agreement

Science & Technology | Item 22

1. Concept in one line

The United Nations Framework Convention on Climate Change (UNFCCC, 1992) is the parent treaty on climate change; under it, the Kyoto Protocol (1997) set binding emission targets for the Parties listed in its Annex B, and the Paris Agreement (2015) asks every Party to set its own targets. The examination asks for their dates, principles, annexes, mechanisms and key Articles.

2. Revision notes

2.1 The science and the IPCC in brief

- Greenhouse gases absorb the long wave radiation given out by the Earth; human activities have added to them and the Earth has warmed (Topic 96).
- The Intergovernmental Panel on Climate Change (IPCC), set up in 1988, assesses the science; it does not negotiate. After its First Assessment Report (1990), the IPCC and the Second World Climate Conference called for a global climate treaty. More in Topic 587.

2.2 The UNFCCC (the Convention)

Point	Detail
Adopted	At New York, on 9 May 1992 (the date line of the text)
Opened for signature	At Rio de Janeiro, during the UN Conference on Environment and Development (the Rio Earth Summit) of 1992
In force	21 March 1994

Point	Detail
Parties	198, as listed on the UNFCCC website on 14 October 2026; membership is universal

- **Objective (Article 2):** the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". It is to be reached in a time-frame that lets ecosystems adapt naturally, keeps food production safe and lets economic development go on sustainably.
- **Principles (Article 3):**
  - Equity, and common but differentiated responsibilities and respective capabilities (CBDR-RC): the Parties protect the climate system "on the basis of equity" and in accordance with their "common but differentiated responsibilities and respective capabilities"; so the developed country Parties should take the lead (Article 3.1).
  - Precaution: Parties should "take precautionary measures to anticipate, prevent or minimize the causes of climate change". Where serious or irreversible damage threatens, lack of full scientific certainty should not be a reason to postpone them (Article 3.3).

Three groups of Parties

Group	Who is in it	What the Convention asks of them
Annex I Parties	Industrialised countries that were members of the OECD in 1992, and the economies in transition (countries moving to a market economy, such as the Russian Federation)	Specific commitments on limiting emissions and enhancing sinks (Article 4.2)
Annex II Parties	The OECD members of Annex I, without the economies in transition	Provide new and additional financial resources to developing countries (Article 4.3), and promote the transfer of environmentally sound technologies
Non-Annex I Parties	Mostly developing countries	No such specific commitments

Bodies of the Convention

Body	Article	Role
Conference of the Parties (COP)	Article 7	"The supreme body of this Convention". It keeps the implementation of the Convention under regular review and takes decisions. It meets every year
Subsidiary Body for Scientific and Technological Advice (SBSTA)	Article 9	Gives the COP timely information and advice on scientific and technological matters
Subsidiary Body for Implementation (SBI)	Article 10	Helps the COP assess and review the implementation of the Convention
Secretariat	Article 8	Organises the sessions of the COP and of the subsidiary bodies. It has been located in Bonn, Germany, since 1996; it was first in Geneva

2.3 The Kyoto Protocol

- **Adopted** at Kyoto on 11 December 1997, at COP3. **In force** on 16 February 2005. The meeting of its Parties is called the CMP.

- **Entry-into-force condition (Article 25):** at least 55 Parties to the Convention, including Annex I Parties accounting for at least 55 per cent of the total carbon dioxide emissions of the Annex I Parties for 1990.
- **Binding targets (Article 3.1):** the Annex I Parties were to reduce their overall emissions of the gases in Annex A "by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012". Each country's own figure is in Annex B: 37 industrialised countries and economies in transition, and the European Community (now the European Union).
- **Annex B figures are a percentage of the base year:** the European Community 92 (a cut of 8 per cent), the United States 93, Japan and Canada 94, Australia 108 (a rise of 8 per cent allowed), Iceland 110.
- **Principle:** in line with CBDR-RC, the Protocol binds only developed countries, as largely responsible for emissions so far. Developing countries such as India had no binding target.
- **The gases:** six in Annex A (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride); the Doha Amendment added nitrogen trifluoride as the seventh, from the second commitment period (Topic 96).
- **Second commitment period (2013 to 2020):** set by the Doha Amendment, adopted at Doha, Qatar, on 8 December 2012 (at CMP8). Its Parties committed to cut emissions by at least 18 per cent below 1990 levels over the eight years. The Amendment entered into force on 31 December 2020.

The three flexible (market) mechanisms

Mechanism	Article of the Protocol	Who and where	What it does
International Emissions Trading	Article 17	Between the Parties in Annex B	Countries trade emission allowances, called assigned amount units (AAUs), to meet part of their targets
Clean Development Mechanism (CDM)	Article 12	A project in a Party not included in Annex I (a developing country)	The project earns certified emission reductions (CERs), which an Annex I Party may use for part of its target. Its two purposes: sustainable development in the host country, and helping Annex I Parties comply
Joint Implementation (JI)	Article 6	A project in one Annex I Party, credited to another Annex I Party	The project cuts emissions or enhances sinks and earns emission reduction units (ERUs)

- All three are to be supplemental to domestic action: a country cannot meet its target by trading alone.
- Do not mix up the two "Article 6"s: Article 6 of the Kyoto Protocol is Joint Implementation; Article 6 of the Paris Agreement is on cooperative approaches (2.5).
- **Adaptation Fund:** it finances adaptation projects and programmes in developing countries that are Parties to the Protocol. In the first commitment period it was financed mainly by a share of the proceeds from CDM project activities (Article 12.8). For the second period, the Doha decision added a 2 per cent share of proceeds from International Emissions Trading and Joint Implementation.

2.4 The Paris Agreement: goals and core Articles

- **Adopted** on 12 December 2015 at COP21 in Paris. The UNFCCC website says it was adopted by 195 Parties; some books give 196 (195 countries and the European Union). **In force** on 4 November 2016. The meeting of its Parties is called the CMA.
- Keep the three counts apart: 195 Parties adopted the Agreement (12 December 2015); 194 are Parties to the Agreement (as of 27 January 2026, 2.6); 198 are Parties to the Convention (as on 14 October 2026, 2.2).

- **Entry-into-force condition (Article 21):** at least 55 Parties to the Convention accounting for at least an estimated 55 per cent of total global greenhouse gas emissions. Compare Kyoto, which counted only the Annex I Parties' carbon dioxide of 1990.

Article	What it provides
Article 2.1: the three goals	(a) holding the increase in the global average temperature to "well below 2°C above pre-industrial levels" and pursuing efforts to limit it to "1.5°C above pre-industrial levels"; (b) increasing the ability to adapt and fostering climate resilience; (c) "making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development"
Article 4: nationally determined contributions (NDCs)	Each Party shall "prepare, communicate and maintain successive nationally determined contributions". Each new NDC is to represent a progression beyond the current one and reflect the Party's highest possible ambition. A new NDC is communicated every five years
Article 13: enhanced transparency framework	An enhanced transparency framework for action and support, with flexibility reflecting capacities. BTRs are generally due every two years: the first by 31 December 2024 and the second by 31 December 2026. LDCs and SIDS may submit the required information at their discretion. Reporting covers emissions, NDC progress, adaptation and support as applicable; the Agreement differentiates obligations by subject and Party category.
Article 14: global stocktake	The CMA periodically takes stock of the implementation of the Agreement, to assess the collective progress towards its purpose and long-term goals: first in 2023, then every five years. The first was concluded at COP28 in Dubai (December 2023)
Article 28: withdrawal	A Party may give notice at any time after three years from the Agreement's entry into force for it; the withdrawal takes effect one year after the notice is received

- Article 13 and Article 14 work together: each Party's reports under Article 13 feed the collective stocktake under Article 14, which informs the next NDCs.

2.5 The Paris Agreement: markets, loss and damage, finance

- **Article 6 (cooperative approaches):**
  - 6.2: Parties may cooperate voluntarily in implementing their NDCs, using "internationally transferred mitigation outcomes" (country-to-country trading of emission reductions).
  - 6.4: a mechanism "to contribute to the mitigation of greenhouse gas emissions", under the authority of the CMA. COP29 calls it the "Paris Agreement Crediting Mechanism".
  - 6.8: non-market approaches.
  - **COP29 at Baku (closed 24 November 2024):** the rules for Article 6 were agreed: for 6.2, how countries authorise trades and how registries track them; for 6.4, standards for the centralised mechanism, with mandatory environmental and human rights safeguards.
- **Loss and damage (Article 8):** Parties recognise the importance of "averting, minimizing and addressing loss and damage associated with the adverse effects of climate change". The Warsaw International Mechanism for Loss and Damage dates from COP19 (2013). COP27 at Sharm el-Sheikh (2022) agreed to set up a fund for loss and damage. COP28 at Dubai operationalised it on its first day.
- **Climate finance:**
  - Article 9.1: "Developed country Parties shall provide financial resources to assist developing country Parties" with both mitigation and adaptation. Other Parties are encouraged to contribute voluntarily.
  - The earlier goal was USD 100 billion a year by 2020. It came first in the Copenhagen Accord (COP15, 2009), in which developed countries committed to a goal of mobilising this sum jointly. The Cancún Agreements (COP16, 2010) formally recognised that commitment and set up the Green Climate Fund.

- **New collective quantified goal (NCQG), COP29 at Baku (2024):** at least USD 300 billion a year for developing countries by 2035, three times the earlier USD 100 billion; and a call on all actors to scale up finance from public and private sources to USD 1.3 trillion a year by 2035.

2.6 Who is in: Parties, withdrawals and India

Treaty	Parties, as on 14 October 2026 (UNFCCC website)	Countries to remember
UNFCCC	198	The United States gave notice of withdrawal on 27 February 2026; the UN depositary notice says it takes effect on 27 February 2027. Until then it remains a Party
Kyoto Protocol	192	The United States signed it (12 November 1998) but never ratified it. Canada gave notice of withdrawal in December 2011, effective 15 December 2012
Paris Agreement	194 (the count stated as of 27 January 2026)	The withdrawal of the United States took effect on 27 January 2026 (Topic 80)

India

- India is a non-Annex I Party to the Convention, so it has no quantified commitment under Article 4.2 and no Annex B target.
- India acceded to the Kyoto Protocol on 26 August 2002 and accepted the Doha Amendment on 8 August 2017.
- India ratified the Paris Agreement on 2 October 2016, depositing its instrument at the UN as the 62nd country to do so. Its NDCs (2015, updated in August 2022, and the NDC for 2031 to 2035) and its long-term goal of net zero by 2070 are set out in Topic 80, and come again in Topic 307.

2.7 The three treaties compared

Point	UNFCCC	Kyoto Protocol	Paris Agreement
Adopted	9 May 1992, New York	11 December 1997, Kyoto (COP3)	12 December 2015, Paris (COP21)
In force	21 March 1994	16 February 2005	4 November 2016
Its meeting of Parties	COP	CMP	CMA
Who takes on what	Annex I: specific commitments; Annex II: finance and technology	Binding targets only for the Parties in Annex B; an average cut of at least 5 per cent below 1990 in 2008 to 2012	Every Party prepares and communicates its own NDC, a new one every five years
Temperature aim	Stabilise concentrations at a safe level (no figure)	No temperature figure	Well below 2°C; efforts towards 1.5°C
Market tools	None of its own	International Emissions Trading, CDM, JI	Article 6.2, the 6.4 mechanism, non-market approaches under 6.8

Point	UNFCCC	Kyoto Protocol	Paris Agreement
Parties (UNFCCC website, 14 October 2026)	198	192	194 (as of 27 January 2026)

- Other days: Topics 307 (India's NDCs, net zero, Mission LiFE), 207 (National Action Plan on Climate Change), 287 (Montreal Protocol), 586 (effects) and 667 (a named COP).

3. Extra section: the COPs that shaped the treaties

COP	Place and year	Known for
COP1	Berlin, Germany, 1995	First COP: a mandate to begin a process on country action for the period beyond 2000
COP3	Kyoto, Japan, December 1997	The Kyoto Protocol adopted on 11 December
COP13	Nusa Dua, Bali, Indonesia, December 2007	The Bali Road Map, with the Bali Action Plan for talks on the period after 2012
COP15	Copenhagen, Denmark, December 2009	The Copenhagen Accord, of which the COP only took note; in it developed countries first committed to mobilising USD 100 billion a year by 2020
COP16	Cancún, Mexico, 2010	The Cancún Agreements: formally recognised the USD 100 billion a year goal and set up the Green Climate Fund
COP21	Paris, France, 2015	The Paris Agreement adopted on 12 December
COP26	Glasgow, United Kingdom, 2021	The Glasgow Climate Pact called for accelerating efforts towards the phase-down of unabated coal power and the phase-out of inefficient fossil-fuel subsidies.
COP27	Sharm el-Sheikh, Egypt, 2022	Agreement on a fund for loss and damage
COP28	Dubai, United Arab Emirates, 2023	First global stocktake concluded; loss and damage fund operationalised
COP29	Baku, Azerbaijan, 2024	NCQG of USD 300 billion a year by 2035; rules for Article 6
COP30	Belém, Brazil, 2025	The first COP hosted by Brazil, in the Amazon region (details in Topic 80)
COP31	Antalya, Türkiye, 2026	Türkiye hosts and holds the presidency; Chris Bowen of Australia is President of Negotiations (details in Topic 80)

- COP32 is to be held in Ethiopia in 2027.
- One more milestone: COP7 at Marrakesh (2001) adopted the Marrakesh Accords, the detailed rules of the Kyoto Protocol.

4. Three common exam traps

1. **Mixing up "adopted" and "in force", and Rio and New York.** The text of the UNFCCC was adopted at New York (9 May 1992) and only opened for signature at the Rio Earth Summit; it came into force in 1994. The Kyoto Protocol has 1997 and 2005; the Doha Amendment has 2012 and 2020; the Paris Agreement has 2015 and 2016.

2. **Turning the goals into one number.** Article 2.1(a) combines holding warming well below 2°C with pursuing efforts to limit it to 1.5°C above pre-industrial levels. Preserve both elements; neither should be omitted. Kyoto's "5 per cent" is the collective average of the first period, not every country's target: Annex B gave each country its own figure, and some were allowed a rise.
3. **Treating "signed", "Party" and "withdrawn" as the same.** The United States signed the Kyoto Protocol but never ratified it, so it was never a Party; Canada was a Party and then withdrew. The United States has left the Paris Agreement (from 27 January 2026), but its withdrawal from the Convention takes effect only on 27 February 2027, as notified; as of 16 October 2026, it remains a Party to the UNFCCC.

PART 1 · STUDY NOTES · TOPIC 108

Decision making: types and steps

General Mental Ability: Reasoning & Psychological | Item 17

1. Concept in one line

Decision making is choosing one course of action from the alternatives that are available, in order to reach an objective. The exam asks about the types of decision, the order of the steps, the techniques and pitfalls of group decisions, and the common biases.

2. Revision notes

2.1 What decision making is, and why it matters to a civil servant

- **Meaning.** Decision making is the process of identifying and analysing the possible alternatives and choosing one course of action from them. A wider, commonly quoted definition calls it the mental (cognitive) process that ends in the selection of a belief or a course of action from among several alternatives.
- **No alternatives, no decision.** NCERT, writing on planning, says that the need for planning arises only when alternatives are available, and that planning involves decision making: each alternative has to be examined and evaluated.
- **A decision serves an objective.** The first step of planning in NCERT is setting objectives, which specify what the organisation wants to achieve. An option is "good" or "bad" only against that objective.
- **Why it matters in public service.** An officer decides all day: routine files in the morning, an emergency in the evening. Each decision touches citizens, spends public money and can be questioned later, so it must rest on facts, on the rules and on fairness.

2.2 Types of decision

Type	What it means	Public-service example
Programmed decision	A routine, repetitive decision on a situation that recurs, made within rules, procedures or policies already laid down	A municipal clerk issues a birth certificate after checking the hospital record against the fixed checklist
Non-programmed decision	A decision on a new, unusual or non-recurring problem, for which no procedure and no ready-made alternatives exist; it is usually of high importance and needs judgement and creative thinking	After a cyclone destroys a ration shop and its records, an officer decides how to distribute rations that week

Type	What it means	Public-service example
Strategic decision	A major choice on allocating resources towards the long-term goals of the organisation; usually made by top managers	A State decides to spend its road budget for three years on repairing existing roads before laying new ones
Tactical decision	A decision on the specific actions that will bring about the objectives; usually made by middle managers	The Chief Engineer decides how the year's repair money is shared among the divisions
Operational decision	A decision on day-to-day functions, subordinate to strategic and tactical decisions	An engineer decides which damaged roads in the division are repaired this month
Individual decision	A decision taken by one person alone	A tahsildar decides a land-record correction on the file before him
Group decision	A decision taken by several members together; in many cases it is preferable, because complex problems often need several specialists	Health, police and transport officers decide together on the crowd plan for a large festival

- **The test for programmed against non-programmed is whether the situation recurs and is already covered by a rule, procedure or policy.** Herbert Simon introduced this distinction. Texts add that non-programmed decisions are usually of high importance and are taken at the top, while programmed decisions can be left to lower staff too. These are usual features, not the test: a senior officer's routine sanction under a fixed procedure is still a programmed decision.
- **Link with NCERT's plans.** NCERT says that rules are specific statements that do not allow any flexibility or discretion, that procedures are routine steps for carrying out activities, and that policies are general statements which a manager may use his or her discretion to interpret and apply. Programmed decisions are made within such standing guides.
- **Three levels or two.** Some texts join tactical and operational decisions into one class (tactical or operational), derived from strategic decisions and tied to day-to-day working; others keep three levels.
- **Risk and uncertainty.** Frank Knight (Risk, Uncertainty and Profit, 1921) separated risk, where the chances of the outcomes can be measured, from uncertainty, where there is no quantifiable knowledge of them. In the technical distinction used here, a decision is under risk when outcome probabilities can be assessed, and under uncertainty when reliable probabilities are unavailable.

2.3 The steps of the decision process

Standard texts put the steps in this order; some put setting the objectives before defining the problem. NCERT's steps of planning follow nearly the same sequence; NCERT has no separate first step for defining the problem.

No.	Step	NCERT's planning step	What goes wrong at this step
1	Identify and define the problem	(NCERT begins at objectives)	The officer treats a symptom, or defines the problem so narrowly that good options are shut out
2	Set the objectives and the criteria for judging options	Setting objectives	A vague objective ("improve things") gives no yardstick, so options cannot be compared

No.	Step	NCERT's planning step	What goes wrong at this step
3	Gather information	Developing premises: assumptions about the future, based on forecasts	Only the facts that suit a preferred answer are collected; forecasts are not checked
4	Develop alternatives	Identifying alternative courses of action	Too few options; the first workable one is taken without looking further
5	Evaluate the alternatives against the criteria	Evaluating alternative courses: weighing pros and cons, risk and return	The criteria are changed midway to suit a favourite, or risks are ignored
6	Choose	Selecting an alternative; sometimes a combination of plans is chosen	The choice is made under pressure from a superior or a group, not on the evaluation
7	Implement	Implementing the plan: putting it into action	Orders are not communicated, or men, money and material are not provided
8	Monitor and review	Follow-up action: monitoring to ensure that objectives are achieved	No feedback is collected, so a failing course is continued

- Herbert Simon reduced the process to three phases: intelligence (finding the occasion for a decision), design (identifying, developing and analysing the possible alternatives) and choice (selecting one course of action).

2.4 Information, time and values

- **Information.** For a non-programmed decision, information is often ambiguous or incomplete, and the mind can process only so much of it. This is one reason why real decisions fall short of the ideal.
- **Time.** NCERT notes that time is a limited resource. With little time to collect and process information, a good non-programmed decision becomes less likely, and people fall back on mental shortcuts (heuristics) that save time but need not give the best answer.
- **Values.** Personal biases can tilt a choice, for example towards the familiar or towards people like oneself (the "similar to me" bias). In public service, values such as fairness and the safety of life often decide between options that are equal on cost.

2.5 Group decision making

Advantages	Drawbacks
More complete information and knowledge	It takes more time
More diverse views	Members feel pressure to conform
Greater acceptance of the solution by those who must carry it out	One member or a few members may dominate
Group decisions are generally more accurate than those of the average member (but less accurate than those of the most accurate member)	Responsibility for the decision can become unclear (ambiguous)

Groupthink. The word was coined by William H. Whyte Jr. in 1952. Irving Janis, a psychologist at Yale, built the theory in Victims of Groupthink (1972; revised in 1982 as Groupthink). Janis described it as a mode of thinking in a cohesive in-group in which the search for agreement (concurrence-seeking) becomes so strong

that it overrides a realistic appraisal of the alternatives. He named high group cohesiveness as the main factor leading to it; structural faults (insulation from outside views, a leader who is not impartial, members of one type) and a stressful situation add to the risk. His eight symptoms fall into three types:

Type	Symptom	What it looks like
Overestimation of the group	Illusion of invulnerability	Too much optimism; risks are taken freely
Overestimation of the group	Unquestioned belief in the group's morality	Members ignore the consequences of their actions
Closed-mindedness	Rationalisation	Warnings that challenge the group's assumptions are explained away
Closed-mindedness	Stereotyping outsiders	Opponents are seen as weak, evil or stupid
Pressure towards uniformity	Self-censorship	Members keep back ideas that differ from the apparent consensus
Pressure towards uniformity	Illusion of unanimity	Silence is taken as agreement
Pressure towards uniformity	Direct pressure on dissenters	A member who questions the group is called disloyal
Pressure towards uniformity	Mindguards	Self-appointed members shield the group from dissenting information

Janis's remedies include a leader who does not state an opinion at the start, outside experts, discussion with trusted people outside the group, and one member who plays devil's advocate at each meeting.

Techniques for better group decisions

Technique	How it works
Brainstorming	Members produce as many ideas as possible; no idea may be criticised until all members have offered theirs, and evaluation waits till then
Nominal group technique	Members write their ideas silently and independently, the ideas are listed in turn with no discussion until all are recorded, then discussed briefly to clarify them, and finally ranked by each member's vote
Delphi technique	A systematic way to obtain agreement from a panel of experts who do not meet face to face: written replies to questionnaires are summarised, the summary goes back to the experts, they reconsider, and the rounds continue to a predefined stopping point, such as a fixed number of rounds or a stated consensus criterion; agreement is not guaranteed; developed at the RAND Corporation and used for forecasting and policy-making
Devil's advocacy	One person is appointed to question critically whether each proposal is valid and feasible
Dialectical inquiry	Two opposing sets of recommendations are debated to bring out the strengths and weaknesses of each

2.6 Common biases

Bias	What it is
Anchoring and adjustment	Early information shapes the view of the information that comes later
Confirmation bias (selective search for evidence)	Gathering the facts that support a conclusion and ignoring those that go against it

Bias	What it is
Sunk-cost fallacy	Continuing a course because of what has already been invested in it; linked to escalating commitment
Availability heuristic (availability bias)	Overestimating how likely an event is because it comes easily to memory, for example because it is recent, unusual or emotionally charged
Overconfidence	Having more confidence in one's own answers than is justified

2.7 Decision aids and the models in brief

- **Probability-weighted comparison (expected value):** weigh each outcome by its chance and pick the option with the highest weighted value.
- **Decision tree:** a tree-like diagram of decisions and their possible consequences, including chance outcomes; decision points are usually drawn as squares, chance events as circles and end points as triangles. **Cost-benefit analysis:** compares the benefits and costs of each alternative, including leaving things as they are, in money terms; it is widely used for public policy. **SWOT analysis:** lists the strengths and weaknesses (usually internal) and the opportunities and threats (usually external) of an organisation or project.
- **Models (Topic 468):** the rational model is a multi-step process that favours logic, objectivity and analysis; Simon's bounded rationality says decisions are limited by the information and time available and by the mind's capacity, so people often "satisfice", taking the first acceptable option. The intuitive approach is used by experts under high time pressure, high stakes or ambiguity.

Other days cover decision making models (Topic 468), problem solving (Topic 338), critical thinking (Topics 268 and 598), administrative prioritisation (Topic 728), biases under pressure (Topic 788), and group decision making and groupthink in depth (Topic 988).

3. Extra section: a worked case, a flood in a district

At 6 p.m. a district officer receives a warning that a river, swollen by rain upstream, may flood three low-lying villages by early morning.

1. **Define the problem.** Not "the river is rising" but "people in three villages may be trapped by water before dawn". This points the decision at people, not at the water.
2. **Objectives and criteria.** First, no loss of life; second, the least hardship. Options will be judged on safety, on whether they can be done before night, on the boats, buses and camps available, and on whether villagers will accept them.
3. **Information.** Upstream water-level readings, the rain forecast, the list of elderly, pregnant and disabled people from the health staff, and the camps ready. Guard against anchoring: last year's flood did not reach these villages, but that is no forecast for tonight.
4. **Alternatives.** A: move everyone in the three villages tonight. B: wait for the 2 a.m. reading. C: move the most vulnerable people now and keep the rest on alert, with buses standing by.
5. **Evaluate.** A is safest but hard at night and may meet resistance. B saves effort, but if the water rises fast, a night rescue is dangerous: it fails the first criterion. C protects those least able to move and keeps the vehicles ready. At the meeting, one officer is asked to argue against every option, so that the group does not slide into groupthink.
6. **Choose.** C now, with a trigger: if the 2 a.m. reading crosses the set level, move everyone (A). A combination is a legitimate choice.
7. **Implement.** Orders to the mandal teams, buses and boats in place, food and medicines at the camps, announcements in the villages.

8. **Monitor and review.** Hourly readings and head counts at the camps. If the water rises faster than forecast, change course at once; effort already spent on C is no reason to stay with it (sunk cost). After the flood, record what worked.

Type of decision: the district's standing flood plan makes parts of this programmed (opening camps), but tonight's choice among A, B and C, for a situation the plan did not foresee, is non-programmed.

4. Three common exam traps

1. **Who gave "groupthink".** The word was coined by William H. Whyte Jr. (1952). Irving Janis built the theory and listed its symptoms (Victims of Groupthink, 1972). A question on the theory or the symptoms points to Janis; a question on the first use of the word points to Whyte.
2. **The order of NCERT's planning steps.** Setting objectives, developing premises, identifying alternatives, evaluating them, selecting one, implementing, follow-up action. "Developing premises" (assumptions about the future) comes before identifying alternatives, and follow-up comes after implementation. Ordering questions jumble exactly these.
3. **Telling the biases apart by their description.** Early information colouring later judgement is anchoring. Looking only for supporting facts is confirmation bias. Continuing because of what is already spent is the sunk-cost fallacy. Examiners describe a behaviour and ask for its name.

PART 1 · STUDY NOTES · TOPIC 109

BODMAS and simplification

General Mental Ability: Quantitative & Data | Item 14

1. Concept in one line

BODMAS is the agreed order in which the operations in an expression are carried out, so that one expression has only one value. The exam gives a long expression to simplify, and most wrong options are the values you get by doing the steps in the wrong order.

2. Revision notes

2.1 Why an order of operations is needed

- An expression is a set of numbers joined by operation signs (+, -, ×, ÷), with or without brackets. To simplify it is to find its single value.
- Without an agreed order, one expression can give two values. 30 + 5 × 4 is 50 if you multiply first, but 140 if you add first.
- The agreed rule is to multiply first, so 30 + 5 × 4 = 30 + 20 = 50. If the addition is meant to come first, it must be put in brackets: (30 + 5) × 4 = 140.
- The order of operations exists so that a writer and a reader, or an examiner and a candidate, get the same value from the same expression.

2.2 BODMAS, letter by letter

Rank	Letters	Operations	Example
1	B	Brackets: the bar, ( ), { } and [ ], worked from the innermost outwards	2 × (3 + 4) = 2 × 7 = 14
2	O	Orders (powers and roots), and "of"	1/2 of 6^2 = 1/2 of 36 = 18

Rank	Letters	Operations	Example
3	D, M	Division and multiplication: equal rank, worked from left to right	18 ÷ 3 × 2 = 6 × 2 = 12
4	A, S	Addition and subtraction: equal rank, worked from left to right	20 - 8 + 3 = 12 + 3 = 15

- **BODMAS** stands for Brackets, Orders or "of", Division, Multiplication, Addition, Subtraction. The O is read as "of" (a multiplication) in some books and as "order" (a power or a root) in others.
- **Other names for the same rule:** BIDMAS (I for indices, that is, powers), BEDMAS (E for exponents; common in Canada and New Zealand) and PEMDAS (Parentheses, Exponents, Multiplication or Division, Addition or Subtraction; common in the United States and France). They rank brackets, powers, ×, ÷, + and - in the same way. Only the names of the letters differ.

2.3 The two rules that students miss

- **Division and multiplication have equal rank.** When both appear, work them from left to right, whichever comes first. 48 ÷ 6 × 2 = 8 × 2 = 16. Multiplying first, 48 ÷ 12 = 4, is wrong.
- **Addition and subtraction have equal rank too.** Work them from left to right. 20 - 8 + 3 = 12 + 3 = 15. Adding first, 20 - 11 = 9, is wrong.
- The order of the letters in BODMAS does not mean "divide before you multiply" or "add before you subtract". Some guidebooks print the list D, M, A, S as if it were a ranking; it is not.
- **Why left to right works for + and -:** NCERT reads an expression as a sum of terms. Terms are the parts separated by a "+" sign, and every subtraction is first turned into the addition of a negative number: 20 - 8 + 3 = 20 + (-8) + 3. The terms can then be added in any order, and the value is still 15. Each minus sign stays with the number just after it.

2.4 Where "of" stands

- "Of" means multiplication: 3/4 of 20 = 3/4 × 20 = 15.
- **The rule used in these notes:** "of" is worked before division and multiplication. This is a common convention in Indian school guidebooks (their list reads: of, division, multiplication, addition, subtraction), not a universal rule. Powers and roots inside it are worked first: 1/2 of 6^2 = 1/2 of 36 = 18.
- **How others treat it.** The NCERT chapter on arithmetic expressions (Ganita Prakash, Grade 7) does not use BODMAS or any other mnemonic and gives "of" no rank of its own; it works through terms and brackets. Where the O of BODMAS is read as "order" (powers), "of" is simply a multiplication, worked from left to right with division.
- **When the two readings differ.** Only when "of" comes straight after a division sign. 24 ÷ 4 of 3 is 24 ÷ 12 = 2 if "of" is worked first, but 6 × 3 = 18 if "of" is treated as an ordinary ×. Anywhere else the two readings agree: 3/4 of 20 ÷ 5 = 15 ÷ 5 = 3 either way.
- In the two MCQs below, the placement of “of” causes no ambiguity, so both readings give the same value. If you meet "÷ … of" in a guidebook question, the guidebook expects "of" first.
- A similar doubt arises when a number is written against a bracket with no sign, after a division: 8 ÷ 2(2 + 2) is read as 1 by some and as 16 by others. Questions set with care avoid this form.

2.5 Powers and roots before multiplication

- A power or a root is worked out before any multiplication, division, addition or subtraction next to it. 2 + 3^2 × 2 = 2 + 9 × 2 = 2 + 18 = 20. √36 + 2^3 ÷ 4 = 6 + 8 ÷ 4 = 6 + 2 = 8.
- **A minus sign in front of a power.** -3^2 means -(3^2) = -9. The square is taken first and the minus sign is put in front afterwards. Only $(-3)^2$ = 9, where the minus sign is inside the bracket.

2.6 The kinds of brackets, and the order in which they are removed

Order of removal	Symbol	Name	Example
1 (innermost)	a line drawn over a group of numbers	Bar (vinculum)	9 - bar(5 - 2) = 9 - 3 = 6
2	( )	Parentheses, or round brackets	7 + (6 - 4) = 7 + 2 = 9
3	{ }	Braces, or curly brackets	3 × {10 - (2 + 3)} = 3 × 5 = 15
4 (outermost)	[ ]	Square brackets	[12 - {4 + (5 - 3)}] = [12 - 6] = 6

- In these notes, bar(5 - 2) stands for a bar drawn over 5 - 2.
- The **bar** (vinculum) is a horizontal line drawn over numbers to group them. 9 - bar(5 - 2) means "work out 5 - 2 first, then subtract the result from 9": 9 - 3 = 6. Read without the bar, 9 - 5 - 2 = 2. Modern mathematics mostly uses parentheses in its place, but guidebook simplification questions still use it.
- **Innermost first.** Brackets can be nested one inside another. Always work from the inside outwards. Indian school guidebooks nest them in a fixed order, so this means the bar first, then ( ), then { }, then [ ]. That order is a common convention, not a universal rule: if a book nests them differently, the innermost bracket still comes first. Inside each bracket, follow the rest of BODMAS (powers, then division and multiplication, then addition and subtraction).
- A bar is also used with a root sign to show the entire expression under the root; here it still groups the radicand. Over the repeating digits of a recurring decimal, a bar instead marks repetition (Topic 19 writes these as 0.333...).

2.7 A minus sign before a bracket

- When a bracket with a minus sign before it is removed, the sign of every term inside it changes. 100 - (15 + 56) = 100 - 15 - 56 = 29. 500 - (250 - 100) = 500 - 250 + 100 = 350.
- When the sign before a bracket is "+", the terms inside keep their signs.
- A number written just before a bracket multiplies everything inside: 2 × (43 + 24) = 2 × 43 + 2 × 24 = 134.
- The safest course with nested brackets is to work out the innermost bracket to a single number first. Then every bracket outside it holds plain numbers only.
- **A negative result inside a bracket.** If a bracket works out to a negative number, keep the minus sign: 10 + [12 - (20 - 5)] = 10 + [12 - 15] = 10 + (-3) = 7.

2.8 Quick checks before you choose an option

- **Estimate first.** Round the numbers and work the expression roughly in the right order. The option nearest the estimate is usually the answer; an option that comes from adding first or multiplying first is often far away.
- **Check the sign.** If the expression subtracts more than it adds, the value may be negative. A negative intermediate result (15 - 24 = -9) must keep its minus sign in the next step.
- **Count the terms.** Split the expression at each + and - sign that is outside every bracket. Work each term to a single number, then add the terms with their signs.

2.9 Common mistakes: wrong and right working side by side

Mistake	Wrong working	Right working
Multiplying before dividing	48 ÷ 6 × 2 = 48 ÷ 12 = 4	48 ÷ 6 × 2 = 8 × 2 = 16

Mistake	Wrong working	Right working
Adding before subtracting	20 - 8 + 3 = 20 - 11 = 9	20 - 8 + 3 = 12 + 3 = 15
Adding before multiplying	30 + 5 × 4 = 35 × 4 = 140	30 + 5 × 4 = 30 + 20 = 50
Reading past the bar	9 - bar(5 - 2) = 9 - 5 - 2 = 2	9 - bar(5 - 2) = 9 - 3 = 6
Not changing the signs after a minus	500 - (250 - 100) = 500 - 250 - 100 = 150	500 - (250 - 100) = 500 - 250 + 100 = 350
Squaring the minus sign	$-3^2 = 9$	$-3^2 = -(3^2) = -9$
Losing the sign of a negative result	15 - 24 + 12 = 9 + 12 = 21	15 - 24 + 12 = -9 + 12 = 3

Other days cover simplification with fractions and decimals (Topic 239), approximation, symbol substitution (Topic 399), newly defined operations (Topic 609) and algebraic identities for quick calculation (Topic 799).

3. Extra section: worked examples

A. Division and multiplication from left to right

1. **36 ÷ 4 × 3.** Left to right: 36 ÷ 4 = 9, then 9 × 3 = 27. (Multiplying first would give 36 ÷ 12 = 3.)
2. **72 ÷ 8 × 3 - 45 ÷ 9 × 2.** First term: 72 ÷ 8 = 9, then 9 × 3 = 27. Second term: 45 ÷ 9 = 5, then 5 × 2 = 10. Then 27 - 10 = 17.
3. **60 - 15 + 5.** Left to right: 60 - 15 = 45, then 45 + 5 = 50. (Adding first would give 60 - 20 = 40.)

B. "Of"

1. **3/5 of 40 ÷ 8 + 2.** "Of" first: 3/5 of 40 = 24. Then 24 ÷ 8 = 3. Then 3 + 2 = 5. Here "of" is not just after a division sign, so treating "of" as an ordinary × and working left to right gives the same 5.
2. **24 ÷ 4 of 3: the case where books differ.** With "of" first (the rule of these notes): 4 of 3 = 12, and 24 ÷ 12 = 2. With "of" as an ordinary ×, left to right: 24 ÷ 4 = 6, and 6 × 3 = 18. Written with brackets, 24 ÷ (4 × 3), there is no doubt.

C. Nested brackets with a bar

1. **50 - [20 - {14 - (9 - bar(6 - 2))}].**
   - Bar: 6 - 2 = 4.
   - Parentheses: 9 - 4 = 5.
   - Braces: 14 - 5 = 9.
   - Square brackets: 20 - 9 = 11.
   - Last step: 50 - 11 = 39.
   - Check: reading past the bar (9 - 6 - 2 = 1) would give 14 - 1 = 13, 20 - 13 = 7 and 50 - 7 = 43, which is wrong.

D. Fractions and decimals

1. **0.6 × 0.5 + 2.4 ÷ 0.8 - 0.3.** Multiplication and division first: 0.6 × 0.5 = 0.3 and 2.4 ÷ 0.8 = 3. Then 0.3 + 3 - 0.3 = 3.
2. **2/3 + 1/2 × 4/9 - 1/6.** Multiplication first: 1/2 × 4/9 = 2/9. Then, with the common denominator 18: 12/18 + 4/18 - 3/18 = 13/18. (Adding 2/3 and 1/2 first would give 7/6 × 4/9 - 1/6 = 19/54, which is wrong.)

E. A long chain with a negative result on the way

1. **15 - 4 × 6 + 18 ÷ 3 × 2 - (7 - 12).**
   - Bracket: 7 - 12 = -5, so the last part is - (-5) = +5.
   - Multiplication and division, left to right: 4 × 6 = 24; 18 ÷ 3 = 6, then 6 × 2 = 12.
   - The expression is now 15 - 24 + 12 + 5.
   - Left to right: 15 - 24 = -9; -9 + 12 = 3; 3 + 5 = 8.
   - Check by terms: (15 + 12 + 5) - 24 = 32 - 24 = 8.

4. Three common exam traps

1. **"DMAS" is not a ranking of four steps.** Division and multiplication share one rank, and addition and subtraction share the next; within each pair, work from left to right. 18 ÷ 3 × 2 is 12, not 3; 20 - 8 + 3 is 15, not 9. Options are built from exactly these slips.
2. **A minus sign in front of a bracket or a bar changes every sign inside.** 500 - (250 - 100) is 350, not 150. A bar groups the numbers under it just as brackets do: 9 - bar(5 - 2) is 6, not 2.
3. **"Of" right after a division sign.** 24 ÷ 4 of 3 gives 2 when "of" is worked first (a common Indian guidebook convention) and 18 when "of" is treated as an ordinary ×. In every other position "of" is plain multiplication and both readings agree. A power with a minus sign in front has a similar trap: -3^2 is -9, not 9.

PART 1 · STUDY NOTES · TOPIC 110

Current affairs: LVM3-M6 and the BlueBird Block-2 satellite (December 2025)

Current Affairs | CA-ST

Scheduled topic: Current affairs: Science, Technology, Health & Defence (one topic from the December 2025 issue of the monthly magazine)

1. Concept in one line

On 24 December 2025 ISRO's LVM3-M6 placed BlueBird Block-2, a communication satellite of about 6,100 kg belonging to AST SpaceMobile of the United States, in Low Earth Orbit under a commercial agreement made through NewSpace India Limited, and it is the heaviest satellite launched from Indian soil. The examination asks about the mission and its records, the satellite and direct-to-device service, the LVM3 and its flights, and India's commercial launch business.

2. Revision notes

2.1 The mission at a glance

Point	Detail
Launch	24 December 2025, 08:55 hours Indian Standard Time (IST), from the Second Launch Pad (SLP) of the Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota. In the eastern United States it was then 10:25 pm on 23 December 2025, so the company's release gives 23 December
Flight	LVM3-M6, the sixth operational flight of LVM3 and its third dedicated commercial mission

Point	Detail
Customer	AST SpaceMobile, a company of the United States. ISRO's mission brochure names the contracting company as AST and Science, LLC
Agreement	A commercial agreement between NewSpace India Limited (NSIL), the commercial arm of ISRO, and AST SpaceMobile
Payload	One satellite, BlueBird Block-2, of about 6,100 kg
Target orbit (ISRO mission brochure)	Circular, at 520 km altitude, with an inclination of 53 degrees (allowed error 0.1 degree). Inclination is the angle between the plane of the orbit and the equator (Topic 7)
Result	ISRO: the satellite was placed in its intended orbit. In the brochure's flight plan the satellite separates about 942.5 seconds after lift-off, at an altitude of about 520.8 km

- The six operational flights are LVM3-M1 to LVM3-M6. The experimental flight of 2014 and the two developmental flights (D1 and D2) came before them and are not in that count.
- How the official sources word the record: the Prime Minister's message (Press Information Bureau, 24 December 2025) called it "the heaviest satellite ever launched from Indian soil into its intended orbit"; ISRO's brochure says "the heaviest payload (~6100 kgs.) into Low Earth Orbit (LEO) in the LVM3 launch history".
- Before the launch some reports gave the mass as 6.5 tonnes and the date as 15 December 2025. ISRO and NSIL give about 6,100 kg, and the launch took place on 24 December 2025.

2.2 The satellite: BlueBird Block-2, or BlueBird 6

- **Names:** ISRO and NSIL call it BlueBird Block-2. AST SpaceMobile calls it BlueBird 6 and counts it among its next-generation BlueBird satellites. ISRO's list of LVM3 launches writes "Blue Bird 2".
- **Antenna:** a phased-array antenna of 223 square metres (ISRO brochure). The company gives "nearly 2,400 square feet", which is the same area. ISRO calls BlueBird Block-2 the largest commercial communications satellite deployed in Low Earth Orbit; the company calls its antenna the largest commercial communications array deployed there.
- **Against the first generation:** the company says BlueBird 6 is about three times the size of its BlueBirds 1 to 5 (their array is 693 square feet) and is designed for up to ten times their capacity, with peak data rates of up to 120 Mbps.
- **What it is for:** it is part of a global constellation in Low Earth Orbit meant to give cellular broadband from space directly to standard smartphones: 4G and 5G voice, video, texts, streaming and data.
- **In orbit:** in February 2026 the company announced that the antenna had been fully unfolded.

2.3 Three "heaviest" records compared

Flight and date	Payload	Mass	Orbit	What the official source claims
LVM3-M2, 23 October 2022	36 OneWeb satellites	5,796 kg in all	Low Earth Orbit	The heaviest payload of LVM3 up to then; also the first commercial mission of LVM3 and its first launch to Low Earth Orbit
LVM3-M5, 2 November 2025	CMS-03, one communication satellite	About 4,400 kg	Geosynchronous Transfer Orbit (GTO)	The heaviest communication satellite launched to GTO from Indian soil

Flight and date	Payload	Mass	Orbit	What the official source claims
LVM3-M6, 24 December 2025	BlueBird Block-2, one communication satellite	About 6,100 kg	Low Earth Orbit	The heaviest satellite launched from Indian soil; the heaviest payload to Low Earth Orbit in the history of LVM3

- BlueBird Block-2 is heavier than CMS-03, the single satellite launched on the flight just before it, and heavier than the whole batch of 36 OneWeb satellites on either LVM3-M2 (5,796 kg) or LVM3-M3 (5,805 kg).
- The CMS-03 record is limited to communication satellites going to GTO. GTO is the harder orbit to reach: LVM3 carries 4,000 kg there against 8,000 kg to Low Earth Orbit.

2.4 The launch vehicle: LVM3

- LVM3 is the vehicle earlier called GSLV Mk III. ISRO's own page is titled "LVM3 (Geosynchronous Satellite Launch Vehicle Mk III)", and its 2019 page on Chandrayaan-2 still writes "GSLV MkIII-M1".
- **Three stages** (propellant loads from the LVM3-M6 brochure):
  - two S200 solid strap-on motors, with HTPB-based propellant, 204.2 tonnes each; the vehicle lifts off on these two alone;
  - the L110 liquid core stage, with two Vikas engines, burning UH25 and N2O4, 115.9 tonnes;
  - the C25 cryogenic upper stage, with the CE-20 engine, burning liquid hydrogen and liquid oxygen, 28.5 tonnes. ISRO calls the CE-20 India's largest cryogenic engine.
- **Size:** 43.5 m tall; 640 tonnes at lift-off; a payload fairing of 5 m diameter.
- **Payload capacity:** ISRO's LVM3 page gives 4,000 kg to GTO and 8,000 kg to Low Earth Orbit (600 km altitude). The LVM3-M6 mission page gives 4,200 kg to GTO, and ISRO's page on launchers speaks of "4 tonne class" communication satellites and "10 tonne class" payloads to Low Earth Orbit. As in Topic 17, learn 4,000 kg and 8,000 kg, and if a question names another ISRO page, follow that page.
- **Record:** the M6 brochure says LVM3 came to this flight with eight consecutive successful missions, and ISRO's launchers page says it has had all successful launches from its first development flight. As on 14 October 2026 ISRO's list has nine LVM3 flights, and LVM3-M6 is the latest.
- **For Gaganyaan:** ISRO has identified the human-rated LVM3 as the launch vehicle for the Gaganyaan mission; its launchers page names it the Human Rated Launch Vehicle (HRLV). Gaganyaan is taught on another day.

2.5 NSIL and the commercial launch business

- **NSIL:** established in 2019; a Central Public Sector Enterprise under the Department of Space and the commercial arm of ISRO. It commercialises ISRO's technologies, launch services and satellite services, and offers dedicated and ride-sharing launches on PSLV, GSLV, LVM3 and SSLV.
- **OneWeb:** LVM3-M2 (23 October 2022) was NSIL's first mission on LVM3 and the first OneWeb mission with NSIL and the Department of Space. With LVM3-M3 (26 March 2023), the two OneWeb missions carried 72 satellites in all.
- **Share of commercial flights:** three of the six operational LVM3 flights (M2, M3 and M6) were dedicated commercial missions. The other three carried Chandrayaan-2, Chandrayaan-3 and CMS-03.
- **Figures from a Government backgrounder of 21 June 2026:** India launched 35 foreign satellites from the 1990s to 2014, and 399 more after 2014, up to March 2026. NSIL's revenue rose from Rs 321.77 crore in 2021-22 to Rs 3,246.09 crore in 2024-25.
- Space sector reforms, IN-SPACe and NSIL in detail are taught on another day.

2.6 Direct-to-device satellite communication

- **Direct-to-device:** the satellite talks straight to an ordinary mobile phone. AST SpaceMobile says BlueBird 6 connects to "standard, unmodified" smartphones for voice, data and video.
- **Satellite broadband to a terminal:** in a service like Starlink's broadband, the user puts up a flat user terminal, often called a dish, with its own phased-array antenna that must see the sky. Even the small "Mini" model is a separate terminal.
- **The difference is the service, not the company:** SpaceX also runs a "Direct to Cell" service with mobile operators such as T-Mobile in the United States, and reference works note that such service has limited capacity compared with ground mobile networks.
- **India's position on spectrum:** on 6 February 2025 the Government said that the Telecommunications Act, 2023 provides for assignment of spectrum through an administrative process for satellite-based services, and on 9 May 2025 the Telecom Regulatory Authority of India (TRAI) recommended the terms, including a spectrum charge of 4 per cent of adjusted gross revenue.

2.7 After LVM3-M6, up to 14 October 2026

- **LVM3:** no LVM3 flight after LVM3-M6 is on ISRO's list. ISRO's home page reports, without dates, a hot test of a CE-20 engine for the LVM3-M7 mission and the start of the launch campaign for Gaganyaan-G1, the first uncrewed flight, with the assembly of the human-rated LVM3 at Sriharikota.
- **Later BlueBirds, all on United States rockets:** BlueBird 7 was launched on 19 April 2026 on Blue Origin's New Glenn from Cape Canaveral, but the rocket's upper stage left it in a lower orbit than planned; AST SpaceMobile said the altitude was too low to operate and the satellite would be de-orbited. BlueBirds 8, 9 and 10 were launched on 17 June 2026, and BlueBirds 11, 12 and 13 on 5 August 2026, both times on a Falcon 9 from Cape Canaveral Space Force Station. In December 2025 the company aimed to launch 45 to 60 satellites by the end of 2026.

3. Extra section: the flights of LVM3 in date order

No.	Flight	Date	Payload	Note
1	LVM3-X/CARE (ISRO's list: LVM-3/ CARE)	18 December 2014	Crew module Atmospheric Re-entry Experiment (CARE)	Experimental flight
2	LVM3-D1	5 June 2017	GSAT-19	Developmental flight; the satellite was placed in GTO
3	LVM3-D2	14 November 2018	GSAT-29	Developmental flight
4	LVM3-M1	22 July 2019	Chandrayaan-2, made up of an orbiter, a lander (Vikram) and a rover	Placed in an Earth orbit of 169.7 km by 45,475 km
5	LVM3-M2	23 October 2022	36 OneWeb satellites, 5,796 kg in all	First commercial mission of LVM3; first launch to Low Earth Orbit
6	LVM3-M3	26 March 2023	36 OneWeb satellites, 5,805 kg in all	Second OneWeb mission; the two missions together carried 72 satellites
7	LVM3-M4	14 July 2023	Chandrayaan-3, made up of a propulsion module, a lander (Vikram) and a rover	Launched from the Second Launch Pad; landed on the Moon on 23 August 2023
8	LVM3-M5	2 November 2025	CMS-03, about 4,400 kg	Communication satellite launched to GTO

No.	Flight	Date	Payload	Note
9	LVM3-M6	24 December 2025	BlueBird Block-2, about 6,100 kg	Communication satellite placed in Low Earth Orbit; third dedicated commercial mission

Note: As on 14 October 2026 this is ISRO's full list of LVM3 flights. The count will change with the next launch.

4. Three common exam traps

1. **"Heaviest satellite" is not "heaviest payload", and the CMS-03 record had a narrower scope.** BlueBird Block-2, about 6,100 kg, is the heaviest single satellite launched from Indian soil. The record claimed for CMS-03 (about 4,400 kg), launched in November 2025, covered only communication satellites sent to GTO. Before BlueBird, the heaviest loads LVM3 had carried were the two OneWeb batches of 36 small satellites each, 5,796 kg in all on LVM3-M2 and 5,805 kg in all on LVM3-M3, not single satellites. And the figure of 6.5 tonnes seen in some pre-launch reports is not ISRO's figure.
2. **Three bodies, two names and two dates.** ISRO built and flew the rocket; NSIL, its commercial arm, made the commercial agreement; AST SpaceMobile of the United States owns the satellite. ISRO's "BlueBird Block-2" and the company's "BlueBird 6" are the same satellite. The launch was at 08:55 IST on 24 December 2025, when it was still 23 December in the eastern United States.
3. **Direct-to-device is not broadband to a dish.** BlueBird is meant to serve ordinary smartphones with no extra equipment. Starlink's broadband service needs a user terminal that sees the sky. But SpaceX also runs a Direct to Cell service, so the question to ask is what kind of service it is, not which company runs it.

REFERENCE APPENDIX

Sources and references

Source identifiers restart at S1 within each topic. The complete source titles, links and usage notes are given below.

Topic 101 · Mughal administration: mansabdari and land revenue

S1 · NCERT, Our Pasts II (Class VII history), Chapter 4, "The Mughals (16th to 17th Century)". https://ncert.nic.in/textbook/pdf/gess104.pdf

Used for: Higher zat, more prestige and a larger salary; sawars registered, horses branded, then money paid for their salary; jagirdars with rights only to the revenue of their assignments, collected by their servants, and not living in or administering them; jagirs under Akbar assessed to roughly equal the salary; under Aurangzeb revenue collected often less than the grant and long waits for jagirs; 29 mansabdars of 5,000 zat under Akbar and 79 under Aurangzeb; tax on the produce of the peasantry as the main income, collected through zamindars; zamindars as one term for all intermediaries, from village headmen to chieftains; Todar Mal's survey of crop yields, prices and areas cultivated for a 10-year period, revenue circles with schedules of rates for individual crops, the name zabt, survey/account prerequisites and the regional limits of zabt

S2 · NCERT, Themes in Indian History Part II (Class XII), Theme Eight, "Peasants, Zamindars and the State". https://ncert.nic.in/textbook/pdf/lehs204.pdf

Used for: Khud-kashta and pahi-kashta; the Ain's definitions of polaj, parauti, chachar and banjar; good, middling and bad land, one-third of the total as the medium produce and one-third of that as the royal dues; jama and hasil; the amil-guzar; payment in cash with the option of kind; measurement of cultivated and cultivable land; batai (bhaoli) and kankut; zamindars as the narrow apex, milkiyat, colonisation of land, cash loans; mansabdari as the apex of the administration; naqdi and jagirs, the majority paid through jagirs; the Ain's "Account of the Twelve Provinces"

S3 · NCERT, Themes in Indian History Part II (Class XII), Theme Nine, "Kings and Chronicles: The Mughal Courts". https://ncert.nic.in/ncerts/l/lehs205.pdf

Used for: All holders of government offices holding mansabs; zat as position in the hierarchy and salary, sawar as the number of horsemen; mansabdars of 1,000 zat or above as nobles (umara); Akbar as the designer of the mansab system; the diwan-i ala as finance minister; the sadr-us sudur as minister of grants (madad-i maash) who appointed local judges (qazis); the mir bakhshi as paymaster general on the emperor's right, supervising the court writers (waqia nawis) who recorded applications, documents and farmans; the subadar reporting directly to the emperor, with diwan, bakhshi and sadr; faujdars with cavalry and musketeers; the qanungo as keeper of revenue records; sarkars; Todar Mal, a Khatri, as finance minister

S4 · Encyclopaedia Britannica, "India", section "The reign of Akbar the Great". https://www.britannica.com/place/India/The-reign-of-Akbar-the-Great

Used for: The four departments under the wakil, the diwan (wazir), the mir bakhshi and the sadr al-sudur (chief justice and religious official); ministers appointed, promoted and dismissed by the emperor; 15 provinces including Berar, Khandesh and Ahmadnagar; governor, diwan, bakhshi, sadr, qazi and reporting agents in each province; separation of powers between the governor and the diwan; faujdar, qazi, kotwal, bitikchi and khazanedar in each sarkar; a kotwal in every town of consequence; village panchayats

S5 · S.M. Ikram, Muslim Civilization in India (Columbia University Press, 1964), Chapter XVI, "Mughal Administration", web edition on the site of Professor Frances Pritchett. https://franpritchett.com/00islamlinks/ikram/part2_16.html

Used for: The diwan, mir bakhshi, mir saman and sadr as the principal central officers; the sadr as director of religious matters, charities and endowments; the diwan-i-khalsa in charge of state lands; ten vakils between 1560 and 1657, about thirty-nine years in all, the post seen as mainly honorary; the diwan for revenue and finance; the mir saman over the karkhanas and stores; the subahdar called sipah salar under Akbar and nazim later; the provincial diwan in independent charge of revenue, reporting to the imperial diwan; the kotwal appointed by the centre in provincial capitals and big cities; the faujdar as head of the sarkar and the amalguzar for its revenue; the muqaddam and the patwari; 33 grades from commanders of 10 to commanders of 10,000 in 1573 to 1574; 5,000 as the highest rank of an ordinary officer until the middle of Akbar's reign, higher grades for princes; pay in cash or by temporary jagirs; escheat; transfer anywhere in the empire; the demand of one-third of the produce after measurement and classification; low rates on new land rising to the full amount in five years; Todar Mal as the most famous diwan

S6 · S.M. Ikram, Muslim Civilization in India (Columbia University Press, 1964), Chapter XI, "The Age of Akbar", web edition on the site of Professor Frances Pritchett. https://franpritchett.com/00islamlinks/ikram/part2_11.html

Used for: Akbar adopting what was vital in Sher Shah's administrative system and making it more effective; his preference for cash salaries over the grant of jagirs; his work with Todar Mal on the revenue administration

S7 · University of Lucknow, e-content in Medieval Indian History, "Central Administration of Akbar" (no author named on the page). https://www.lkouniv.ac.in/site/writereaddata/siteContent/20200413215950058 0shama_mih_Central_Administration_of_Akbar.pdf

Used for: The vakil as the highest officer next to the emperor; Bairam Khan's powers, his downfall and the post becoming ornamental, given to nobles who played little part in administration; the lesson against giving one minister all powers; the diwan for all income and expenditure and control over jagir and inam lands; the mir bakhshi presenting candidates, branding and verification, papers from the news writers; the mir saman, the household and the karkhanas, the term rarely used under Akbar; the sadr's grants, charity and education; the qazi-ul-quzat at the head of the judiciary, deciding by Islamic law and appointing qazis; the muhtasib as censor of public morals, market rules, gambling and intoxicants; the waqia navis and the khufia navis; the chehra (descriptive roll); the diwan-i-khalisa in charge of crown lands

S8 · Wikipedia, "Government of the Mughal Empire" (citing John F. Richards, The Mughal Empire, 1993; M. Athar Ali; Irfan Habib, The Agrarian System of Mughal India, 3rd edition; Shireen Moosvi, The Economy of the Mughal Empire c. 1595, 2nd edition, 2015; Nandini Chatterjee, 2019). https://en.wikipedia.org/wiki/Government_of_the_Mughal_Empire

Used for: The wakil's work divided in Akbar's reorganisation; the mir bakhshi as head of military intelligence and keeper of the mansabdari rolls; the khan-i-saman and the karkhanas; the qazi-ul-quzat; the muhtasib as censor and market supervisor; the waqia navis at every subah capital and major camp, the sawanih nigar's longer reports, the khufia navis as confidential reporter; about 21 subahs by the end of Aurangzeb's reign; the subah officials as a check on the governor; the faujdar and the amalguzar in the sarkar; the shiqdar, amin, karkun or patwari and qazi in the pargana; the muqaddam, patwari and panchayat in the village; khalisa and about one-fifth of the demand under Akbar (Moosvi); jagirs rotated to prevent hereditary bases

S9 · Wikipedia, "Zabt" (citing Irfan Habib, The Agrarian System of Mughal India, 1556-1707, 3rd edition, 2013; Shireen Moosvi, 2015; Abu'l-Fazl, Ain-i Akbari, translated by H. Blochmann, 1873; M. Athar Ali). https://en.wikipedia.org/wiki/Zabt

Used for: Zabt as fixed assessment in cash; the bigha as the standard unit; dasturs as schedules of cash demand per bigha per crop; the dahsala of 1580 under Todar Mal; Todar Mal as a Khatri accountant who had served Sher Shah and was in charge of the revenue from 1574; 40 dams to the rupee; the bigha of 3,600 square Ilahi gaz (given there as about 0.55 acre); the Ilahi gaz of about 33 inches; the jarib as a rope; nasaq as assessment by reference to records

S10 · Wikipedia, "Dahsala system" (citing Irfan Habib, The Agrarian System of Mughal India, 3rd edition, 2014; John F. Richards, 1993; Shireen Moosvi, 2015; Douglas Streusand, 2011). https://en.wikipedia.org/wiki/Dahsala_system

Used for: The settlement proclaimed in 1580; yields and prices averaged for 1570-71 to 1579-80; one-third of the average yield valued at the average price and turned into a cash rate per bigha; the dastur-ul-amal of each revenue circle; the four classes of land and the rates on each; Habib's view that the real share often approached one-half; the Ilahi gaz and the bigha as a square of 60 gaz; polaj and parauti graded into three quality classes; the jarib of bamboo pieces joined by iron rings in place of rope; kankut as an estimate of the standing crop; nasaq based on past collections; ghalla-bakhshi as crop-sharing; extension to Gujarat with local rates; Sher Shah's one-third share and the sikandari gaz

S11 · Wikipedia, "Mansabdar" (its references include R.S. Chaurasia, History of Medieval India, 2002; Banglapedia, "Mansabdari"). https://en.wikipedia.org/wiki/Mansabdar

Used for: Mansab as rank; the system not hereditary; the three classes by the relation of sawar to zat; zat and sawar added in the later years of Akbar's reign; differing views of historians on the meaning of zat; branding of horses; Shah Jahan's reduction of the troops required

S12 · Banglapedia: National Encyclopedia of Bangladesh (Asiatic Society of Bangladesh), "Mansabdari". https://en.banglapedia.org/index.php/Mansabdari

Used for: Mansab meaning rank; thirty-three grades from commanders of 10 to commanders of 10,000; 5,000 as the highest rank for an ordinary officer until the middle of Akbar's reign; 7,000 to 10,000 reserved for royal princes; appointment, promotion and dismissal resting with the emperor; no part of a mansabdar's property hereditary, his children beginning afresh

S13 · Vajiram and Ravi, "Mansabdari System, Origin, Merits and Demerits", a study compilation for the civil services examination. https://vajiramandravi.com/upsc-exam/mansabdari-system/

Used for: Zat and sawar introduced in 1595 to 1596; the wording of the three classes (sawar equal to zat; half or more but less than zat; less than half); Jahangir's du-aspa sih-aspa rule; Shah Jahan's month scale of ten, eight, six months or less; pay in cash or by jagir; the system not hereditary

S14 · National Institute of Open Schooling (NIOS), Senior Secondary History (315), Lesson 10, "Establishment of the Mughal Rule". https://www.nios.ac.in/media/documents/SrSec315NEW/315_History_Eng/315_History_Eng_Lesson10.pdf

Used for: Bairam Khan as the wakil of the kingdom with the title Khan-i-Khanan; the watan jagir of Rajput mansabdars, hereditary and non-transferable

S15 · Central Bureau of Communication, Government of India, "Nature of Mughal State" (Mughal Empire web exhibition). https://cbc.gov.in/cbcdev/mughal-empire/mughal-story.html

Used for: The mir-i-saman (khan saman) in charge of the royal household and the karkhanas, factories and stores; the muhtasib in charge of the censorship of public morals; the sadr as the emperor's religious adviser; the jagir as a revenue assignment

S16 · Patna Women's College (Department of History), e-content "Mansabdari System" by Bhawana Singh. https://patnawomenscollege.in/mansabdari-system/; IGNOU, History of Bharat, Unit 12, section 12.4: https://www.egyankosh.ac.in/bitstream/123456789/116364/1/Unit-12.pdf ; Administrative and Institutional Structures, Unit 28, p. 410: https://www.egyankosh.ac.in/bitstream/123456789/102551/1/Unit-28.pdf ; Administrative Structure, Unit 8, escheat discussion: https://egyankosh.ac.in/bitstream/123456789/68914/3/Unit-8.pdf

Used for: Jahangir as the author of the du-aspa sih-aspa rule; the month scale under Shah Jahan, under which a mansabdar who did not receive a full twelve months' pay could keep fewer sawars without loss of rank; the three classes by the relation of sawar to zat; designated du-aspa sih-aspa portion doubled, with corresponding payment; estate administration settles State dues and does not invariably exclude heirs

Topic 102 · Chandragupta Maurya and Bindusara

S1 · NCERT, Themes in Indian History Part I (Class XII), Theme Two, "Kings, Farmers and Towns: Early States and Economies (c. 600 BCE-600 CE)". https://ncert.nic.in/textbook/pdf/lehs102.pdf

Used for: Chandragupta's empire founded c. 321 BCE and extended to Afghanistan and Baluchistan; Megasthenes as Greek ambassador whose account survives in fragments; the military committee and its six subcommittees; the Arthashastra, parts probably composed by Kautilya or Chanakya, traditionally Chandragupta's minister; later Buddhist, Jaina, Puranic and Sanskrit literature and Ashoka's inscriptions as sources (p. 32); the five major political centres and the role of Taxila, Ujjayini and Suvarnagiri (pp. 32-33); the empire not covering the whole subcontinent and control not uniform (p. 35); the Sudarshana lake built by a local governor under the Mauryas (p. 38); timeline, c. 321 BCE accession (p. 50)

S2 · NCERT, Our Pasts I (Class VI, history), Chapter 8, "Ashoka, the Emperor Who Gave Up War" (copy of the NCERT chapter hosted by a school site). https://ssgopalganj.in/online/Class VI\S Sc\Our Past I\ch7.pdf

Used for: Chandragupta as founder, supported by Chanakya or Kautilya; Chanakya's ideas written down in the Arthashastra; Bindusara as son of Chandragupta and father of Ashoka (p. 75); Pataliputra, Taxila and Ujjain; the area around Pataliputra under direct control; princes as governors and local customs (pp. 76-77); Megasthenes sent by Seleucus Nicator, the Greek ruler of West Asia; the quotation on Pataliputra's wall, 570 towers and 64 gates (p. 78)

S3 · National Institute of Open Schooling (NIOS), Senior Secondary History (315), Lesson 5, "From Janapadas to Empire". https://digital.nios.ac.in/content/315en/315_History_Eng_Lesson5.pdf

Used for: Mahapadma Nanda as the most important Nanda ruler, called low caste or non-Kshatriya in Brahmanical texts, his army and Kalinga; Dhana Nanda's oppression and taxes, and Chandragupta's overthrow of the Nandas (p. 69)

S4 · Encyclopaedia Britannica, "Chandragupta". https://www.britannica.com/biography/Chandragupta

Used for: Founder of the Mauryan dynasty; emperor 321 to 297 BCE; died c. 297 BCE at Shravanabelagola

S5 · Encyclopaedia Britannica, "Bindusara". https://www.britannica.com/biography/Bindusara

Used for: Born c. 320 BCE, came to the throne about 297 BCE, died 272/3 BCE; Amitrochates from Amitraghata, "destroyer of foes"; a successful Deccan campaign that stopped near Karnataka; good relations of the Cholas, Pandyas and Cheras; the war of succession won by Ashoka

S6 · Encyclopaedia Britannica, "Megasthenes". https://www.britannica.com/biography/Megasthenes

Used for: An Ionian, c. 350 to c. 290 BCE, sent by Seleucus I on embassies to Chandragupta; the Indica in four books; used by Diodorus, Strabo, Pliny and Arrian; mistakes in detail and uncritical acceptance of folklore

S7 · Wikipedia, "Chandragupta Maurya" (citing Upinder Singh 2016, Habib and Jha 2004, Roy 2012, Jansari 2023 and Mookerji for dates and origins; Kulke and Rothermund 2004 for the south; Jansari, Long 2013, Dikshitar 1993 and Dundas 2003 on the Jain tradition; Olivelle 2013 on the Arthashastra). https://en.wikipedia.org/wiki/Chandragupta_Maurya

Used for: The dates of reign and of the conquest of Magadha as different historians give them; the Buddhist Kshatriya origin, "Vrishala" and "kula-hina" in the Mudrarakshasa and Mookerji's reading, the Jain peacock tamers, Justin's humble birth; Chanakya as teacher and minister, training at Taxila; Buddhist and Jain versions of Dhana Nanda's end; Justin on the Greek governors; the uncertain order of the Punjab campaign; Sandrocottus in Strabo, Arrian and Justin, and William Jones in 1793; Megasthenes' stay of about four years; Gujarat and the uncertain south; the Digambara tradition (Bhadrabahu, the famine, sallekhana, Chandragiri, Chandragupta basadi), inscriptions from about 600 CE, the Samprati view, Hemachandra's version, Greek evidence of wine and hunting

S8 · Wikipedia, "Bindusara" (citing Upinder Singh, Sailendra Nath Sen, A. L. Basham, K. Krishna Reddy and Alain Danielou). https://en.wikipedia.org/wiki/Bindusara

Used for: Amitrochates (Athenaeus) and Allitrochades (Strabo) from Amitraghata, "slayer of enemies"; Simhasena; Durdhara; reign of 25 years in the Puranas and 28 in the Mahavamsa; Deimachus as Antiochus I's ambassador; Dionysius sent by Ptolemy II (Pliny); the request for sweet wine, dried figs and a sophist (Athenaeus citing Hegesander) and the reply; follower of the Brahmanas in Buddhist texts; Basham on the Ajivikas; Pingalavatsa; the Taxila revolts in the Ashokavadana and Sushima's failure; Taranatha's sixteen towns and the land between the seas, and the differing views; Chanakya as minister in the Parishishtaparvan

S9 · Wikipedia, "Seleucid-Mauryan war" (citing Grainger 2014, Kosmin 2014, Thapar 1963, Trautmann 2015, Majumdar 1952, Wheatley and Heckel 2011). https://en.wikipedia.org/wiki/Seleucid%E2%80%93Mauryan_war

Used for: War of 305 to 303 BCE; Appian's "marriage relationship" and Strabo's "terms of intermarriage"; Arachosia, Gedrosia and Paropamisadae as the lands of Strabo's account, Aria added in Pliny and doubtful; 500 elephants and their use at Ipsus; Megasthenes as ambassador

S10 · Wikipedia, "Indica (Megasthenes)" (citing Schwanbeck 1846, McCrindle 1877, Stoneman 2022, Kosmin 2013, Thapar 1990 and 2012, Habib and Jha 2004). https://en.wikipedia.org/wiki/Indica_(Megasthenes)

Used for: The Indica lost and reconstructed from Diodorus, Strabo, Pliny and Arrian; the seven castes in order; the claim that there were no slaves; Strabo calling Megasthenes and Deimachus liars; the seven castes against the four varnas and Thapar's explanation; the Arthashastra showing that slavery existed

S11 · Wikipedia, "Megasthenes" (citing Arrian, Anabasis; Kosmin 2014; Stoneman 2019). https://en.wikipedia.org/wiki/Megasthenes

Used for: Megasthenes sent by Seleucus I to Chandragupta at Pataliputra; his earlier stay with Sibyrtius, satrap of Arachosia

S12 · Wikipedia, "Junagadh rock inscription of Rudradaman" (citing F. Kielhorn, Epigraphia Indica VIII, pp. 36-49, and Richard Salomon, Indian Epigraphy, 1998, pp. 89-90). https://en.wikipedia.org/wiki/Junagadh_rock_inscription_of_Rudradaman

Used for: Date shortly after 150 CE; Sanskrit prose in Brahmi; the rock near Girnar that also bears Ashoka's edict; the Sudarshana lake; Pushyagupta, a Vaishya, provincial governor of Chandragupta; the Yavana Tushaspha under Ashoka

S13 · Wikipedia, "Arthashastra" (citing Olivelle 2013, Trautmann 1971, Kangle 1965 and 1969, Shamasastry 1909, McClish 2019). https://en.wikipedia.org/wiki/Arthashastra

Used for: Kautilya and Vishnugupta named in the text, Chanakya absent; Kangle's Mauryan date; Olivelle's layers; Trautmann's several authors; the palm-leaf manuscript at Mysore, Shamasastry's publication from 1905 to 1909 and translation of 1915; 15 books; spies, officials and taxes

S14 · Wikipedia, "Mudrarakshasa" (citing Upinder Singh 2008, Thapar 2013, Mookerji 1966). https://en.wikipedia.org/wiki/Mudrarakshasa

Used for: Vishakhadatta as author; dates from the late 4th to the 8th century CE; Sanskrit drama; Chandragupta and Chanakya against Rakshasa; creative writing

S15 · Wikipedia, "Maurya Empire" (citing Upinder Singh, Sailendra Nath Sen and others). https://en.wikipedia.org/wiki/Maurya_Empire

Used for: Alexander's army at the Beas and his death at Babylon in 323 BCE; the wooden wall of Pataliputra; the council of ministers (mantriparishad); provinces under princes; the Sangam poet Mamulanar; Taranatha's sixteen kingdoms

S16 · Strabo, Geography, Book XV, Chapter 1, sections 39 to 73, translated by H. L. Jones (Loeb Classical Library), on LacusCurtius. https://penelope.uchicago.edu/Thayer/E/Roman/Texts/Strabo/15A3*.html

Used for: The seven castes (sections 46 to 49); "The city commissioners are divided into six groups of five each" and the duties of the groups (section 51); Megasthenes' statement that no Indian uses slaves (section 54)

S17 · Mahavamsa, Chapter V, "The Third Council", English translation hosted by lakdiva.org.lk. https://lakdiva.org.lk/mahavamsa/chap005.html

Used for: Chanakya anointing Chandragupta "born of a noble clan, the Moriyas" after Dhana Nanda was slain; reigns of 24 years for Chandragupta and 28 for Bindusara

S18 · Encyclopaedia Britannica, "Chanakya". https://www.britannica.com/biography/Kautilya

Used for: Also known as Kautilya and Vishnugupta; counsellor and adviser to Chandragupta; the Arthashastra in 15 sections, lost for centuries and discovered in 1905

S19 · Strabo, Geography, Book XV, Chapter 2, section 9, translated by H. L. Jones (Loeb Classical Library), on LacusCurtius. https://penelope.uchicago.edu/Thayer/E/Roman/Texts/Strabo/15B*.html

Used for: Seleucus Nicator gave Sandrocottus lands along the Indus once held by the Persians, "upon terms of intermarriage and of receiving in exchange five hundred elephants"

S20 · William Smith (ed.), A Dictionary of Greek and Roman Biography and Mythology, "Daimachus", on Perseids. https://cts.perseids.org/read/pdlrefwk/viaf88890045/003/perseus-eng1/D.daimachus_1

Used for: Daimachus sent as ambassador to Allitrochades, the son of Sandrocottus, king of India (citing Strabo, Book II)

S21 · Purushottam Lal Bhargava, Chandragupta Maurya (1935), pp. 30 and 112, with foreword by Radhakumud Mookerji; IGNOU, BHIC-101, Unit 16, section 16.3.1, p. 280. https://rarebooksocietyofindia.org/book_archive/196174216674_10151337606711675.pdf ; https://www.egyankosh.ac.in/bitstream/123456789/64794/1/Unit16.pdf

Used for: Parishishtaparvan's Jain tradition: Chandragupta's mother was the daughter of the headman of peacock tamers; IGNOU confirms the grandson-of-chief attribution. This is a literary tradition, not established biological ancestry

Topic 103 · National Human Rights Commission and the Protection of Human Rights Act

S1 · Protection of Human Rights Act, 1993 (Act No. 10 of 1994), text as amended, with amendment footnotes, India Code. https://www.indiacode.nic.in/bitstream/123456789/15709/1/a199410.pdf ; https://www.indiacode.nic.in/handle/123456789/15709

Used for: Act number, date of enactment (8 January 1994) and deemed commencement (28 September 1993); sections 2(1)(a), 2(1)(d), 2(1)(f); section 3 (composition, deemed members, Secretary-General, headquarters); sections 4 to 8 and 11; sections 12 to 20, 21, 30, 31, 36 and 40B; footnotes showing the words changed by Act 43 of 2006 (in force 23 November 2006) and Act 19 of 2019 (in force 2 August 2019)

S2 · PRS Legislative Research, "The Protection of Human Rights (Amendment) Bill, 2019". https://prsindia.org/billtrack/the-protection-of-human-rights-amendment-bill-2019

Used for: What the 2019 Bill changed (Chairperson, Members, deemed members, term, reappointment, Secretary-General, State Commission Chairperson, Union Territories and Delhi); dates of introduction (8 July 2019) and passage (19 and 22 July 2019); Ministry of Home Affairs

S3 · National Human Rights Commission, "About the Organisation". https://nhrc.nic.in/about-the-organisation

Used for: Establishment on 12 October 1993; statute; conformity with the Paris Principles; Paris workshop of October 1991; General Assembly resolution 48/134

S4 · National Human Rights Commission, "Composition of the Commission" (page as seen on 14 October 2026, marked "Last Updated : 13-Oct-2026"). https://nhrc.nic.in/about-us/composition_of_commission; NHRC Annual Report 2015-16, paragraphs 19.6-19.7: https://nhrc.nic.in/assets/uploads/annual_reports/NHRC_AR_EN_2015-2016.pdf

Used for: Chairperson, Members and Secretary-General with dates of assumption; deemed members; composition under section 3; statutory recommendatory wording and judicial treatment of enforceability

S5 · National Human Rights Commission, home page (seen on 14 October 2026). https://nhrc.nic.in/

Used for: 33rd Foundation Day on 12 October 2026; "Established under the Protection of Human Rights Act, 1993"

S6 · National Human Rights Commission, "Paris Principles". https://nhrc.nic.in/paris-principles

Used for: Paris Principles as standards for national human rights institutions

S7 · Office of the UN High Commissioner for Human Rights, "Principles relating to the Status of National Institutions (The Paris Principles)". https://www.ohchr.org/en/instruments-mechanisms/instruments/principles-relating-status-national-institutions-paris

Used for: Adoption by General Assembly resolution 48/134 (the page dates it 19 December 1993; the UN's own record, S12, gives 20 December 1993); headings of the Principles

S8 · GANHRI, "Membership". https://ganhri.org/membership/

Used for: India's National Human Rights Commission listed with A status

S9 · GANHRI, "Chart of the Status of National Institutions", accreditation status as of 4 June 2026. https://ganhri.org/wp-content/uploads/2026/06/sca-47th-session-acrreditation-chart-04062026.pdf

Used for: Meaning of A and B status; India's review history (1999, October 2006, May 2011, November 2016 deferred, November 2017, March 2023 deferred to March 2024, first session 2024 deferred to first session 2025, March 2025 recommended to be downgraded to B); status A as of 4 June 2026

S10 · GANHRI, Report and Recommendations of the Sub-Committee on Accreditation, session of 13 to 21 March 2025. https://ganhri.org/wp-content/uploads/2025/06/SCA-Report-march-2025-session_13052025_EN.pdf

Used for: Recommendation that the NHRC be downgraded to B status; Article 18.1 of the GANHRI Statute (no effect for one year); A status maintained until the 47th session in 2026

S11 · GANHRI, "SCA reports" page and the report of the 47th session (20 April to 1 May 2026). https://ganhri.org/accreditation/sca-reports/ ; https://ganhri.org/wp-content/uploads/2026/06/sca-report-47th-session-en.pdf; GANHRI, Upcoming Sessions: https://ganhri.org/upcoming-sessions/

Used for: Dates of the SCA sessions of 2025 and 2026; the 47th session's summary of recommendations does not list India; 48th session scheduled for 9-20 November 2026, India listed for alteration-of-accreditation review; checked 16 October 2026

S12 · United Nations Digital Library, record of A/RES/48/134, "National institutions for the promotion and protection of human rights". https://digitallibrary.un.org/record/180217

Used for: Resolution 48/134 adopted without vote at the 85th plenary meeting, 20 December 1993

S13 · National Human Rights Commission, "Shri Piyush Goyal (Secretary General & Chief Executive Officer of the Commission)" (seen on 14 October 2026). https://nhrc.nic.in/about-us/composition_of_commission/shri-piyush-goyal

Used for: The Secretary-General is an IAS officer (1994 batch, Nagaland cadre), earlier Secretary, Ministry of Mines

Topic 104 · Amendment procedure: Article 368

S1 · Government of India, Ministry of Law and Justice, Legislative Department, The Constitution of India [As on 1st May, 2024], official text (the portion the reader could open: title page, Preface, Contents, Part I and Part II). https://cdnbbsr.s3waas.gov.in/s380537a945c7aaa788ccfcdf1b99b5d8f/uploads/2024/07/20240716890312078.pdf

Used for: Title page date; Preface, all amendments "up to the Constitution (One Hundred and Sixth Amendment) Act, 2023"; Contents: Part XX "Amendment of the Constitution", the heading of Article 368, the headings of Articles 3, 54, 55, 73, 108, 162, 169, 239A, 241 and 279A, Chapter IV of Part V (Articles 124 to 147), Chapter V of Part VI (Articles 214 to 232), Chapter I of Part XI (Articles 245 to 255), the headings of the Fifth and Sixth Schedules; the proviso to Article 3 (recommendation of the President, reference to the State Legislature for its views, period); Article 4(1) and 4(2); Article 11

S2 · constitutionofindia.net, "Article 368: Power of Parliament to amend the Constitution and procedure therefor" (text of the Article). https://constitutionofindia.net/articles/article-368-power-of-parliament-to-amend-the-constitution-and-procedure-therefor

Used for: The words of clause (1), clause (2), the proviso with items (a) to (e) including Article 279A, and clauses (3), (4) and (5); clause (4)'s reference to section 55 of the 42nd Amendment Act

S3 · Indian Kanoon, "Article 368 in Constitution of India". https://indiankanoon.org/doc/594125/

Used for: Words of clause (1), of clause (2) before the proviso (including "it shall be presented to the President who shall give his assent to the Bill"), and of clauses (3), (4) and (5)

S4 · constitutionofindia.net, "Article 169: Abolition or creation of Legislative Councils in States". https://www.constitutionofindia.net/articles/article-169-abolition-or-creation-of-legislative-councils-in-states/

Used for: Article 169(1): law of Parliament after a resolution of the Legislative Assembly by a majority of its total membership and two-thirds present and voting; 169(2); 169(3), "shall not be deemed to be an amendment of this Constitution for the purposes of article 368"

S5 · NCERT, Indian Constitution at Work (Class XI), Chapter 9, "Constitution as a Living Document". https://ncert.nic.in/textbook/pdf/keps209.pdf

Used for: Amended 106 times as on 26 January 2024; the three methods; the two parts of the special majority; ratification by half the States; no provision for a joint session; the President has no power to send the Bill back for reconsideration; the U.S. (two-thirds), South Africa and Russia (three-fourths for some amendments) also use special majorities; Kesavananda Bharati and the basic structure

S6 · Wikipedia, "Amendment of the Constitution of India" (citing R.C. Bhardwaj (ed.), Constitution Amendment in India, Lok Sabha Secretariat, and the text of the Constitution). https://en.wikipedia.org/wiki/Amendment_of_the_Constitution_of_India

Used for: The first kind: Articles 4(2), 169, 239A(2), 239AA(7)(b), 243M(4)(b), 243ZC(3), 244A(4), 312(4), Fifth Schedule paragraph 7(2), Sixth Schedule paragraph 21(2), with the "shall not be deemed" words; no joint sitting; Private Members' amendment Bills follow the rules for Private Members' Bills; no time limit for ratification, which must precede presentation to the President; the American and British ideas combined by the framers; Shankari Prasad reported AIR 1951 SC 458

S7 · Wikipedia, "Twenty-fourth Amendment of the Constitution of India" (citing the Act's text on India Code and R.C. Bhardwaj, Constitution Amendment in India, 1995). https://en.wikipedia.org/wiki/Twenty-fourth_Amendment_of_the_Constitution_of_India

Used for: Heading of 1950, "Procedure for amendment of the Constitution", and the new heading; the old and new words on the President's assent; insertion of clauses (1) and (3) and of Article 13(4); assent and commencement on 5 November 1971; assent made obligatory

S8 · Wikipedia, "List of amendments of the Constitution of India". https://en.wikipedia.org/wiki/List_of_amendments_of_the_Constitution_of_India

Used for: 106 amendments as of March 2026; the 106th (women's reservation) as the last row; the 42nd amended Article 368 and Minerva Mills quashed the amendments to Articles 31C and 368; the 101st amended Article 368 and inserted Article 279A; the 99th ratified by 16 State Legislatures and struck down on 16 October 2015

S9 · Gazette of India, Extraordinary, Part II, Section 1, No. 36, 28 September 2023, "The Constitution (One Hundred and Sixth Amendment) Act, 2023". https://egazette.gov.in/WriteReadData/2023/249045.pdf

Used for: Short title of the 106th Amendment Act; President's assent on 28 September 2023

S10 · Wikipedia, "Constitution (131st Amendment) Bill, 2026". https://en.wikipedia.org/wiki/Constitution_(131st_Amendment)_Bill,_2026

Used for: Introduced in the Lok Sabha on 16 April 2026; failed on 17 April 2026, 298 for and 230 against

S11 · LiveLaw, "Lok Sabha Rejects Constitution (131st) Amendment Bill 2026 To Increase Seats; Centre Withdraws Delimitation Bill", 17 April 2026. https://www.livelaw.in/amp/top-stories/lok-sabha-rejects-constitution-131st-bill-2026-on-delimitation-530736

Used for: 298 ayes, 230 noes, 528 present and voting; the Bill failed to get the two-thirds majority required for a Constitution Amendment Bill

S12 · Supreme Court of India, I.R. Coelho (Dead) by LRs v. State of Tamil Nadu and Others, judgment of 11 January 2007 (nine judges; Y.K. Sabharwal, C.J.I.), text on Indian Kanoon. https://indiankanoon.org/doc/322504/

Used for: Its account of Sankari Prasad (Article 13(2) does not apply; constituent power), Sajjan Singh (17th Amendment upheld; Sankari Prasad repeated), Golak Nath (eleven judges, six to five), the 24th Amendment, Kesavananda Bharati (24 April 1973; thirteen judges; seven to six; "does not enable the Parliament to alter the basic structure or framework of the Constitution"), Indira Gandhi v. Raj Narain (Article 329A, 39th Amendment, basic structure), Minerva Mills ((1980) 3 SCC 625; clauses (4) and (5) of Article 368 and section 4 of the 42nd Amendment), Waman Rao ((1981) 2 SCC 362; on or after 24 April 1973); its own view that Ninth Schedule laws "will not have the full protection"

S13 · Wikipedia, "Minerva Mills v. Union of India" (citing the judgment on Indian Kanoon, doc 1939993, and R.C. Bhardwaj, Constitution Amendment in India). https://en.wikipedia.org/wiki/Minerva_Mills_v._Union_of_India

Used for: Judgment of 31 July 1980; five judges; clauses (4) and (5) of Article 368 struck down; "a limited amending power is one of the basic features of our Constitution"

S14 · Wikipedia, "Indira Gandhi v. Raj Narain" (citing the judgment on Indian Kanoon, doc 936707). https://en.wikipedia.org/wiki/Indira_Gandhi_v._Raj_Narain

Used for: Judgment of 7 November 1975; five judges; clause (4) of Article 329A, inserted by the 39th Amendment, struck down as violating the basic structure; free and fair elections

S15 · Wikipedia, "National Judicial Appointments Commission" (citing the Supreme Court's judgment in Writ Petition (Civil) No. 13 of 2015 and press reports of 16 October 2015). https://en.wikipedia.org/wiki/National_Judicial_Appointments_Commission

Used for: Judgment of 16 October 2015; 4 to 1; the 99th Amendment Act, 2014 and the NJAC Act, 2014 struck down; independence of the judiciary and the basic structure; 16 State Legislatures had ratified

S16 · Wikipedia, "Constitution of India" (table of influences, which carries no citation for this row). https://en.wikipedia.org/wiki/Constitution_of_India

Used for: South Africa listed for the amendment procedure and the election of members of the Rajya Sabha

S17 · Earlier topics of this programme, read for consistency: Topic 42, "Salient features of the Constitution" (its sources include S1 and Union of India v. Rajendra N. Shah, https://api.sci.gov.in/supremecourt/2013/21321/21321_2013_32_1501_28728_Judgement_20-Jul-2021.pdf); Topic 62, "Article 12 and Article 13"; Topic 82, "Rajya Sabha: composition, Chairman and special powers"

Used for: Topic 42: Part XX has a single Article; the Finance Commission is Article 280 in Part XII; 106 amendments, the last being the 106th of 2023; Rajendra N. Shah (2021) and the 97th Amendment. Topic 62: Article 13(4) inserted by the 24th Amendment with effect from 5 November 1971; Golak Nath on 27 February 1967. Topic 82: the Lok Sabha's 543 members and 28 States; Article 249 resolution by two-thirds present and voting

S18 · Supreme Court of India, Union of India v. Rajendra N. Shah and Another, judgment of 20 July 2021 (R.F. Nariman, J.), paragraph 27, which sets out Article 368. https://api.sci.gov.in/supremecourt/2013/21321/21321_2013_32_1501_28728_Judgement_20-Jul-2021.pdf

Used for: The proviso to Article 368(2) as now in force: (a) "article 54, article 55, article 73, article 162, article 241 or article 279A", (b) Chapter IV of Part V, Chapter V of Part VI, Chapter I of Part XI, (c) any of the Lists in the Seventh Schedule, (d) the representation of States in Parliament, (e) the provisions of this article; ratification "by resolutions to that effect passed by those Legislatures before the Bill" is presented to the President for assent

S19 · Central Board of Indirect Taxes and Customs (Government of India), text of "The Constitution (One Hundred and First Amendment) Act, 2016". https://cbic-gst.gov.in/hindi/constitution-amendment-act.html

Used for: Section 15: in clause (a) of the proviso to Article 368(2), "article 162, article 241 or article 279A" substituted for "article 162 or article 241"; assent on 8 September 2016

S20 · Gazette of India, Extraordinary, Part II, Section 2, No. 12, 16 April 2026 (Lok Sabha Bills). https://egazette.gov.in/WriteReadData/2026/271849.pdf

Used for: Bill No. 107 of 2026, the Constitution (One Hundred and Thirty-first Amendment) Bill, 2026, introduced in the Lok Sabha on 16 April 2026; the Constitution (One Hundred and Sixth Amendment) Act, 2023 named as an existing Act

S21 · SCC Online blog (SCC Times), "Special Session and Constitutional Limits: Why the Lok Sabha Bills Did Not Pass", 18 April 2026. https://www.scconline.com/blog/?p=381513

Used for: Cross-check of the vote on the 131st Amendment Bill: 298 for, 230 against; the Bill failed to secure the special majority under Article 368

S22 · Supreme Court of India, Minerva Mills Ltd. and Others v. Union of India and Others, judgment of 31 July 1980 (five judges), text on Indian Kanoon. https://indiankanoon.org/doc/1939993/

Used for: Date and bench; clauses (4) and (5) of Article 368 unconstitutional and void; section 4 of the 42nd Amendment (Article 31C); "Since the Constitution had conferred a limited amending power on the Parliament"

S23 · Supreme Court of India, Indira Nehru Gandhi v. Shri Raj Narain and Another, judgment of 7 November 1975 (five judges), text on Indian Kanoon. https://indiankanoon.org/doc/936707/

Used for: Date and bench size; clause (4) of Article 329A held invalid

S24 · Wikipedia, "Kesavananda Bharati v. State of Kerala" (citing the judgment on Indian Kanoon and the Lok Sabha Secretariat, Constitution Amendment: Nature and Scope of the Amending Process). https://en.wikipedia.org/wiki/Kesavananda_Bharati_v._State_of_Kerala

Used for: "In a verdict divided 7-6", Parliament's power held not to extend to destroying the basic elements of the Constitution; the Court upheld the 24th Amendment and "reversed its ruling in Golaknath", with no division given for these points; a summary statement signed by nine judges

S25 · SCC Online blog (SCC Times), "50 years of the unprecedented case of Kesavananda Bharati v. State of Kerala and the 'Doctrine of Basic Structure'". https://www.scconline.com/blog/?p=290424

Used for: "The 13-Judge Constitution Bench in a 7:6 ratio gave birth to the 'Doctrine of Basic Structure'"; "The Court upheld the entire 24th Constitutional amendment"

Topic 105 · Special Category Status and Special Assistance for Andhra Pradesh

S1 · Lok Sabha, Unstarred Question No. 688, "Special Category Status", answered on 6 February 2019 by the Minister of State (Independent Charge), Ministry of Planning. https://eparlib.nic.in/bitstream/123456789/806572/1/AU688.pdf

Used for: NDC granted the status in the past for plan assistance; the five features; "integrated consideration"; the eleven States; Fourteenth Finance Commission: no distinction between general and special category States, share raised from 32 to 42 per cent for 2015-20, post-devolution revenue deficit grants; revenue deficit grant of Rs 22,112 crore to Andhra Pradesh for 2015-20; the special assistance measure for 2015-16 to 2019-20 through externally aided projects

S2 · Lok Sabha, Unstarred Question No. 217, answered on 2 February 2022 by the Minister of State (Independent Charge), Ministry of Planning. https://eparlib.nic.in/bitstream/123456789/984848/1/AU217.pdf

Used for: NDC granted the status in the past; the features; no distinction by the Fourteenth Finance Commission; 32 to 42 per cent; Fifteenth Finance Commission's 41 per cent; no proposal to grant the status to any State, including Bihar

S3 · Lok Sabha, Unstarred Question No. 2712, answered on 9 July 2019 by the Minister of State, Ministry of Home Affairs. https://eparlib.nic.in/bitstream/123456789/952596/1/AU2712.pdf

Used for: The special category class no longer exists following the Fourteenth Finance Commission; special assistance to make up the additional central share for 2015-16 to 2019-20 had centrally sponsored schemes been funded 90 to 10, through repayment of loan and interest on externally aided projects

S4 · Lok Sabha, Unstarred Question No. 4712, answered on 22 July 2019 by the Minister of State for Finance, Department of Expenditure. https://eparlib.nic.in/bitstream/123456789/955060/1/AU4712.pdf

Used for: Chief Minister's charter of demands of 26 May 2019, including Special Category Status, forwarded to the Fifteenth Finance Commission; Annexure of releases to Andhra Pradesh up to 2018-19 (resource gap, backward districts, new capital, Polavaram, interest on externally aided projects, total Rs 14,310.01 crore); Polavaram funding limited to the irrigation component from 1 April 2014

S5 · Lok Sabha, Unstarred Question No. 6156, answered on 4 April 2018 by the Minister of State (Independent Charge), Ministry of Planning. https://eparlib.nic.in/bitstream/123456789/773520/1/AU6156.pdf

Used for: Central assistance to Andhra Pradesh announced by the Department of Expenditure in September 2016; the commitments based on the Act, the Fourteenth Finance Commission's report, the Prime Minister's statement to Parliament of 20 February 2014 and the NITI Aayog Vice Chairman's report of 1 December 2015; 100 per cent of the remaining cost of the irrigation component of Polavaram from 1 April 2014

S6 · Prime Minister's Office, "Cabinet approves Special Assistance Measure for Andhra Pradesh", 15 March 2017. https://www.pmindia.gov.in/en/news_updates/cabinet-approves-special-assistance-measure-for-andhra-pradesh/

Used for: Cabinet approval of 15 March 2017; the two parts of the measure (externally aided projects and the Polavaram irrigation component); the State to execute Polavaram on behalf of the Union; role of the Polavaram Project Authority and the Department of Expenditure

S7 · Lok Sabha, Unstarred Question No. 193, “Special Status to Bihar”, answered by the Minister of State for Finance, 22 July 2024. https://sansad.in/getFile/loksabhaquestions/annex/182/AU193_7F7UEc.pdf?source=pqals

Used for: NDC criteria; Inter-Ministerial Group report dated 30 March 2012; finding that Bihar’s case was not made out under those criteria

S8 · Lok Sabha debates (Sixteenth Lok Sabha), M. Murali Mohan, "Regarding grant of special category status to Andhra Pradesh", Parliament Digital Library. https://eparlib.sansad.in/bitstream/123456789/808748/1/14772.pdf

Used for: The Finance Minister's announcement of the special assistance measure on 7 September 2016, in lieu of the status; the State's continuing demand

S9 · Scroll.in, "Centre says no to special status for Andhra Pradesh, cites constraints in Finance Commission report", 8 September 2016. https://scroll.in/latest/815952/centre-says-no-to-special-status-for-andhra-pradesh-cites-constraints-in-finance-commission-report

Used for: Announcement by Finance Minister Arun Jaitley on Wednesday (7 September 2016); constraints of the Fourteenth Finance Commission's report cited; Cabinet approval still to come

S10 · Wikipedia, "Andhra Pradesh special status protests" (citing Srinivasan Ramani, "What is the special category status?", The Hindu). https://en.wikipedia.org/wiki/Andhra_Pradesh_special_status_protests

Used for: Prime Minister Manmohan Singh's statement in the Rajya Sabha on 20 February 2014, during the debate on the Bill: the status for the successor State of Andhra Pradesh for five years

S11 · Wikipedia, "Gadgil formula". https://en.wikipedia.org/wiki/Gadgil_formula

Used for: Formula of 1969 for central assistance to State plans, approved by the NDC and named after D.R. Gadgil; special category States (Assam, Jammu and Kashmir, Nagaland) met first from the pool; Gadgil-Mukherjee formula approved by the NDC on 11 October 1990

S12 · NITI Aayog, Annual Report 2014-15, chapter 1, paragraphs 1.1 and 1.4; PIB, Prime Minister’s Independence Day address, 15 August 2014. https://www.niti.gov.in/sites/default/files/2018-12/Niti_annual_report-2014-15.pdf ; https://www.pib.gov.in/newsite/PrintRelease.aspx?lang=2&reg=48&relid=108815

Used for: Announcement of replacement on 15 August 2014; Planning Commission continued through 31 December 2014; NITI Aayog replaced it by resolution dated 1 January 2015

S13 · Wikipedia, "National Democratic Alliance". https://en.wikipedia.org/wiki/National_Democratic_Alliance

Used for: TDP left the NDA on 16 March 2018 citing special status and the Reorganisation Act's promises; rejoined on 9 March 2024

S14 · Prime Minister's Office, "Cabinet approves recommendations of the Sub Group of Chief Ministers on Rationalisation of Centrally Sponsored Schemes", 3 August 2016. https://www.pmindia.gov.in/en/news_updates/cabinet-approves-recommendations-of-the-sub-group-of-chief-minsters-on-rationalisation-of-centrally-sponsored-schemes/

Used for: Funding pattern of core schemes: 90 to 10 for the 8 North Eastern States and 3 Himalayan States, 60 to 40 for other States

S15 · Ministry of Home Affairs, press release on the maps of the newly formed Union Territories of Jammu and Kashmir and Ladakh (PIB Delhi, 2 November 2019), as carried by the High Commission of India, Lilongwe. https://www.hcililongwe.gov.in/section/news/press-release-on-maps-of-newly-formed-union-territories-of-jammu-kashmir-and-ladakh-with-the-map-of-india/

Used for: The former State of Jammu and Kashmir reorganised as the Union Territories of Jammu and Kashmir and Ladakh on 31 October 2019, under the Jammu and Kashmir Reorganisation Act, 2019

Topic 106 · Rainfall: types and world distribution

S1 · NCERT, Fundamentals of Physical Geography (Class XI), Chapter 10, "Water in the Atmosphere", reprint 2026-27. https://ncert.nic.in/textbook/pdf/kegy210.pdf

Used for: Precipitation, rainfall, snowfall, sleet, hailstones; the three types of rainfall; convectional rain (heated air, convection currents, cumulus clouds, thunder and lightning, heavy but short-lived, summer or the hotter part of the day, equatorial regions and the interiors of the continents, particularly in the northern hemisphere); orographic rain (saturated air mass forced to ascend, windward slopes receive greater rainfall, descending air warmed and its capacity to take in moisture increased, leeward slopes rainless and dry, rain-shadow area, relief rain); cyclonic rain referred to Chapter 9; every sentence of the world distribution of rainfall (equator to poles, coasts and interiors, oceans and landmasses, 35° to 40°, 45° to 65°, mountains parallel to the coast); the four bands by annual total and the regions in each; seasonal distribution and its effectiveness; even distribution in the equatorial belt and the western parts of the cool temperate regions

S2 · NCERT, Fundamentals of Physical Geography (Class XI), Chapter 11, "World Climate and Climate Change", reprint 2026-27. https://ncert.nic.in/textbook/pdf/kegy211.pdf

Used for: Tropical wet climate with rain in every month as afternoon thunder showers; tropical monsoon climate with heavy rainfall mostly in summer and a dry winter; Mediterranean climate with hot, dry summers, mild, rainy winters and 35 to 90 cm; marine west coast climate with precipitation throughout the year, 50 to 250 cm; subtropical dry climates between 15° and 35°, in the area of the subtropical high from 15° to 30° with subsidence and inversion; extension towards the equator on the western margins next to cold currents, in western South America; fog in coastal deserts

S3 · NCERT, Fundamentals of Physical Geography (Class XI), Chapter 9, "Atmospheric Circulation and Weather Systems", reprint 2026-27. https://ncert.nic.in/textbook/pdf/kegy209.pdf

Used for: A front as the boundary zone between two air masses; warm air gliding up over cold air at a warm front with a sequence of clouds causing precipitation; cold air pushing warm air up at a cold front with cumulus clouds; extra-tropical cyclones along the polar front in the middle and high latitudes; tropical cyclones over warm tropical oceans with very heavy rainfall and a strong spiralling ascent of air in the eye wall

S4 · NCERT, Contemporary India-I (Class IX), Chapter 4, "Climate" (footer "Rationalised 2023-24"). https://ncert.nic.in/textbook/pdf/iess104.pdf

Used for: Mawsynram in the southern ranges of the Khasi Hills receiving the highest average rainfall in the world; over 250 cm on the windward side of the Western Ghats; the Deccan Plateau and parts of Madhya Pradesh in the rain-shadow area getting some rain; low rainfall in the interior of the Deccan Plateau and east of the Sahyadris; over about 400 cm on parts of the western coast and north-eastern India; less than 10 cm in Ladakh and western Rajasthan

S5 · World Meteorological Organization, World Weather and Climate Extremes Archive, "Records of Weather and Climate Extremes" (table as on 31 July 2025). https://wmo.int/sites/default/files/2025-07/Table_Records_25Jul2025.pdf

Used for: Mawsynram, 11,872 mm, greatest average annual precipitation in Asia, 38 years; Cherrapunji, 26.47 m in 12 months (August 1860 to July 1861) and 2.493 m in 48 hours (15 to 16 June 1995); Foc-Foc, La Réunion, 1.825 m in 24 hours (7 to 8 January 1966) and Tropical Cyclone Denise; Arica, 0.76 mm, least average annual precipitation in South America, 59 years; Arica, longest dry period of 172 months (October 1903 to January 1918); Wadi Halfa, less than 2.54 mm, 39 years

S6 · Encyclopaedia Britannica, "climate", section "Mechanisms of precipitation release". https://www.britannica.com/science/climate-meteorology/Mechanisms-of-precipitation-release; NOAA, Tropical Rain Identification: https://vlab.noaa.gov/web/wdtd/-/tropical-rain-identification ; NOAA, Cloud Top Phase: https://vlab.noaa.gov/web/towr-s/cloud-top-phase

Used for: Cloud droplets falling at about 1 cm per second; the collision and coalescence of droplets of different sizes, in deep clouds with strong updrafts, as the source of tropical showers where cloud tops are too warm for ice; the ice-crystal process in supercooled clouds, with the crystals growing faster than the droplets and melting into raindrops; warm-rain processes do not imply all tropical clouds are ice-free

S7 · Encyclopaedia Britannica, "climate", section "Types of precipitation". https://www.britannica.com/science/climate-meteorology/Types-of-precipitation

Used for: Drizzle drops about 0.2 to 0.5 mm across; raindrops rarely exceeding about 6 mm because larger drops break up

S8 · Encyclopaedia Britannica, "climate", section "World distribution of precipitation". https://www.britannica.com/science/climate-meteorology/World-distribution-of-precipitation

Used for: Global average of about 100 cm a year; heavy rain in regions of rising air and deserts where air descends; thunderstorms most frequent over tropical land; deserts of North Africa, the Arabian Peninsula, South Africa and Australia under the subtropical highs; the trade winds bringing rain to the eastern coasts while the west coasts and interiors are very dry; more rain in winter on the western coasts of North America, Europe and North Africa; low polar precipitation; the south-west monsoon's summer rain over India and South-East Asia, heavier where the air is forced up the Western Ghats and the Himalayas, and the dry winter air over land; the desert of southern Argentina sheltered by the Andes from the Pacific westerlies; the west-coast desert of South America under the South Pacific subtropical high and shielded from Atlantic winds

S9 · Wikipedia, "Wegener-Bergeron-Findeisen process" (citing K. Harper, Weather and Climate: Decade by Decade, 2007, and Pruppacher and Klett, Microphysics of Clouds and Precipitation). https://en.wikipedia.org/wiki/Wegener%E2%80%93Bergeron%E2%80%93Findeisen_process

Used for: The name of the process; ice growing at the expense of liquid water in mixed-phase clouds because of the lower saturation vapour pressure over ice; crystals falling and melting into rain

S10 · US Geological Survey, Deserts: Geology and Resources, "Types of Deserts" (last modified 29 October 1997). https://pubs.usgs.gov/gip/deserts/types/

Used for: The Sahara as the largest trade wind desert; the Atacama and the Namib as coastal deserts on the western edges of continents beside cold ocean currents, the Atacama as the Earth's driest desert; the Rajasthan and Thar deserts as monsoon deserts

S11 · Wikipedia, "Rain shadow" (for the Great Basin, citing Johnson and others, An Introduction to Geology, chapter "Deserts", 2019). https://en.wikipedia.org/wiki/Rain_shadow

Used for: Rain shadow as the zone of reduced rainfall on the leeward side; the Andes shielding eastern Patagonia from the westerlies; the Great Basin of Utah and Nevada in the rain shadows of the Cascades and the Sierra Nevada

S12 · Wikipedia, "Kalahari Desert" (citing Tyson and Crimp, 1998, for the climate; the WWF ecoregions). https://en.wikipedia.org/wiki/Kalahari_Desert

Used for: The Kalahari over much of Botswana and parts of Namibia and South Africa; described as a semi-desert; the Kalahari High dominating in winter

S13 · Encyclopaedia Britannica, "Atacama Desert". https://www.britannica.com/place/Atacama-Desert

Used for: The Atacama mainly in northern Chile, along the Pacific coast of South America

S14 · US National Weather Service, Glossary, "Isohyet" and "Rain gauge". https://forecast.weather.gov/glossary.php?word=isohyet ; https://forecast.weather.gov/glossary.php?word=rain%20gauge

Used for: An isohyet as a line joining points of equal precipitation; a rain gauge as an instrument for measuring the quantity of rain that has fallen

S15 · American Meteorological Society, Glossary of Meteorology, "Bergeron-Findeisen process". https://glossary.ametsoc.org/wiki/Bergeron-findeisen_process

Used for: The equilibrium vapour pressure of water vapour with respect to ice being less than that with respect to liquid water; ice crystals gaining mass by vapour deposition at the expense of the liquid drops, which lose mass by evaporation

S16 · NCERT, India: Physical Environment (Class XI), Chapter 4, "Climate". https://ncert.nic.in/textbook/pdf/kegy104.pdf

Used for: Cherrapunji and Mawsynram in the Khasi Hills of Meghalaya receiving rainfall over 1,080 cm in a year; Mawsynram, on the crest of the Khasi hills, receiving the highest average annual rainfall in the world; the windward side of the Sahyadris and the Western Coastal Plain receiving 250 to 400 cm; the rain-shadow area east of the Western Ghats

S17 · NCERT, Fundamentals of Physical Geography (Class XI), Chapter 13, "Movements of Ocean Water". https://ncert.nic.in/textbook/pdf/kegy213.pdf

Used for: Cold currents usually found on the west coasts of the continents in the low and middle latitudes; such coasts having fog but being generally arid

S18 · Encyclopaedia Britannica, "Peru Current" (also known as the Humboldt Current). https://www.britannica.com/place/Peru-Current

Used for: A cold-water current of the south-east Pacific flowing north along the west coast of South America; helping to keep the coast one of the most intensely arid areas in the world

S19 · Encyclopaedia Britannica, "Benguela Current". https://www.britannica.com/place/Benguela-Current

Used for: Flowing north along the west coast of southern Africa; the coastal areas beside it experiencing a desert-like aridity

S20 · Encyclopaedia Britannica, "Kalahari". https://www.britannica.com/place/Kalahari

Used for: The Kalahari as a basin-like plain of the interior plateau of southern Africa, spanning parts of Botswana, Namibia and South Africa

Topic 107 · Climate change agreements: UNFCCC, Kyoto Protocol and Paris Agreement

S1 · United Nations Framework Convention on Climate Change, text (FCCC/INFORMAL/84). https://unfccc.int/resource/docs/convkp/conveng.pdf

Used for: Adoption at New York on 9 May 1992; opening for signature at Rio during the UN Conference on Environment and Development, and then at New York until June 1993; Article 2 objective; Article 3.1 (equity, CBDR-RC, developed countries to take the lead) and 3.3 (precautionary measures, lack of full scientific certainty); Article 4.2 (Annex I) and 4.3 (Annex II, new and additional financial resources); Article 7 (COP as supreme body); Article 8 (secretariat); Articles 9 and 10 (SBSTA, SBI); lists of Annex I and Annex II; countries added to Annex I (amendment in force 13 August 1998); Turkey deleted from Annex II (28 June 2002)

S2 · Kyoto Protocol to the United Nations Framework Convention on Climate Change, text. https://unfccc.int/resource/docs/convkp/kpeng.html

Used for: Adoption at Kyoto on 11 December 1997; Article 3.1 (at least 5 per cent below 1990 levels in 2008 to 2012; Annex A gases; Annex B); Article 6 (emission reduction units); Article 12 (clean development mechanism, its purposes, certified emission reductions, share of proceeds for adaptation in 12.8); Article 17 (emissions trading among Annex B Parties, supplemental to domestic action); Article 25 (entry-into-force condition); Annex B percentages

S3 · UN Climate Change, "What is the Kyoto Protocol?". https://unfccc.int/process-and-meetings/the-kyoto-protocol/what-is-the-kyoto-protocol/what-is-the-kyoto-protocol

Used for: 192 Parties; adoption and entry into force; 37 industrialised countries and economies in transition and the EU in Annex B; 5 per cent average; binding only developed countries, CBDR-RC; the three market mechanisms; the Adaptation Fund and its financing in the two periods (2 per cent share added at Doha); Doha Amendment (8 December 2012; 2013 to 2020; at least 18 per cent; 144 needed, 147 by 28 October 2020; in force 31 December 2020)

S4 · Paris Agreement, text. https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

Used for: Article 2.1 (a), (b), (c); Article 2.2; Article 4.2, 4.3 and 4.9; Article 6.2, 6.4 and 6.8; Article 7.1; Article 8.1; Article 9.1; Article 13.1; Article 14.1 and 14.2; Article 21.1; Article 28.1 and 28.2

S5 · UN Climate Change, "The Paris Agreement". https://unfccc.int/process-and-meetings/the-paris-agreement

Used for: 194 Parties as of 27 January 2026; adoption by 195 Parties at COP21 on 12 December 2015; entry into force on 4 November 2016; five-year cycle; reporting from 2024; global stocktake; developed countries to take the lead on finance, others encouraged to contribute voluntarily

S6 · UN Climate Change, "Biennial Transparency Reports". https://unfccc.int/biennial-transparency-reports

Used for: BTRs under the enhanced transparency framework; contents; every two years; first by 31 December 2024 at the latest; second by 31 December 2026; discretion for LDCs and SIDS

S7 · UN Climate Change, "Parties and observers". https://unfccc.int/parties-observers

Used for: Definitions of Annex I (OECD members of 1992 plus economies in transition), Annex II (OECD members of Annex I without the economies in transition; finance and technology transfer), non-Annex I Parties; 49 least developed countries

S8 · UN Climate Change, "About the Secretariat". https://unfccc.int/about-us/about-the-secretariat

Used for: Secretariat in Bonn since 1996, earlier in Geneva; 198 Parties to the Convention, universal membership; annual COP

S9 · UN Climate Change, "History of the Convention". https://unfccc.int/process/the-convention/history-of-the-convention

Used for: IPCC set up in 1988; its first assessment report (1990) and the call for a treaty; 1992 text adopted and opened for signature at Rio with the CBD and UNCCD; 1994; COP1 at Berlin (1995); Kyoto Protocol at COP3; Marrakesh Accords at COP7 (2001); first meeting of Kyoto Parties at Montreal (2005); Bali Road Map at COP13 (2007); Copenhagen Accord at COP15 (2009); Cancún Agreements at COP16 (2010); Doha Amendment at CMP8 (2012); Warsaw Mechanism for Loss and Damage (2013); Paris Agreement adopted on 12 December 2015; the page's own count of 197 Parties

S10 · UN Climate Change, press release "COP29 UN Climate Conference Agrees to Triple Finance to Developing Countries, Protecting Lives and Livelihoods", 24 November 2024. https://unfccc.int/news/cop29-un-climate-conference-agrees-to-triple-finance-to-developing-countries-protecting-lives-and

Used for: Closing date; NCQG of USD 300 billion a year by 2035 from the earlier USD 100 billion; USD 1.3 trillion; Article 6.2 and 6.4 decisions ("Paris Agreement Crediting Mechanism", safeguards, Indigenous Peoples, appeals); loss and damage fund agreed at COP27

S11 · UN Climate Change, press release "COP28 Agreement Signals 'Beginning of the End' of the Fossil Fuel Era", 13 December 2023. https://unfccc.int/news/cop28-agreement-signals-beginning-of-the-end-of-the-fossil-fuel-era

Used for: First global stocktake; tripling renewables and doubling energy efficiency by 2030; transition away from fossil fuels in energy systems; loss and damage fund operationalised on the first day, pledges over USD 700 million; Green Climate Fund second replenishment, USD 12.8 billion from 31 countries

S12 · Wikipedia, "United Nations Climate Change Conference" (citing the IISD Earth Negotiations Bulletin for COP1; decision 1/CP.13 for Bali; the Copenhagen Accord of 18 December 2009; and news reports for COP27 to COP32). https://en.wikipedia.org/wiki/United_Nations_Climate_Change_Conference

Used for: Places and years of COP1, COP3, COP13 (Nusa Dua, Bali; Bali Action Plan), COP15 (Copenhagen; accord only noted), COP16 (Cancún; USD 100 billion a year and Green Climate Fund), COP21, COP26 (Glasgow, phase down coal), COP27, COP28, COP29, COP30 (first hosted by Brazil, Amazon region), COP31 (Antalya; Murat Kurum; Chris Bowen; pre-COP in the Pacific), COP32 (Ethiopia, 2027); COP1 outcomes (mandate for action beyond 2000, pilot phase for joint implementation, secretariat at Bonn, subsidiary bodies)

S13 · Wikipedia, "Kyoto Protocol" (citing CBC News, "Canada pulls out of Kyoto Protocol", 12 December 2011, and the Byrd-Hagel Resolution). https://en.wikipedia.org/wiki/Kyoto_Protocol

Used for: United States signed on 12 November 1998 but never ratified; Canada's withdrawal effective 15 December 2012; India as a non-Annex I Party without a binding target; AAUs, CERs and ERUs

S14 · Wikipedia, "List of parties to the Kyoto Protocol" (citing the UNFCCC status of ratification and the United Nations Treaty Series). https://en.wikipedia.org/wiki/List_of_parties_to_the_Kyoto_Protocol

Used for: India's accession on 26 August 2002 and acceptance of the Doha Amendment on 8 August 2017; Canada's notice of 15 December 2011, effective 15 December 2012

S15 · Climate Home News, "US set to exit UN climate convention in February 2027", Matteo Civillini, 4 March 2026 (citing UN depositary notification C.N.102.2026). https://www.climatechangenews.com/2026/03/04/us-set-to-exit-un-climate-convention-in-february-2027/

Used for: The United States' notice of withdrawal from the UNFCCC, taking effect on 27 February 2027

S16 · United Nations, depositary notification C.N.102.2026.TREATIES-XXVII.7, "United Nations Framework Convention on Climate Change, New York, 9 May 1992. United States of America: Withdrawal". https://treaties.un.org/doc/Publication/CN/2026/CN.102.2026-Eng.pdf

Used for: Withdrawal of the United States from the Convention, effected on 27 February 2026, to take effect on 27 February 2027

S17 · United Nations Sustainable Development blog, "India ratifies Paris climate pact at UN, brings its entry into force 'tantalisingly close'", October 2016. https://www.un.org/sustainabledevelopment/blog/2016/10/india-ratifies-paris-climate-pact-at-un-brings-its-entry-into-force-tantalisingly-close

Used for: India's ratification of the Paris Agreement on 2 October 2016, as the 62nd country to deposit its instrument

S18 · United Nations Treaty Collection, Multilateral Treaties Deposited with the Secretary-General, Chapter XXVII 7.a, Kyoto Protocol (status). https://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XXVII/xxvii-7-a.en.pdf

Used for: India's accession on 26 August 2002; United States signature on 12 November 1998 with no ratification; Canada's notification of 15 December 2011, effective 15 December 2012; 192 Parties

S19 · Paris Agreement, UNFCCC publication text. https://unfccc.int/sites/default/files/resource/parisagreement_publication.pdf

Used for: Article 4.2, 4.3 and 4.9 (successive NDCs, progression, every five years); Article 6.1, 6.2, 6.4 and 6.8; Article 8.1; Article 9.1; Article 13.7

S20 · UN Climate Change, decision 2/CP.15, "Copenhagen Accord" (FCCC/CP/2009/11/Add.1). https://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf

Used for: The COP "Takes note of the Copenhagen Accord of 18 December 2009"; paragraph 8: developed countries "commit to a goal of mobilizing jointly USD 100 billion dollars a year by 2020"

S21 · UN Climate Change, decision 1/CP.16, "The Cancun Agreements" (FCCC/CP/2010/7/Add.1). https://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf

Used for: Paragraph 98: "Recognizes that developed country Parties commit" to mobilising jointly USD 100 billion per year by 2020; paragraph 102: "Decides to establish a Green Climate Fund"

S22 · Wikipedia, "2015 United Nations Climate Change Conference". https://en.wikipedia.org/wiki/2015_United_Nations_Climate_Change_Conference

Used for: The 196 count of Parties at COP21: "The European Union and 195 nations" were the participating parties

Topic 108 · Decision making: types and steps

S1 · NCERT, Business Studies, Class XII, Part I, Chapter 4 "Planning". https://ncert.nic.in/textbook/pdf/lebs104.pdf

Used for: Planning involves decision making; the need for planning arises only when alternatives are available; each alternative is examined and evaluated; the seven steps of planning (setting objectives, developing premises, identifying alternative courses of action, evaluating alternative courses, selecting an alternative, implementing the plan, follow-up action) with their key lines (premises and forecasts; pros and cons, risk and return; a combination of plans may be selected; monitoring to ensure that objectives are achieved); time is a limited resource; policy, procedure and rule (rules allow no flexibility or discretion; a policy may be interpreted with discretion)

S2 · INFLIBNET e-book (UGC), Organisation behaviour, Chapter 25 "Group Decision Making", by Prof. Geeta Bansal. https://ebooks.inflibnet.ac.in/mgmtp13/chapter/group-decision-making/

Used for: Programmed decisions (routine, following set policies) and non-programmed decisions (unique problems, no predetermined alternatives); strategic decisions (allocate resources towards organisational objectives) and tactical (operational) decisions (carry out strategy in day-to-day work); group decisions often preferable, complex problems need several specialists; advantages and drawbacks of group decision making; conditions of groupthink; brainstorming and its

rule that no idea is criticised until all members have offered theirs; the steps of the nominal group technique (silent, independent writing; round listing; clarification; vote); the Delphi technique (members do not meet face to face; written input) and its steps, developed at the RAND Corporation; devil's advocacy; dialectical inquiry

S3 · Anjali Singh, "Unit II: Decision Making", B.A. Public Administration, Semester II, Paper III (Administrative Theory and Behaviour), Department of Public Administration, University of Lucknow. https://www.lkouniv.ac.in/site/writereaddata/siteContent/20200502130652159 0Nand-Lal-Bharti-Decision-making.pdf

Used for: Decision making as identifying and analysing alternatives and choosing one course of action; Simon's two types: programmed (routine and repetitive, made on rules and procedures, can be made by lower staff too) and non-programmed (novel and non-recurring, of high importance, made at the apex); the order of steps (objectives placed before identifying the problem); Simon's three phases: intelligence, design and choice

S4 · Wikipedia, "Decision-making" (citing Herbert A. Simon, The New Science of Management Decision, 1977; Blackhart and Kline, 2005; Schacter, Gilbert and Wegner, Psychology, 2011, p. 372; Landeta, 2006). https://en.wikipedia.org/wiki/Decision-making; RAND, Methodological Guidance for Conducting and Critically Appraising Delphi Panels, pp. 25-26: https://www.rand.org/content/dam/rand/pubs/tools/TLA3000/TLA3082-1/RAND_TLA3082-1.pdf

Used for: Decision making as the cognitive process resulting in the selection of a belief or a course of action among alternatives; bounded rationality (limited by information, time and the mind's processing capacity) and satisficing; the rational and intuitive approaches; the GOFER steps (goals, options, facts, effects, review and implementation); the Delphi method used for forecasting and policy-making; the biases: anchoring and adjustment, selective search for evidence, sunk-cost fallacy and escalating commitment; expected-value (probability-weighted) choice; Delphi prespecified stopping rules and possible persistent disagreement

S5 · Wikipedia, "Groupthink" (citing William H. Whyte Jr., Fortune, March 1952; Irving L. Janis, Psychology Today, November 1971, p. 43; Janis, Victims of Groupthink, Houghton Mifflin, 1972; Janis, Groupthink, 1982). https://en.wikipedia.org/wiki/Groupthink

Used for: The word coined by Whyte in 1952; Janis's research and books; Janis's description of groupthink (concurrence-seeking in a cohesive in-group overriding realistic appraisal of alternatives); the eight symptoms in three types; high cohesiveness as the main factor, with structural faults and situational context; Janis's remedies, including the devil's advocate and outside experts

S6 · David S. Bright and Anastasia H. Cortes, Principles of Management, OpenStax (Rice University), 2019, sections 2.3 "Programmed and Nonprogrammed Decisions" and 2.4 "Barriers to Effective Decision-Making". https://openstax.org/books/principles-management/pages/2-3-programmed-and-nonprogrammed-decisions and https://openstax.org/books/principles-management/pages/2-4-barriers-to-effective-decision-making

Used for: Programmed decisions (repeated over time, guided by an existing set of rules) and nonprogrammed decisions (novel, unstructured; information often ambiguous or incomplete; need judgement and creative thinking); limited processing capacity; time pressure makes good nonprogrammed decisions less likely and pushes people towards heuristics; decisions made under uncertainty because outcomes are known only after the choice; the "similar to me" bias and preference for the familiar

S7 · Frédéric Adam, "Programmability of Decision Making", in Encyclopedia of Management Theory, SAGE, 2013, pp. 626 to 628. https://sk.sagepub.com/ency/edvol/embed/encyclopedia-of-management-theory/chpt/programmability-decision-making

Used for: Herbert Simon introduced the distinction between programmed and nonprogrammed decisions

S8 · EBSCO Research Starters, "Decision Making" (Business and Management), 2019. https://www.ebsco.com/research-starters/business-and-management/decision-making

Used for: Strategic decisions (long-term goals; top managers), tactical decisions (specific actions that bring about the objectives; middle managers) and operational decisions (day-to-day functions; subordinate to strategic and tactical decisions)

S9 · Wikipedia, "Knightian uncertainty" (citing Frank H. Knight, Risk, Uncertainty and Profit, 1921). https://en.wikipedia.org/wiki/Knightian_uncertainty; IGNOU, Construction Organisation, Unit 3: https://egyankosh.ac.in/bitstream/123456789/31120/1/Unit-3.pdf

Used for: Knight's distinction between risk (measurable) and uncertainty (no quantifiable knowledge); technical decision-making distinction between assessable outcome probabilities and uncertainty

S10 · Wikipedia, "List of cognitive biases" (citing Schwarz and others, Journal of Personality and Social Psychology, 1991, for availability; Hilbert, Psychological Bulletin, 2012, for overconfidence). https://en.wikipedia.org/wiki/List_of_cognitive_biases

Used for: The availability heuristic (overestimating the likelihood of events that come easily to memory, through recency, unusualness or emotional charge); the overconfidence effect

S11 · Wikipedia, "Decision tree" (citing Kamiński, Jakubczyk and Szufel, 2017, for the node types; von Winterfeldt and Edwards, Decision Analysis and Behavioral Research, 1986, for its use in decision analysis). https://en.wikipedia.org/wiki/Decision_tree

Used for: A tree-like model of decisions and their possible consequences, including chance outcomes; decision, chance and end nodes drawn as squares, circles and triangles

S12 · Wikipedia, "Cost-benefit analysis". https://en.wikipedia.org/wiki/Cost%E2%80%93benefit_analysis

Used for: A systematic comparison of the benefits and costs of alternatives, including the status quo, in money terms; common in public policy

S13 · Wikipedia, "SWOT analysis" (citing Learned and others, Business Policy: Text and Cases, 1965; Puyt, Lie and Wilderom, Long Range Planning, 2023). https://en.wikipedia.org/wiki/SWOT_analysis

Used for: Strengths and weaknesses (usually internal) and opportunities and threats (usually external) of an organisation or project

S14 · eBook Organisational Behaviour (eISBN), p. 40, section 4.7b "Weaknesses of Group Decision Making" (no author or year shown). https://pkb.mypolycc.edu.my/ebook/OrganisationalBehaviour/files/basic-html/page40.html

Used for: Group decisions generally more accurate than those of the average member, but less accurate than those of the most accurate member

Topic 109 · BODMAS and simplification

S1 · NCERT, Ganita Prakash, Grade 7 (reprint 2026-27), Chapter 2 "Arithmetic Expressions", Sections 2.1 and 2.2 (Brackets in Expressions, Terms in Expressions, Swapping and Grouping, Removing Brackets I and II) and the summary. https://ncert.nic.in/textbook/pdf/gegp102.pdf

Used for: 30 + 5 × 4 is unclear without a rule; brackets are worked first (30 + (5 × 4) = 50; 100 - (15 + 56) = 29); terms are the parts separated by "+", and subtractions are turned into additions to find them; reordering or regrouping terms does not change the value; a minus sign before a bracket changes the signs inside (100 - (15 + 56) = 100 - 15 - 56; 500 - (250 - 100) = 500 - 250 + 100); a "+" sign does not; 2 × (43 + 24) = 2 × 43 + 2 × 24; the chapter does not use BODMAS or any mnemonic

S2 · Wikipedia, "Order of operations" (citing Bronstein and Semendjajew, Taschenbuch der Mathematik, 1987; Davies, "BODMAS Exposed", Mathematics in School, 1979; Knight, "Why BODMAS?", The Mathematical Gazette, 1997). https://en.wikipedia.org/wiki/Order_of_operations; OpenStax, Prealgebra 2e, section 5.7: https://openstax.org/books/prealgebra-2e/pages/5-7-simplify-and-use-square-roots

Used for: BODMAS as Brackets, Of, Division/Multiplication, Addition/Subtraction, with "of" meaning multiplication, and the O sometimes read as Order (exponent or root); BIDMAS; BEDMAS in Canada and New Zealand; PEMDAS in the United States and France; operations of the same precedence evaluated from left to right; nested brackets evaluated from the inside outward; curly braces and square brackets as other grouping symbols; -3^2 read as $-(3^2) = -9$; 8 ÷ 2(2 + 2) read as 1 or 16; radical notation functions as a grouping symbol

S3 · Wikipedia, "Vinculum (symbol)" (citing Cajori, A History of Mathematical Notations, Vol. I, 1928). https://en.wikipedia.org/wiki/Vinculum_(symbol)

Used for: The vinculum as a horizontal line that groups the terms under it, meaning that they are worked first; modern mathematics has largely replaced it by parentheses; its use over the number under a radical sign and over the repeating digits of a recurring decimal

S4 · Learn CBSE, "BODMAS Rule" (2019). https://www.learncbse.in/bodmas-rule/

Used for: Indian school guidebook form of the rule: V for vinculum (bar), then brackets ( ), { }, [ ]; the operations listed as of, division, multiplication, addition, subtraction, with "of" worked before division and multiplication; the bar removed first and then the brackets in the order ( ), { }, [ ]

S5 · Shaalaa.com, concept note "Simplification of Brackets" (CISCE, Class 6). https://www.shaalaa.com/hin/concept-notes/simplification-of-brackets_37679

Used for: BODMAS letters with O as "of"; the order bar, ( ), { }, [ ], with the bar innermost and square brackets outermost

Topic 110 · Current affairs: LVM3-M6 and the BlueBird Block-2 satellite (December 2025)

S1 · ISRO, "LVM3-M6 / BlueBird Block-2 Mission". https://www.isro.gov.in/LVM3_M6_BlueBird_Block2_Mission.html

Used for: Dedicated commercial mission; sixth operational flight of LVM3; customer AST SpaceMobile, USA; satellite placed in its intended orbit; largest commercial communications satellite deployed in LEO; heaviest payload launched by LVM3 from Indian soil; cellular broadband directly to standard smartphones; three stages; 640 tonnes; 43.5 m; 4,200 kg to GTO; two OneWeb missions with 72 satellites in all; LVM3-M5 on 2 November 2025

S2 · ISRO, LVM3-M6 mission brochure. https://www.isro.gov.in/media_isro/pdf/LVM3M6/LVM3M6_Brochure_201225.pdf

Used for: Second Launch Pad; target orbit (520 km circular, 53 plus or minus 0.1 degrees); satellite about 6,100 kg and the wording of the record in LVM3's history; phased-array antenna of 223 square metres; 4G and 5G voice, video, texts, streaming and data; commercial agreement between NSIL and AST and Science, LLC; third dedicated commercial mission; eight consecutive successful missions; stage data (S200 204.2 t, L110 115.9 t of UH25 and N2O4, C25 28.5 t of LH2 and LOX); 5 m fairing; separation at 942.52 seconds and 520.817 km

S3 · Press Information Bureau (Department of Space), "LVM3 Demonstrates World-Class Reliability with Successful Deployment of Heaviest Payload: Dr Jitendra Singh", 24 December 2025, Release ID 2208090. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2208090&reg=3&lang=2

Used for: Launch on 24 December 2025; heaviest satellite carried by an Indian launch vehicle; injection into the intended low Earth orbit; commercial agreement between NSIL and AST SpaceMobile; third fully commercial mission of LVM3

S4 · Press Information Bureau (Prime Minister's Office), "Prime Minister congratulates space scientists and engineers for successful launch of BlueBird Block-2 by LVM3-M6", 24 December 2025, Release ID 2207983. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2207983&reg=3&lang=1

Used for: The words "the heaviest satellite ever launched from Indian soil into its intended orbit"

S5 · NewSpace India Limited, "Launch of BlueBird Block-2 communication satellite" (news item dated 29 December 2025). https://www.nsilindia.co.in/news-details/751

Used for: Launch at 08:55 IST on 24 December; satellite of about 6,100 kg to LEO; NSIL's third dedicated commercial launch mission of LVM3; NSIL a CPSE under the Department of Space and the commercial arm of ISRO

S6 · AST SpaceMobile, "AST SpaceMobile Announces Successful Orbital Launch of BlueBird 6, the Largest Commercial Communications Array Ever Deployed in Low Earth Orbit" (Business Wire, December 2025). https://www.businesswire.com/news/home/20251222922862/en/AST-SpaceMobile-Announces-Successful-Orbital-Launch-of-BlueBird-6-the-Largest-Commercial-Communications-Array-Ever-Deployed-in-Low-Earth-Orbit

Used for: Lift-off at 10:25 pm EST on 23 December from Sriharikota; nearly 2,400 square feet; three times the size of BlueBirds 1 to 5; ten times the capacity; peak data rates up to 120 Mbps; standard, unmodified smartphones; plan of 45 to 60 satellites by the end of 2026

S7 · AST SpaceMobile, "AST SpaceMobile Successfully Completes Unfolding of BlueBird 6, the Largest Commercial Communications Array Antenna Ever Deployed in Low Earth Orbit" (Business Wire, February 2026). https://www.businesswire.com/news/home/20260210108166/en/AST-SpaceMobile-Successfully-Completes-Unfolding-of-BlueBird-6-the-Largest-Commercial-Communications-Array-Antenna-Ever-Deployed-in-Low-Earth-Orbit

Used for: Antenna of BlueBird 6 fully unfolded; about 2,400 square feet; up to ten times the capacity of BlueBirds 1 to 5

S8 · AST SpaceMobile, "Next-Generation BlueBird". https://ast-science.com/next-gen-bluebird/

Used for: Next-generation satellites for broadband direct to smartphones; nearly 2,400 square feet against 693 square feet for the first generation; launch vehicles of BlueBirds 7 to 13

S9 · AST SpaceMobile, "AST SpaceMobile Announces BlueBird 7 Launch Date of Sunday, April 19" (Business Wire, April 2026), with the release headings listed beside it, including "AST SpaceMobile Announces Successful Orbital Launch of BlueBirds 11, 12, and 13". https://www.businesswire.com/news/home/20260416181082/en/AST-SpaceMobile-Announces-BlueBird-7-Launch-Date-of-Sunday-April-19-Invites-Retail-Investors-to-Attend-Live-Launch-Event-at-Cape-Canaveral

Used for: BlueBird 7 on Blue Origin's New Glenn, 19 April 2026, Cape Canaveral; BlueBirds 11, 12 and 13 launched on 5 August 2026 on a Falcon 9

S10 · AST SpaceMobile, "AST SpaceMobile Announces Successful Orbital Launch of BlueBirds 8, 9, and 10" (Business Wire, June 2026). https://www.businesswire.com/news/home/20260617420856/en/AST-SpaceMobile-Announces-Successful-Orbital-Launch-of-BlueBirds-8-9-and-10

Used for: Launch on 17 June 2026 on a Falcon 9 from Cape Canaveral Space Force Station

S11 · ISRO, "List of LVM3 Launches" (read on 14 October 2026). https://www.isro.gov.in/LVM3_Launchers.html

Used for: Nine flights with dates and payloads, from LVM-3/CARE (18 December 2014) to LVM3-M6 (24 December 2025); GSAT-29 on LVM3-D2; OneWeb Gen-1 on M2 and M3; no later flight

S12 · ISRO, "LVM3 (Geosynchronous Satellite Launch Vehicle Mk III)". https://www.isro.gov.in/GSLVmk3_CON.html

Used for: Earlier name; two S200 with HTPB; L110 with two Vikas engines; C25 with the CE-20, India's largest cryogenic engine; 4,000 kg to GTO; 8,000 kg to LEO of 600 km

S13 · ISRO, "Launchers". https://www.isro.gov.in/Launchers.html

Used for: 4 tonne class communication satellites and 10 tonne class payloads to LEO; all successful launches from the first development flight; human-rated LVM3 identified for Gaganyaan, named HRLV

S14 · ISRO, "LVM3-M5/CMS-03 Mission". https://www.isro.gov.in/LVM3_M5_CMS_03_MISSION.html

Used for: CMS-03, about 4,400 kg, to GTO; heaviest communication satellite launched to GTO from Indian soil; 2 November 2025

S15 · ISRO, "LVM3 M2 / OneWeb India-1 Mission". https://www.isro.gov.in/LVM3_M2_OneWebIndia.html

Used for: 36 OneWeb satellites; 5,796 kg; heaviest payload of LVM3 up to then; first commercial mission; first launch to LEO; first NSIL mission with LVM3; first OneWeb mission with NSIL and the Department of Space

S16 · ISRO, "LVM3-M1 / Chandrayaan-2 Mission". https://www.isro.gov.in/mission_GSLVMkIIIM1.html

Used for: Launch on 22 July 2019 by "GSLV MkIII-M1"; orbiter, lander (Vikram) and rover; injection orbit of 169.7 km by 45,475 km

S17 · ISRO, "Chandrayaan-3". https://www.isro.gov.in/Chandrayaan3.html

Used for: LVM3-M4 on 14 July 2023 from the Second Launch Pad; propulsion module, Vikram lander and rover; soft landing on 23 August 2023

S18 · ISRO, home page (read on 14 October 2026). https://www.isro.gov.in/

Used for: LVM3-M6 the latest LVM3 launch shown; CE-20 hot test for the LVM3-M7 mission; Gaganyaan-G1 launch campaign started with human-rated LVM3 assembly at SDSC

S19 · NewSpace India Limited, "Launch services". https://www.nsilindia.co.in/launch-services

Used for: Dedicated and ride-sharing launches on PSLV, GSLV, LVM3 and SSLV; GSAT-19 placed in GTO by GSLV Mk III-D1 on 5 June 2017

S20 · Press Information Bureau, backgrounder "India's Space Odyssey: Building India's Space Future", 21 June 2026. https://static.pib.gov.in/WriteReadData/specificdocs/documents/2026/jun/doc2026621898801.pdf

Used for: NSIL established in 2019 and its role; NSIL revenue in 2021-22 and 2024-25; 35 foreign satellites up to 2014 and 399 after 2014 up to March 2026

S21 · Press Information Bureau (Ministry of Communications), "Growing importance of satellite communication", 6 February 2025, Release ID 2100233. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2100233&reg=48&lang=2

Used for: The Telecommunications Act, 2023 provides for administrative assignment of spectrum for satellite-based services (First Schedule)

S22 · Press Information Bureau, "TRAI releases Recommendations on 'Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services'", 9 May 2025, Release ID 2127866. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2127866

Used for: Date of TRAI's recommendations; spectrum charge of 4 per cent of adjusted gross revenue

S23 · Wikipedia, "Starlink" (sections on user terminals and Direct to Cell, citing the SpaceX submission to the 2015 ISS conference, Ars Technica and CNBC of 25 August 2022, and T-Mobile's announcements of January 2024). https://en.wikipedia.org/wiki/Starlink

Used for: Flat user terminals with phased-array antennas that must see the sky; Starlink Mini; Direct to Cell service with T-Mobile and other operators for unmodified phones; limited capacity compared with ground networks

S24 · The institute's current affairs files: Insights "Current Affairs 30", December 2025, page 182; ForumIAS "Factly Compilation", December 2025, page 94

Used for: Selection of the item only. The facts in the notes are taken from the official and company sources listed in this table

S25 · AST SpaceMobile, company statement of 19 April 2026, “AST SpaceMobile Addresses Today’s Orbital Launch of BlueBird 7 on the New Glenn Launch Vehicle”, distributed by Business Wire. https://www.businesswire.com/news/home/20260419512905/en/AST-SpaceMobile-Addresses-Todays-Orbital-Launch-of-BlueBird-7-on-the-New-Glenn-Launch-Vehicle

Used for: BlueBird 7 placed in a lower-than-planned orbit by the upper stage; altitude too low to operate; planned de-orbit

S26 · AST SpaceMobile, "Next-Generation BlueBird" (read on 14 October 2026). https://ast-science.com/next-gen-bluebird/

Used for: BlueBird 7 launched on 19 April 2026 on New Glenn; BlueBirds 8 to 10 on 17 June and BlueBirds 11 to 13 on 5 August 2026, both on a Falcon 9 from Cape Canaveral

S27 · PTI report in The Week, "ISRO's 'Bahubali' rocket places 6000 kg US communication sat into orbit", 24 December 2025. https://www.theweek.in/wire-updates/national/2025/12/24/mds16-isro-ldall-satellite.html

Used for: Lift-off at 8.55 am on 24 December 2025 from the second launch pad; ISRO Chairman: "the heaviest satellite ever launched from Indian soil"

S28 · ISRO, "LVM3-M3 / OneWeb India-2 Mission" and "LVM3 M3/OneWeb India-2 mission accomplished successfully" (26 March 2023). https://www.isro.gov.in/LVM3M3MissionLandingPage.html ; https://www.isro.gov.in/LVM3_M3_OneWeb_India2_mission_successful.html

Used for: 36 OneWeb satellites; total payload of 5,805 kg

DAY 11 · TOPIC 101 · SOURCE REFERENCE

Zabt: regional reach

Zabt required land surveys and careful accounts. Under Akbar, it was not applied uniformly; its reach was limited in Gujarat and Bengal.

References

IGNOU, Land Revenue System, Unit 10, printed p. 30. The discussion describes limited adoption in Gujarat and Malwa, rather than uniform empire-wide implementation.

https://egyankosh.ac.in/bitstream/123456789/22001/1/Unit-10.pdf

NCERT, Our Pasts-II, Chapter 4, printed p. 43. Survey and accounting prerequisites and the regional limits of zabt.

https://ncert.nic.in/textbook/pdf/gess104.pdf