APPSC GROUP 1 · 1,000 TOPICS IN 100 DAYS

Day 12 | English edition | Topics 111–120

Study Notes and Sources

10 complete lessons and 201 source records.

Practice questions and explanations are in the separate MCQ Practice PDF.

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DAY 12 · TOPIC 111

Ashoka: Dhamma, edicts and inscriptions

1. Concept in one line

Ashoka, the Mauryan emperor who gave up war after conquering Kalinga, set out his Dhamma, a code of moral and social conduct for all his subjects, in edicts cut on rocks and pillars across the subcontinent. The examination asks what the Dhamma taught, how it was spread, and which inscription is found where, in which script, and what it is known for.

2. Revision notes

2.1 Accession, titles and how his name was recovered

- **Accession:** Ashoka, a son of Bindusara, came to the throne after a struggle among Bindusara's sons (Topic 102). The Sri Lankan chronicle, the Mahavamsa, says he was consecrated four years after he became king.
- **Consecration:** about 268 BCE, as in Topics 71 and 102. Some modern works give 269 BCE. The edicts count years from the consecration (regnal years), not from the accession.
- **Death:** sources differ: about 232 BCE in one standard reckoning, and 238 BCE, with a query, in Britannica.
- **Titles:** the edicts call him Devanampiya Piyadasi, translated "Beloved-of-the-Gods, He Who Looks On With Affection".
- **Decipherment:** NCERT (Class XII) says James Prinsep, an officer in the mint of the East India Company, deciphered Brahmi and Kharosthi, and gives 1838 as the year he deciphered Asokan Brahmi. Other accounts say he read a Delhi pillar inscription in 1837 and published his results in March 1838. For a question that follows NCERT, give 1838.
- **The name "Ashoka":** most edicts do not use it. The Piyadasi of the edicts was confirmed as the Ashoka of the Buddhist chronicles only in 1915, when a Minor Rock Edict at Maski (Raichur district, Karnataka) was found by C. Beadon, a British gold-mining engineer. It reads "Devanampriya Asoka". The Minor Rock Edict at Gujarra (Datia district, Madhya Pradesh) reads "Devanampiya Piyadasi Asokaraja". Some accounts add Nittur (Bellary district, Karnataka).

2.2 The Kalinga war in Edict XIII's own words

Major Rock Edict XIII, in one English translation:

- "Beloved-of-the-Gods, King Piyadasi, conquered the Kalingas eight years after his coronation."
- "One hundred and fifty thousand were deported, one hundred thousand were killed and many more died (from other causes)."
- "Now Beloved-of-the-Gods feels deep remorse for having conquered the Kalingas."

NCERT (Class XII) prints the same figures in its translation: "One hundred and fifty thousand men were deported, a hundred thousand were killed, and many more died." The eighth year after consecration falls about 260 BCE.

- After the war he turned from conquest by force to what Britannica calls "conquest by dharma". Edict XIII claims this conquest among five Greek kings and, in the south, among the Cholas and the Pandyas, as far as Tamraparni (Sri Lanka).
- In Kalinga itself, at Dhauli and Jaugada, Major Rock Edicts XI to XIII are left out, and two Separate Edicts stand in their place. So the copies in the conquered land do not carry the remorse of Edict XIII.

2.3 Dhamma: what it was

- Dhamma is the Prakrit form of the Sanskrit dharma. NCERT (Class VI): Ashoka's dhamma did not involve worship of a god, or performance of a sacrifice. He saw it as his duty to instruct his subjects, as a father teaches his children.
- NCERT (Class XII): the dhamma he proclaimed included respect towards elders, generosity towards Brahmanas and those who renounced worldly life, and respect for religions and traditions other than one's own. Its principles "were simple and virtually universally applicable".
- So Dhamma was a code of ethics and social conduct addressed to all subjects, not the creed of one sect. Ashoka's own faith was Buddhist (2.5), but the Dhamma asked for generosity towards Brahmans and ascetics alike.

Main point	What the edicts and NCERT say	Where it comes from
Respect for elders	"Respect for mother and father is good"; NCERT: respecting one's elders	Major Rock Edict III; NCERT
Kindness to slaves and servants	NCERT: being gentle with slaves and servants; Edict IX speaks of proper behaviour towards servants and employees	NCERT; Major Rock Edict IX
Generosity	Generosity to friends, acquaintances, relatives, Brahmans and ascetics; NCERT: giving gifts to brahmins and monks	Major Rock Edict III; NCERT
Tolerance of other sects	"One should listen to and respect the doctrines professed by others"; NCERT: it is wrong to praise one's own religion or criticise another's	Major Rock Edict XII; NCERT
Non-violence to animals	No living beings are to be slaughtered or offered in sacrifice; the royal kitchen now kills only two peacocks and a deer; NCERT: treating all creatures with compassion	Major Rock Edict I; NCERT
Moderation	Moderation in spending and in saving is good	Major Rock Edict III

2.4 How the Dhamma was spread: officers, tours, bans and welfare

- **Dhamma mahamattas:** Major Rock Edict V says there were no such officers in the past, and that Ashoka appointed them thirteen years after his coronation. They looked after moral welfare among all sects and groups.
- **Regular tours of officials:** Edict III asks officials to tour the realm every five years to teach the Dhamma.

- **Dhamma yatras:** Edict VIII says that ten years after his coronation he went to Sambodhi (Bodh Gaya), the place of the Buddha's enlightenment, and so began the Dhamma tours. They took the place of the pleasure tours, with hunting, of earlier kings.
- **Bans:** Edict I forbids killing living beings for sacrifice and forbids festive gatherings.
- **Welfare (Edict II):** Ashoka "made provision for two types of medical treatment: medical treatment for humans and medical treatment for animals". Along roads he had wells dug and trees planted for people and animals. The edict says this was done also in the lands of neighbours: the Cholas, the Pandyas, the Satiyaputras, the Keralaputras, as far as Tamraparni, and where the Greek king Antiochos rules.
- **Pillar Edict VII** adds banyan trees, mango groves, and wells and rest houses along the roads.
- NCERT (Class VI) adds that he sent messengers to spread the dhamma to Syria, Egypt, Greece and Sri Lanka.

2.5 Ashoka and Buddhism

- **Minor Rock Edict I:** Ashoka says he had been a lay follower (upasaka) for more than two and a half years, and that after a first year of little progress he drew closer to the Sangha.
- **The Bhabru edict** (also called the Calcutta-Bairat edict; Minor Rock Edict III): found near Bairat in Rajasthan by Captain Burt in 1840. In it Ashoka declares his reverence and faith in the Buddha, the Dhamma and the Sangha, and names seven Buddhist texts for monks, nuns, laymen and laywomen to study. Vincent Smith: it is the only edict that openly declares his devotion to Buddhism, and it was addressed to the Buddhist clergy, not to the public.
- **Lumbini:** twenty years after his consecration, as the Rummindei inscription says, he visited the Buddha's birthplace and set up a pillar there (Topic 71).
- **The Third Buddhist Council (Buddhist tradition):** the Theravada chronicles and commentaries of Sri Lanka say it was held at Pataliputra in Ashoka's reign, with the elder Moggaliputta Tissa presiding, and that his Kathavatthu was added to the canon. The Mahavamsa puts it in the 17th year of his reign. Ashoka's edicts do not mention it.
- **Missions (Mahavamsa):** after the council, monks were sent out to many lands, among them Mahinda to Sri Lanka.
- **Mahinda and Sanghamitta:** the Sri Lankan tradition makes Mahinda Ashoka's son and Sanghamitta his daughter, who took a sapling of the Bodhi tree to Sri Lanka and founded an order of nuns there. The Chinese pilgrim Xuanzang makes Mahinda a younger brother of Ashoka. Ashoka's own edicts do not mention the mission to Sri Lanka.
- **Other sects:** the Barabar caves in Bihar carry Ashoka's inscriptions recording gifts to the Ajivikas, from his twelfth regnal year.
- The Buddhist councils, sects and literature are Topic 391.

2.6 The inscriptions, classified

Group	What it holds	Main sites, as standard sources list them	Script and language	Point to note
Major Rock Edicts	Fourteen edicts, numbered I to XIV	Girnar (Gujarat), Kalsi (Uttarakhand), Shahbazgarhi and Mansehra (Pakistan), Dhauli and Jaugada (Odisha), Sopara (Maharashtra), Yerragudi (Andhra Pradesh), Sannati (Karnataka), Kandahar (Afghanistan)	Prakrit in Brahmi; Prakrit in Kharosthi at Shahbazgarhi and Mansehra; Greek parts of XII and XIII at Kandahar	From the 12th regnal year; Edict XIII from the 14th
Separate Kalinga Edicts	Two edicts that replace XI to XIII	Dhauli and Jaugada (Odisha); Separate Edicts I and II are also found at Sannati (Karnataka)	Prakrit in Brahmi	Addressed to the officials (mahamattas) of the conquered province
Minor Rock Edicts	Minor Rock Edict I at every site; II at some sites; III only at Bairat	Maski, Brahmagiri, Siddapur, Jatinga-Rameshwara, Nittur, Udegolam (Karnataka); Rupnath, Gujarra, Panguraria (Madhya Pradesh); Sasaram (Bihar); Ahraura (Uttar Pradesh); Bairat (Rajasthan); Yerragudi, Rajula Mandagiri (Andhra Pradesh)	Prakrit in Brahmi	The first edicts in an Indian language, from the 11th regnal year (the Kandahar bilingual, in Greek and Aramaic, is dated to the 10th); Maski and Gujarra carry the name Asoka
Major Pillar Edicts	Seven edicts	Delhi-Topra, Delhi-Meerut, Lauriya-Araraj, Lauriya-Nandangarh, Rampurva, Allahabad-Kosam	Prakrit in Brahmi	From the 26th and 27th regnal years. Only the Delhi-Topra pillar has all seven; the others carry I to VI
Minor Pillar Edicts	Short inscriptions on pillars	Rummindei (Lumbini) and Nigali Sagar (Nepal); Sanchi; Sarnath; Allahabad	Prakrit in Brahmi	The Schism Edict at Sarnath, Sanchi and Allahabad; the Queen's Edict at Allahabad
Cave inscriptions	Gifts of caves	Barabar caves (Bihar)	Prakrit in Brahmi	Gifts to the Ajivikas
Greek and Aramaic inscriptions	Ashoka's message in foreign languages	Kandahar (Afghanistan); Aramaic also at Taxila and Laghman	Greek; Aramaic	The Kandahar bilingual rock inscription, found in 1958 at Chehel Zina, is dated to the tenth regnal year in its own Greek text

- In all, the edicts are found at more than thirty places in India, Nepal, Pakistan and Afghanistan.

2.7 Languages and scripts

- NCERT (Class VI): most of Ashoka's inscriptions were in Prakrit and were written in the Brahmi script. Most modern Indian scripts developed from Brahmi.
- The Prakrit was not the same everywhere: the eastern edicts use a form of Magadhi, and the western ones are closer to Sanskrit. Even in the south the language is Prakrit in Brahmi, not a Dravidian language.

- **Kharosthi** at Shahbazgarhi and Mansehra in the north-west; **Greek and Aramaic** at Kandahar, and Aramaic also at Taxila and Laghman.

2.8 Andhra Pradesh sites, the Lion Capital and the national emblem

- **Yerragudi (Erragudi):** near Gooty, in Andhra Pradesh. The inscriptions are on six large boulders. They were found at the end of 1928 by A. Ghose of the Geological Survey of India, and the find was announced in 1929. Both the Major Rock Edicts and the Minor Rock Edicts are found here.
- **Rajula Mandagiri:** near Pattikonda, Kurnool district, about 35 km from Yerragudi. It has a Minor Rock Edict and was found in 1953-54.
- **Amaravati:** the Andhra Pradesh Capital Region Development Authority's history of Amaravati records a broken pillar with an edict of Ashoka close to the stupa. The Amaravati stupa and its art are Topic 731.
- **The Lion Capital of Sarnath:** carved from a single block of sandstone and set on top of a pillar at Sarnath. NCERT: the lions on our notes and coins come from it.
- **The State Emblem of India,** an adaptation of the Lion Capital, was adopted on 26 January 1950. Three lions are visible. The motto Satyameva Jayate ("Truth Alone Triumphs"), from the Mundaka Upanishad, is written below in Devanagari. Mauryan art and architecture are Topic 631.

3. Extra section: a chronology of the reign by regnal years

The edicts date events by years after the consecration. Keep the order straight; questions often swap two of these years.

Regnal year	Approximate date	Event	Where it comes from
0	About 268 BCE	Consecration	Modern reckoning; four years after accession in the Mahavamsa
8	About 260 BCE	Conquest of Kalinga	Major Rock Edict XIII
10	About 258 BCE	Visit to Sambodhi, the first Dhamma tour; Kandahar bilingual inscription	Major Rock Edict VIII; the Kandahar Greek text
11 onwards		Minor Rock Edicts; more than two and a half years as a lay follower	Minor Rock Edict I
12	About 256 BCE	Barabar caves given to the Ajivikas; Major Rock Edicts begin	Cave inscriptions; modern dating
13	About 255 BCE	Dhamma mahamattas appointed	Major Rock Edict V
17	About 251 BCE	Third Buddhist Council at Pataliputra	Sri Lankan Buddhist tradition
20	About 248 BCE	Visit to Lumbini; pillar at Rummindei	Rummindei inscription
26 and 27	About 242 BCE	The seven Pillar Edicts	Modern dating
	About 232 BCE	Death	One standard reckoning; Britannica gives 238 BCE with a query

The dates in the second column are worked out from a consecration in about 268 BCE, so each is approximate. Later landmarks:

Year	Event
1837 to 1838	James Prinsep deciphers Brahmi (NCERT gives 1838)
1840	Captain Burt finds the Bhabru edict
1915	The Maski edict is found; the name Asoka confirms who Piyadasi was
1928	Yerragudi edicts are found (announced in 1929)
1950	The State Emblem, based on the Sarnath Lion Capital, is adopted on 26 January
1953-54	Rajula Mandagiri edict is found
1958	Kandahar bilingual inscription is found

4. Three common exam traps

1. **Treating the Dhamma as Ashoka's Buddhism.** His personal faith was Buddhist: he calls himself a lay follower and, in one edict, declares faith in the Buddha, the Dhamma and the Sangha. But the Dhamma he preached to his subjects was a moral code for everyone. It asked for generosity to Brahmans as well as to ascetics, and he also gave caves to the Ajivikas. A statement that calls the Dhamma a sect, or simply "Buddhism", is wrong.
2. **Turning Buddhist tradition into inscription fact.** The Third Council under Moggaliputta Tissa, the missions after it, and Mahinda and Sanghamitta as his son and daughter all come from the Sri Lankan chronicles. Ashoka's own edicts mention none of them, and Xuanzang makes Mahinda his younger brother. In a question, accept them as "according to Buddhist tradition", not as what the edicts say.
3. **Mixing up pillars, capitals and the emblem.** The Lumbini (Rummindei) inscription is a Minor Pillar Edict, not one of the seven Pillar Edicts, and only the Delhi-Topra pillar carries all seven Pillar Edicts. The emblem is an adaptation of the Sarnath Lion Capital, adopted on 26 January 1950, not on 15 August 1947; on it only three lions are visible.

DAY 12 · TOPIC 112

Supreme Court and High Courts: composition, jurisdiction and appointment of judges

1. Concept in one line

The Supreme Court (Chapter IV of Part V, Articles 124 to 147) and the High Courts (Chapter V of Part VI, Articles 214 to 231) are the higher judiciary of India; the examination asks how they are composed, who can become a judge and how a judge leaves office, what kinds of jurisdiction each court has, and how judges are appointed under the collegium system.

2. Revision notes

2.1 The Supreme Court: the Articles in one table

Article	What it covers
124 to 126	Establishment of the Court; appointment, qualifications, oath and removal of Judges (124); salaries (125); acting Chief Justice (126)
127, 128	Ad hoc Judges from a High Court (127); retired Judges asked to sit and act as Judges (128)
129, 130	A court of record, with power to punish for contempt of itself (129); seat of the Court (130)
131 to 137	Original jurisdiction (131); appeals (132 to 134, 134A); Federal Court powers (135); special leave (136); review (137)
138 to 142	Enlargement of jurisdiction (138); certain writs (139); transfer of cases (139A); ancillary powers (140); binding law (141); "complete justice" (142)
143	Power of the President to consult the Supreme Court
144 to 147	Authorities to act in aid of the Court (144); Rules of Court (145); officers, servants and expenses (146); interpretation (147)

2.2 Composition and strength

- **Article 124(1).** The Court consists of the Chief Justice of India (CJI) and other Judges: in 1950 "not more than seven", "until Parliament by law prescribes a larger number". The number is fixed by the **Supreme Court (Number of Judges) Act, 1956**, as amended.
- **The 2026 change.** The Supreme Court (Number of Judges) Amendment Ordinance, 2026, promulgated on 16 May 2026, raised the number of Judges other than the CJI from 33 to 37. The Supreme Court (Number of Judges) Amendment Act, 2026 (Act 14 of 2026, assent 11 August 2026) replaced it. **Sanctioned strength as on 16 October 2026: 37 Judges plus the CJI, that is 38** (34 from 2019).
- **Working strength.** As on 16 October 2026 the Court's own list shows the CJI and 36 other Judges: 37, one short of 38.
- **The CJI** (as on 16 October 2026): Justice Surya Kant, sworn in on 24 November 2025.

- **Seat (Article 130).** Delhi, "or in such other place or places" as the CJI may appoint "with the approval of the President". The Court was inaugurated on 28 January 1950.

2.3 Judges of the Supreme Court: qualifications, tenure, pay and removal

- **Qualifications (Article 124(3)).** A citizen of India who (a) has been a Judge of a High Court, or of two or more in succession, for at least five years; or (b) has been an advocate of a High Court, or of two or more in succession, for at least ten years; or (c) is, "in the opinion of the President, a distinguished jurist". No minimum age is laid down.
- **Oath and tenure.** A Judge takes the oath before the President, or a person appointed by him, in the form in the Third Schedule (Article 124(6)), and holds office until the age of 65 (Article 124(2)); he may resign by writing to the President. After retirement he shall not plead or act in any court or before any authority in India (Article 124(7)).
- **Pay.** Salaries are determined by Parliament by law (Article 125). The salaries, allowances and pensions of Supreme Court Judges are charged on the Consolidated Fund of India (Article 112(3)(d)(i)), so they are not voted on each year.
- **Removal (Article 124(4) and (5)).** Only by an order of the President after an address by each House of Parliament, supported "by a majority of the total membership of that House" and by not less than two-thirds of the members "present and voting", in the same session. The only grounds are "proved misbehaviour or incapacity".
- **Judges (Inquiry) Act, 1968.** A notice of motion for removal must be signed by at least 100 members of the Lok Sabha or 50 members of the Rajya Sabha. If the Speaker or the Chairman admits it, a committee of three investigates: one member from the Judges of the Supreme Court (including the CJI), one from the Chief Justices of the High Courts, and a distinguished jurist.
- **Ad hoc Judges (Article 127).** When there is not a quorum of Supreme Court Judges available to hold or continue a session, the CJI, with the previous consent of the President and after consulting the Chief Justice of the High Court concerned, may request a Judge of that High Court, qualified for the Supreme Court, to attend its sittings as an ad hoc Judge.
- **Retired Judges (Article 128).** The CJI, with the previous consent of the President, may request a former Judge of the Supreme Court or the Federal Court, or a retired High Court Judge qualified for the Supreme Court, to sit and act as a Judge of the Supreme Court; he cannot be required to accept.

2.4 Jurisdiction and powers of the Supreme Court

Kind	Article	Key point
Original	131	Disputes between the Government of India and one or more States, or between States; "to the exclusion of any other court"
Writ	32	Enforcement of the Fundamental Rights only (Topic 292)
Appellate	132, 133, 134, 134A	Appeals from High Courts in constitutional (132), civil (133) and criminal (134) cases; a High Court may grant the certificate for appeal, even on its own motion (134A)
Special leave	136	At its discretion, the Court may grant special leave to appeal from judgments, decrees, determinations, sentences or orders of courts or tribunals in India; Article 136 excludes courts and tribunals constituted under laws relating to the Armed Forces

Kind	Article	Key point
Advisory	143	(1) The President "may refer" a question of public importance for the Court's opinion. (2) For a dispute kept out of Article 131 by its proviso, the Court "shall" report its opinion
Review	137	Of its own judgments or orders, subject to a law of Parliament and its rules
Transfer of cases	139A	(1) The Court may withdraw cases involving the same or substantially the same questions of law pending before it and one or more High Courts, or before two or more High Courts, if it is satisfied that those questions are substantial questions of general importance. (2) It may transfer a case from one High Court to another for the ends of justice

- **Binding law (Article 141):** the law declared by the Supreme Court binds all courts in India. Under Article 142 it may pass any order "necessary for doing complete justice".
- **Two references under Article 143:** (1) in July 1998 President K.R. Narayanan referred questions on the appointment of judges; the opinion is the Third Judges Case (2.7). (2) In 2025 President Droupadi Murmu referred questions on how Governors and the President deal with State Bills; in its opinion of 20 November 2025 a five-Judge Bench held that courts cannot fix timelines for them and rejected "deemed assent".

2.5 The High Courts

Article	What it says
214, 215	"There shall be a High Court for each State" (214); every High Court is a court of record, with power to punish for contempt of itself (215)
216, 217	A Chief Justice and "such other Judges as the President may from time to time deem it necessary to appoint" (216); appointment, tenure and qualifications of Judges (217)
218, 221	Clauses (4) and (5) of Article 124 (removal) apply (218); salaries determined by Parliament by law (221)
222, 223	Transfer of a Judge from one High Court to another, by the President "after consultation with the Chief Justice of India" (222); acting Chief Justice, appointed by the President (223)
224, 224A	Additional Judges, for not more than two years (224); retired Judges asked to sit and act as Judges (224A)
226 to 228	Writs (226); superintendence over courts and tribunals in its territories, except those constituted under laws relating to the Armed Forces (227); withdrawal of a case raising a substantial question of the Constitution from a subordinate court (228)
230, 231	Jurisdiction over Union territories (230); a common High Court for two or more States, set up by Parliament by law (231)

- The Contents print Chapter V of Part VI as Articles 214 to 232 (Topic 104), but Article 232 has no text of its own: the Seventh Amendment recast Articles 230 to 232.
- **Tenure.** A High Court Judge holds office until the age of 62 (60 in 1950).
- **Qualifications (Article 217(2)).** A citizen of India who has, for at least ten years, held a judicial office in India, or been an advocate of a High Court or of two or more such Courts in succession.

- **Pay and removal.** The salaries and allowances of High Court Judges are charged on the Consolidated Fund of the State (Article 202(3)(d)); their pensions are charged on the Consolidated Fund of India (Article 112(3)(d)(iii)). They are removed in the same way as Supreme Court Judges (Article 218).
- **Writs (Article 226).** A High Court may issue writs "for the enforcement of any of the rights conferred by Part III and for any other purpose". Since Article 32 is only for the Fundamental Rights, Article 226 is wider.
- **Common High Courts (Article 231).** Examples: Punjab and Haryana (Punjab, Haryana and Chandigarh); Gauhati (Assam, Arunachal Pradesh, Mizoram and Nagaland). There are 25 High Courts (Department of Justice statement as on 1 November 2025).

2.6 The High Court of Andhra Pradesh

- Until 31 December 2018 the High Court of Judicature at Hyderabad was the common High Court for Andhra Pradesh and Telangana, under the Andhra Pradesh Reorganisation Act, 2014.
- The separate **High Court of Andhra Pradesh**, set up by a Presidential order of 26 December 2018 under that Act, began functioning on **1 January 2019**, with its principal seat at Amaravati (Nelapadu, Guntur District).
- **Sanctioned strength:** 37 Judges, 28 permanent and 9 additional (Department of Justice statement as on 1 November 2025).
- **Chief Justice (as on 16 October 2026):** Justice Lisa Gill, sworn in on 25 April 2026. Her predecessor, Justice Dhiraj Singh Thakur, was sworn in on 28 July 2023 and retired on 24 April 2026.

2.7 Appointment of judges: the text, the Judges Cases and the collegium

- **Article 124(2).** Every Judge of the Supreme Court is appointed by the President "by warrant under his hand and seal" "after consultation with such of the Judges of the Supreme Court and of the High Courts" as he deems necessary. For a Judge other than the CJI, "the Chief Justice of India shall always be consulted".
- **Article 217(1).** A High Court Judge is appointed by the President by warrant "after consultation with the Chief Justice of India, the Governor of the State, and", for a Judge other than the Chief Justice, the Chief Justice of that High Court.
- The 99th Amendment (2014) put the recommendation of a National Judicial Appointments Commission (NJAC) in place of this consultation, in Articles 124(2), 217(1) and 222(1), brought the NJAC into Articles 127, 128, 224 and 224A, and inserted Articles 124A to 124C, which the official text still prints (Topic 42). The amendment was struck down, so these notes give the earlier wording, which is followed in practice.

Case	Year	What it held
First: S.P. Gupta v. Union of India	1981	"Consultation" with the CJI does not mean his concurrence; the executive had primacy
Second: Supreme Court Advocates-on-Record Association v. Union of India	1993	Overruled the first; the CJI and the two senior-most Judges to recommend; the judiciary has primacy

Case	Year	What it held
Third: In re Special Reference 1 of 1998	1998	Collegium of the CJI and four senior-most Judges for the Supreme Court; the CJI and two senior-most Judges for the High Courts
Fourth: the NJAC case (Supreme Court Advocates-on-Record Association)	16 October 2015	By 4 to 1, struck down the 99th Amendment Act, 2014 and the NJAC Act, 2014; the earlier collegium system restored

- **Years.** 1981, 1993 and 1998 are the years of decision. Some books, and PRS, give 1982, 1994 and 1999, the years of a law report: the First Judges Case, decided on 30 December 1981, is reported as AIR 1982 SC 149.
- **The collegium today** follows the Third Judges Case. For High Court Judges the Governor and the Chief Justice of the High Court are also consulted. The President appoints on the collegium's recommendation, following the Memoranda of Procedure prepared by the Department of Justice.

2.8 The two courts compared

Point	Supreme Court Judge	High Court Judge
Number fixed by	Parliament by law (Article 124(1))	The President (Article 216)
Experience as a judge	5 years as a High Court Judge	10 years in a judicial office
Experience as an advocate	10 years	10 years
Distinguished jurist route	Yes	No
Retirement age	65	62
Salaries charged on	Consolidated Fund of India	Consolidated Fund of the State
Pensions charged on	Consolidated Fund of India	Consolidated Fund of India
Writ power	Article 32: Fundamental Rights	Article 226: Fundamental Rights and any other purpose

3. Extra section: a chronology of the higher judiciary, 1950 to 2026

Year	Event
1950	Supreme Court inaugurated on 28 January; strength 8 including the CJI
1956	Supreme Court (Number of Judges) Act; strength 11
1960	Strength 14
1977	Supreme Court (Number of Judges) Amendment Act; strength 18
1981	First Judges Case

Year	Event
1986	Strength 26
1993	Second Judges Case: the collegium begins
1998	Third Judges Case, on a Presidential reference
2008	Supreme Court (Number of Judges) Amendment Act; strength 31
2014	99th Amendment and NJAC Act
2015	Fourth Judges Case, 16 October: NJAC struck down
2019	Strength 34 (33 plus the CJI); High Court of Andhra Pradesh began functioning on 1 January
2025	Justice Surya Kant sworn in as CJI on 24 November
2026	Ordinance in May and Amendment Act in August: strength 38 (37 plus the CJI); Justice Lisa Gill Chief Justice of the Andhra Pradesh High Court from 25 April

- The strength figures in this table include the CJI. In the Constitution's own count of 1950, the 8 are the CJI and "not more than seven" other Judges.

4. Three common exam traps

1. **"Article 32 is wider than Article 226."** It is the other way round. Article 32 lets a person move the Supreme Court only for the Fundamental Rights. Article 226 lets a High Court issue writs for the Fundamental Rights and "for any other purpose", for example a legal right that is not a Fundamental Right. Article 32 is itself a Fundamental Right; that makes it more important, not wider.
2. **"The Supreme Court has 34 Judges."** That was the strength from 2019 (33 plus the CJI). Since the Amendment of 2026 it is 38 (37 plus the CJI). The Constitution's own figure in Article 124(1), seven Judges besides the CJI, is only the number of 1950, which Parliament may enlarge by law.
3. **Mixing up the collegiums and the Judges Cases.** The Second Judges Case (1993) spoke of the CJI and the two senior-most Judges. The Third Judges Case (1998) widened the collegium for Supreme Court appointments to the CJI and four senior-most Judges, and kept the CJI and two senior-most Judges for High Court appointments. The First Judges Case (1981) had given the executive primacy, and the Fourth (2015) struck down the NJAC.

DAY 12 · TOPIC 113

Human Development Index: dimensions, indicators and India's rank

1. Concept in one line

The Human Development Index (HDI) of the United Nations Development Programme (UNDP) combines a health index, an education index and an income index into one value between 0 and 1. The examination asks for its dimensions and indicators, how the value is worked out, the related indices, and India's rank and group in the Human Development Report.

2. Revision notes

2.1 Human development: the idea

- UNDP describes human development as "expanding the richness of human life", rather than simply the richness of the economy. It is about giving people more freedom and opportunities to live lives they value, and so, fundamentally, about more choice.
- The approach was developed by the economist Mahbub ul Haq. It is anchored in Amartya Sen's work on human capabilities.
- The first Human Development Report (HDR), in 1990, introduced the approach and the HDI.
- UNDP says the HDI was created to stress that people and their capabilities, not economic growth alone, should be the ultimate criteria for judging a country's development.
- NCERT (Class X, "Understanding Economic Development", Chapter 1) says that the HDR compares countries by the educational levels of their people, their health status and their per capita income, and that by prefixing "Human" to "Development" it makes clear that people, their health and their well-being matter most.

2.2 Three dimensions, four indicators and the goalposts

The HDI is a summary measure of average achievement in three dimensions. Each indicator is turned into an index between 0 and 1 with a minimum and a maximum value, which UNDP calls goalposts (Technical Notes, HDR 2025).

Dimension	Indicator	Minimum	Maximum
A long and healthy life (health)	Life expectancy at birth (years)	20	85
Being knowledgeable (education)	Expected years of schooling (years)	0	18
Being knowledgeable (education)	Mean years of schooling (years)	0	15

Dimension	Indicator	Minimum	Maximum
A decent standard of living	Gross national income (GNI) per capita (2021 PPP dollars)	100	75,000

- **Expected years of schooling** is for children; **mean years of schooling** is for adults (NCERT's table gives it for people aged 25 and above).
- **PPP** means purchasing power parity: the dollars are adjusted so that each dollar buys the same amount of goods and services in every country (NCERT). HDR 2025 gives GNI in 2021 PPP dollars.
- The income indicator is GNI, not gross domestic product (GDP). GNI adds to GDP the net primary income received from abroad (Topic 5).

2.3 How the value is worked out

1. **Dimension index** = (actual value minus minimum) ÷ (maximum minus minimum).
2. **Education index:** the two education indices are worked out separately, and then the **arithmetic mean** of the two is taken.
3. **Income index:** the **natural logarithm** of the actual, minimum and maximum values of GNI per capita is used. UNDP says this reflects the diminishing importance of income as GNI rises.
4. **HDI** = the **geometric mean** of the three dimension indices, that is, the cube root of (health index × education index × income index).

- The geometric mean came with the 2010 report, which also brought in mean and expected years of schooling and GNI per capita. Before that, the three indices were combined with equal weights of one third each (a simple average). Education was then measured by adult literacy (two-thirds weight) and the combined gross enrolment ratio (one-third weight), and income by GDP per capita in PPP dollars.
- With a geometric mean, a low score in one dimension cannot be fully made up by a high score in another (see Section 3).

2.4 Four groups by HDI value

Group	HDI value
Very high human development	0.800 and above
High human development	0.700 to 0.799
Medium human development	0.550 to 0.699
Low human development	Below 0.550

2.5 The other composite indices of UNDP

Index	What it measures	How it is built
Inequality-adjusted HDI (IHDI)	Human development after accounting for how unequally health, education and income are spread among people	Each dimension index is reduced by the Atkinson measure of inequality in that dimension. The IHDI equals the HDI when there is no inequality; the gap between them is the "loss"

Index	What it measures	How it is built
Gender Development Index (GDI)	Gaps between women and men in the same three dimensions	The ratio of the female HDI to the male HDI. Countries fall into five groups by how far the ratio is from 1 (parity): within 2.5 per cent is group 1, more than 10 per cent is group 5
Gender Inequality Index (GII)	Disadvantage of women in three dimensions	Reproductive health: maternal mortality ratio and adolescent birth rate. Empowerment: share of seats in parliament held by each sex, and population with at least some secondary education. Labour market: labour force participation rate
Multidimensional Poverty Index (MPI)	Acute poverty as overlapping deprivations of a person in health, education and the standard of living	Computed with the Oxford Poverty and Human Development Initiative (OPHI); see Topic 93
Planetary pressures-adjusted HDI (PHDI)	Human development after accounting for pressure on the planet	HDI × an adjustment factor, which is the arithmetic average of an index of carbon dioxide emissions per capita and an index of material footprint per capita

- Do not confuse the GDI with the GII. The GDI compares two HDIs; the GII uses its own indicators, none of which is in the HDI.
- The earlier gender-related development index was introduced in 1995. The current Gender Development Index, defined as female HDI divided by male HDI, was introduced in 2014. The Gender Inequality Index was introduced in 2010. Do not attach the 1995 date to the current ratio-based GDI methodology.

2.6 India in the Human Development Report

As on 16 October 2026, the latest global report is **Human Development Report 2025, "A matter of choice: People and possibilities in the age of AI"**, released on 6 May 2025. Its figures are for **2023**. The report year is not the data year: HDR 2025 carries 2023 data and HDR 2023/24 carries 2022 data.

Report (release date)	Data year	India's rank	India's HDI	Group
HDR 2023/24, "Breaking the gridlock: Reimagining cooperation in a polarized world" (14 March 2024)	2022	134 of 193	0.644	Medium
HDR 2025, "A matter of choice: People and possibilities in the age of AI" (6 May 2025)	2023	130 of 193	0.685	Medium

India's indicators in HDR 2025 (2023 data, with the same report's 2022 figures in the last column):

Indicator	2023	2022
Life expectancy at birth	72.00 years	71.70 years
Expected years of schooling	12.95 years	12.96 years
Mean years of schooling	6.88 years	6.57 years

Indicator	2023	2022
GNI per capita (2021 PPP dollars)	9,046.76	8,475.68
HDI value	0.685	0.676
HDI rank	130	133

- **Every report recalculates the whole series.** HDR 2025 puts India's 2022 value at 0.676 and rank at 133; HDR 2023/24 had printed 0.644 and 134 for the same year. UNDP warns that values and ranks from different editions should not be compared. So UNDP describes the move in HDR 2025 as 133 to 130, not 134 to 130.
- **Trend since 1990 (HDR 2025):** India's HDI rose by over 53 per cent. Life expectancy rose from 58.6 years in 1990 to 72 years in 2023; expected years of schooling from 8.2 years to about 13 years; GNI per capita from 2,167.22 dollars to 9,046.76 dollars, over four times. (HDR 2023/24, on its own series, gave 0.434 in 1990 and 0.644 in 2022, a rise of 48.4 per cent.)
- India is still in the medium group, close to the threshold of 0.700 for the high group.
- **Inequality:** inequality reduces India's HDI by 30.7 per cent in HDR 2025 (31.1 per cent in HDR 2023/24). The IHDI for 2023 is 0.475.
- **Gender:** HDR 2025 gives India a GDI of 0.874 (group 5) and a GII of 0.403, rank 102, for 2023. For the separate historical comparison, HDR 2023/24 reported a GII of 0.437 and rank 108 of 166 for 2022; do not mix report vintages.
- **NCERT's table** (Class X, Table 1.6, from HDR 2025, figures for 2023) gives India GNI per capita 9,047 dollars, life expectancy 72 years, mean years of schooling 6.9 and HDI rank 130; it places Sri Lanka at 89 and Bangladesh also at 130. The rank column there carries the heading "2021-22"; the figures are those of HDR 2025.

2.7 Andhra Pradesh and India's own reports

- For the States, the Global Data Lab's Subnational HDI (version 10.2) gives Andhra Pradesh **0.681 for 2023**, against 0.685 for India as a whole (0.673 and 0.676 for 2022). On this database Andhra Pradesh was below the all-India value in 1990 (0.439 against 0.446).
- The Planning Commission brought out the "India Human Development Report 2011: Towards Social Inclusion", with an HDI for India and its States.

2.8 Criticisms of the HDI

- It does not reflect inequality, poverty, human security or empowerment (UNDP itself says so). The IHDI, GDI, GII and MPI were built to fill some of these gaps.
- It ignores sustainability and the environment; the PHDI answers this.
- Years of schooling measure the quantity of education, not its quality or outcomes.
- It leaves out unemployment and democracy.
- Data errors and changes in the formula can put countries in the wrong group; ranks change when the series is revised.

3. Extra section: worked example of the HDI

Take an imaginary country, Country X: life expectancy 72 years, expected years of schooling 13.5, mean years of schooling 7.5, GNI per capita 10,000 dollars (PPP).

Step	Working	Result
Health index	(72 - 20) ÷ (85 - 20) = 52 ÷ 65	0.800
Expected schooling index	13.5 ÷ 18	0.750
Mean schooling index	7.5 ÷ 15	0.500
Education index	Arithmetic mean: (0.750 + 0.500) ÷ 2	0.625
Income index	(ln 10,000 - ln 100) ÷ (ln 75,000 - ln 100) = 4.605 ÷ 6.620	0.696
HDI	Cube root of (0.800 × 0.625 × 0.696) = cube root of 0.348	0.703

- Country X is in the **high** group, just above 0.700.
- The simple average of the three indices would be 0.707. When the indices are close, the two means are close.
- **Why the geometric mean matters:** take indices of 0.9, 0.9 and 0.3. The simple average is 0.700 (high group). The geometric mean is the cube root of 0.243, about 0.624 (medium group). One weak dimension pulls the HDI down more.
- **Why the logarithm matters:** 10,000 dollars is less than one-seventh (2/15) of the 75,000 dollar maximum, yet the income index is 0.696. Each extra dollar adds less as income rises.

4. Three common exam traps

1. **Comparing ranks across editions.** HDR 2023/24 printed rank 134 and 0.644 for 2022; HDR 2025, after recalculating, gives 133 and 0.676 for the same year. India's improvement in HDR 2025 is stated as 133 to 130. Take each year's figure from one edition only.
2. **Report year and data year.** HDR 2025 carries 2023 data; HDR 2023/24 carries 2022 data. A question that says "India's HDI in 2023" means the figure printed in HDR 2025.
3. **GDP in place of GNI, or income without logs.** The income indicator is GNI per capita in PPP dollars, not GDP, and it enters the index as a natural logarithm. So doubling income does not double the income index.

DAY 12 · TOPIC 114

Balance of Payments: current account and capital account

1. Concept in one line

The balance of payments (BoP) is the record of a country's transactions with the rest of the world over a period, grouped into the current account and the accounts for capital and financial flows. The examination asks which transaction goes into which account, what the trade balance, the invisibles and a current account deficit mean, and India's recent figures.

2. Revision notes

2.1 What the balance of payments is

- NCERT: the BoP records the transactions in goods, services and assets between the residents of a country and the rest of the world over a period of time, usually a year.
- The Economic Survey 2025-26 calls India's BoP "a consolidated record of India's transactions with the rest of the world".
- It covers a period, so it is a flow account. The money supply of Topic 24, by contrast, is a stock at a point of time.
- The international standard is set by the International Monetary Fund (IMF) in its Balance of Payments Manual. The sixth edition (BPM6) carries the title "Balance of Payments and International Investment Position Manual". It uses three accounts: the current account, the capital account and the financial account.
- The RBI publishes India's BoP in US dollars in quarterly press releases titled "Developments in India's Balance of Payments". It also issues short monthly statements (the one for April 2026 came out on 15 June 2026). Its figures are first "preliminary" and are revised later.

2.2 The parts, as the RBI's 2026 press releases set them out

Part	What it records	Examples from the RBI's releases
A. Current account: 1. Goods	Exports and imports of goods (merchandise)	Petroleum, oil and lubricants (POL) are shown separately as a part of goods
A. Current account: 2. Services	Exports and imports of services	Computer services and other business services are the main export categories
A. Current account: 3. Primary income	Income earned on factors of production across the border	For India, the net outgo here mainly reflects payments of investment income to foreign investors
A. Current account: 4. Secondary income	Transfers: receipts for which nothing is given in return	Personal transfers, mainly remittances by Indians employed overseas. NCERT adds gifts and grants

Part	What it records	Examples from the RBI's releases
B. Capital account and financial account: 1. Direct investment	Foreign direct investment (FDI)	Net FDI inflows
B. Capital account and financial account: 2. Portfolio investment	Foreign portfolio investment (FPI)	Net FPI inflows or outflows
B. Capital account and financial account: 3. Other investments	Mainly loans and deposits	Non-resident (NRI) deposits and external commercial borrowings (ECBs) to India
B. Capital account and financial account: 4. Reserve assets	The change in India's foreign exchange reserves arising from these transactions	The table marks an increase with a minus sign and a decrease with a plus sign
C. Errors and omissions	What is not recorded accurately	The RBI's table works it out as minus (A + B)

- In block B the RBI's table lists items 1 to 4 under "of which", so they do not add up to the block total.
- **Link with Topic 5:** in the national accounts, Gross National Income = GDP + net primary income from the rest of the world. That net figure is the BoP's primary income balance.
- **Money sent home is not always a transfer.** A current transfer from a household resident abroad to a household resident in India for family expenses is a personal transfer (secondary income). Citizenship alone does not decide BoP residence; a short-term worker may remain resident in India, and compensation of employees is primary income. Savings that a nonresident keeps in an NRI deposit with an Indian bank are a liability of that bank to the nonresident and go into block B.
- **Income and capital are kept apart.** A loan raised abroad, or a foreign investment, comes into block B. The earnings that foreign investors make on their investments, and send home, go out through primary income in the current account.

2.3 NCERT's terms against the RBI's and the IMF's

Point	NCERT (Class XII)	RBI press releases of 2026
Main accounts	Current account and capital account, with errors and omissions and the change in reserves	A. Current account; B. Capital account and financial account (one block); C. Errors and omissions
Where FDI, portfolio flows and loans go	Capital account	Block B
Name for portfolio flows	Foreign Institutional Investments (FIIs) in the text; "portfolio" in its table	Portfolio investment (FPI)
Income from abroad	The text counts factor income within trade in services; the table shows "non-factor services", "income" and "transfers" separately	Services, primary income and secondary income, each separately

Point	NCERT (Class XII)	RBI press releases of 2026
Foreign exchange reserves	"Reserves change", on a line of its own; the RBI's sale of foreign exchange in a deficit is an "official reserve sale"	Reserve assets, inside block B

- **The two meanings of "capital account".** In NCERT, the capital account records all international transactions in assets: FDI, FIIs, external borrowings and assistance. Purchases of assets are debits and sales of assets are credits. In the IMF's terms these transactions belong to the financial account, and the capital account is a small separate account that records capital transfers and the acquisition and disposal of non-produced, non-financial assets. The RBI's 2026 tables print the two together as one block.
- **NCERT's table for India** shows the capital account under these heads: external assistance, external commercial borrowings, short-term debt, banking capital (of which non-resident deposits), foreign investment (FDI and portfolio) and other flows.
- So the older layout (current account, capital account, change in reserves) and the IMF's layout (current, capital and financial accounts) hold the same transactions. The difference is in the names and in where the change in reserves is shown.

2.4 Trade balance, invisibles and the current account balance

- **Balance of trade (BOT), or trade balance (NCERT):** the value of exports of goods minus the value of imports of goods. The RBI calls a negative balance the merchandise trade deficit.
- **Invisibles:** NCERT counts services, transfers and income flows as invisibles. The RBI: net invisibles are the net balances on services, primary income and secondary income taken together.
- **Current account balance = trade balance + net invisibles.**
- **Surplus and deficit:** with a zero capital-account balance, a current-account surplus corresponds to net lending abroad; a deficit corresponds to net borrowing. More generally, under IMF BPM6, the combined balance of the current and capital accounts determines net lending or net borrowing.
- **Financing a current account deficit (CAD):** NCERT says a CAD must be financed by a capital account surplus, that is, a net capital inflow, by selling assets or by borrowing abroad. If these inflows fall short, the central bank sells foreign exchange from its reserves.

Point	Balance of trade	Balance of payments
What it covers	Goods only	All transactions with the rest of the world: goods, services, income, transfers and assets
Where it stands	One part of the current account	The whole record
Can it be in deficit?	Yes, India's trade balance is negative	It balances as an account; a "BoP deficit" means a fall in official reserves

2.5 Why the BoP always balances, and what a "deficit" means

- Every transaction is entered twice, as in double entry book-keeping: once as a credit and once as a debit. So the accounts balance in principle. What is missed in recording appears as errors and omissions, the balancing item, which may be positive or negative.

- In the RBI's table: current account (A) + capital and financial account including reserve assets (B) + errors and omissions (C) = 0.
- **Autonomous and accommodating transactions (NCERT):** transactions made for their own sake, such as for profit, are autonomous ("above the line"). Transactions that only fill the gap left by the autonomous ones are accommodating ("below the line"). The change in official reserves is the main accommodating item.
- **Overall balance (NCERT):** "The decrease (increase) in official reserves is called the overall balance of payments deficit (surplus)." So a BoP deficit means that the autonomous transactions together needed a fall in reserves to finance them.
- NCERT calls it balance-of-payments equilibrium when a CAD is financed entirely by international lending, without any reserve movements.
- **The RBI's role (Topic 43):** it manages foreign exchange under the Foreign Exchange Management Act, 1999 (FEMA), and NCERT calls the central bank the custodian of the foreign exchange reserves. Capital flowing in from abroad adds to liquidity at home, and the RBI can offset this (sterilisation).

2.6 India's figures: dated RBI release snapshots

Amounts in US$ billion, net; rounding can prevent exact totals. The annual columns reproduce the 8 June 2026 release, and the April–June column reproduces the 1 September 2026 release. These are dated release snapshots, not a claim that all historical figures are the latest revised series. In those releases, 2024-25 was partially revised and 2025-26 and April–June 2026 were preliminary.

Item	2024-25	2025-26	April-June 2026 (Q1 of 2026-27)
Current account balance	Deficit 22.9 (0.6 per cent of GDP)	Deficit 25.2 (0.6 per cent of GDP)	Deficit 4.2 (0.5 per cent of GDP)
Goods (merchandise trade balance)	-286.9	-337.3	-86.1
Services	188.8	216.6	51.6
Primary income	-48.3	-48.2	-10.5
Secondary income	123.5	143.6	40.8
Net invisibles	264.0	312.0	81.9 (worked out here)
Net FDI	1.0	6.9	6.1
Net FPI	3.6	-16.4	-9.6
NRI deposits (net)	16.2	14.4	2.8
ECBs to India (net)	18.5	14.2	3.3
Capital and financial account, including reserve assets	21.5	25.4	2.6
Foreign exchange reserves on a BoP basis	Fell by 5.0	Fell by 23.6	Fell by 8.1

Item	2024-25	2025-26	April-June 2026 (Q1 of 2026-27)
Errors and omissions	1.4	-0.1	1.6

- The full-year figures for 2025-26 come from the RBI's release of 8 June 2026, and the April-June 2026 figures from its release of 1 September 2026. The figures for July-September 2026 are due in a later release, and earlier figures can be revised.
- In January-March 2026 alone, the current account was in surplus by US$ 7.1 billion (0.7 per cent of GDP).
- Personal transfers (mainly remittances) brought in US$ 42.9 billion in April-June 2026, against US$ 33.2 billion a year earlier. The Economic Survey 2025-26 puts remittance inflows at US$ 135.4 billion (provisional) in 2024-25, up from US$ 55.6 billion in 2010-11.
- **Foreign exchange reserves as on 9 October 2026** (RBI National Summary Data Page, published 16 October 2026): US$ 726.027 billion. Components: foreign currency assets US$ 597.605 billion; gold US$ 105.094 billion; Special Drawing Rights (SDRs) US$ 18.548 billion; reserve position in the IMF US$ 4.780 billion. This is a dated weekly stock, not a BoP flow; check the latest RBI release before the examination.
- A change in reserves "on a BoP basis" counts only the transactions of the period. The weekly level of reserves also moves with changes in exchange rates and in the price of gold, so the two do not match.

2.7 The 1991 crisis and convertibility, in brief

- **1991:** India faced a BoP crisis in 1990-91. In his Budget speech of 24 July 1991, the Finance Minister, Manmohan Singh, said that the foreign exchange reserves, of about Rs 2,500 crore, would finance imports for "a mere fortnight", even after large borrowings from the IMF in July 1990 and January 1991. The reforms of 1991 followed (Topics 155 and 624).
- **Current account convertibility:** India accepted the move to full current account convertibility in August 1994, under its obligations under Article VIII as a member of the IMF (RBI). The rupee can then be converted freely for current transactions such as trade, services and remittances.
- **Capital account convertibility** means the freedom to convert local financial assets into foreign financial assets, and back, at market-determined rates. The RBI set up a Committee on Capital Account Convertibility in 1997 under S.S. Tarapore. A Committee on Fuller Capital Account Convertibility, also chaired by S.S. Tarapore, gave its report on 31 July 2006.

Covered on other days: exchange rate systems, convertibility and reserves in detail (Topic 413); the composition and direction of trade (Topic 424); FDI and FPI policy (Topic 543); Foreign Trade Policy (Topic 835); the WTO (Topic 324).

3. Extra section: the accounting identity worked out with India's figures

A. The three parts add up to zero. US$ billion, net, from the RBI's tables.

Period	A. Current account	B. Capital and financial account, including reserve assets	C. Errors and omissions	A + B + C
2024-25	-22.9	21.5	1.4	0.0
2025-26	-25.2	25.4	-0.1	0.1 (rounding)

Period	A. Current account	B. Capital and financial account, including reserve assets	C. Errors and omissions	A + B + C
April-June 2026	-4.2	2.6	1.6	0.0

B. From the overall balance to the change in reserves. Take the reserve assets out of B. What is left is the capital and financial account without reserves.

Step	2024-25	2025-26	April-June 2026
1. Reserve assets row in B (plus sign = decrease)	5.0	23.6	8.1
2. B without reserve assets (B minus step 1)	21.5 - 5.0 = 16.5	25.4 - 23.6 = 1.8	2.6 - 8.1 = -5.5
3. Overall balance (A + step 2 + C)	-22.9 + 16.5 + 1.4 = -5.0	-25.2 + 1.8 - 0.1 = -23.5	-4.2 - 5.5 + 1.6 = -8.1
4. What the overall balance means	A deficit of 5.0: reserves fell by 5.0	A deficit of about 23.5: reserves fell by 23.6 (the gap is rounding)	A deficit of 8.1: reserves fell by 8.1

What the figures tell us:

- In 2025-26 the goods deficit (US$ 337.3 billion) was more than thirteen times the current account deficit (US$ 25.2 billion). Net invisibles of US$ 312.0 billion covered all the rest.
- In 2025-26 the CAD was not fully covered by net capital inflows (only about US$ 1.8 billion), so the reserves were drawn down. That is an overall BoP deficit.
- In April-June 2026 the capital and financial account without reserves was itself negative (US$ -5.5 billion), with FPI outflows of US$ 9.6 billion among the outflows. So both the current account and the capital flows needed financing from reserves.

4. Three common exam traps

1. **"The BoP always balances, so a country cannot have a BoP deficit."** Both halves of the sentence use the word in different senses. The account always balances once the change in reserves and errors and omissions are included. A "BoP deficit" is the overall balance, worked out before the change in reserves: it is the fall in official reserves needed to finance the other transactions.
2. **Taking the trade deficit for the current account deficit.** In 2025-26 India's merchandise trade deficit was US$ 337.3 billion, but its current account deficit was only US$ 25.2 billion, because net invisibles of US$ 312.0 billion made up most of the gap. A large trade deficit can go with a small CAD.
3. **Reading a quarter as the year, or a provisional figure as final.** In January-March 2026 India had a current account surplus of US$ 7.1 billion (0.7 per cent of GDP), yet for 2025-26 as a whole it had a deficit of US$ 25.2 billion (0.6 per cent of GDP). Note the period, the unit (US$ billion or per cent of GDP) and whether the figure is preliminary.

DAY 12 · TOPIC 115

Air masses and fronts

1. Concept in one line

An air mass is a large body of air that takes on the temperature and humidity of the surface over which it forms, and a front is the boundary zone where two different air masses meet. The examination asks for the types of air masses with their source regions, and for the four types of fronts with the clouds, rain and weather changes that each brings.

2. Revision notes

2.1 What an air mass is

- **NCERT:** air with distinctive characteristics in terms of temperature and humidity is called an air mass. NCERT defines it as a large body of air having little horizontal variation in temperature and moisture.
- **Britannica:** a large body of air having nearly uniform conditions of temperature and humidity at any given level of altitude. Both mean that, at one height, temperature and moisture hardly change across the air mass.
- The temperature of a place depends partly on the air mass over it: places under warm air masses are warmer, and places under cold air masses are colder (Day 4, Topic 36).

2.2 Source regions: where air masses form

- **NCERT:** air that stays over a homogeneous area, such as a vast ocean surface or a vast plain, for a sufficiently long time acquires the characteristics of that area. The homogeneous surfaces over which air masses form are called the **source regions**.
- The American Meteorological Society (AMS, in its *Glossary of Meteorology*) adds a second condition: the region must lie in the general circulation so that the air stays in contact with its uniform surface long enough to take on its properties.
- **Why these places:** the air must stay nearly stagnant over the surface (MetLink, the Royal Meteorological Society's teaching site, which reproduces Met Office material). MetLink names the subtropical high pressure belts as the main source of tropical air masses and the polar regions as the main source of polar air masses. Both are high pressure areas, where the air subsides from above and diverges at the surface (Day 5, Topic 44), so the air is not swept away quickly.
- NCERT classifies air masses according to their source regions and names five major source regions (see 2.3).

2.3 The types of air masses

- **Two letters.** The first, small letter tells the moisture: **c** (continental) for a land source, which is dry; **m** (maritime) for an ocean source, which is moist. The second, capital letter tells the temperature: **T** (tropical) for low latitudes, warm to hot; **P** (polar) for higher latitudes, cold; **A** (arctic) for the Arctic or the Antarctic, very cold (NOAA, the National Oceanic and Atmospheric Administration of the United States).
- Some authors add **E** (equatorial) as a further temperature class (AMS). NCERT does not use it.

- NCERT's rule in one line: tropical air masses are warm and polar air masses are cold.

Type (NCERT)	Source region (NCERT)	Nature	Weather it brings	Example of where it forms
Maritime tropical (mT)	Warm tropical and subtropical oceans	Warm and moist	Warm, moist and stable when it reaches Britain over a cooler sea: low cloud, drizzle and hill fog (MetLink)	The Atlantic between the Azores and Bermuda (MetLink); the Caribbean Sea and the Gulf of Mexico (Wikipedia, after the AMS)
Continental tropical (cT)	The subtropical hot deserts	Hot and dry	Hot, dry days, often above 30°C in a British summer, with moderate or poor visibility (MetLink)	The Sahara is the main source; also the Arabian Peninsula and central Australia (Wikipedia, after the AMS)
Maritime polar (mP)	The relatively cold high latitude oceans	Cold and moist	It becomes unstable over warmer seas and gives frequent showers (MetLink)	Air from around Greenland and northern Canada that crosses the Atlantic (MetLink)
Continental polar (cP)	The very cold snow covered continents in high latitudes	Cold and dry	Very cold and dry: clear skies and severe frost in winter (MetLink)	Canada, for North America (NOAA); for Britain it comes with high pressure over Scandinavia (MetLink)
Continental arctic (cA)	Ice- and snow-covered land areas in the Arctic region and Antarctica	Very cold and dry, colder than cP (NOAA)	Deep cold; shallow in summer, and it changes quickly as it moves towards the equator (Wikipedia, after the AMS)	Northern Siberia in winter (Wikipedia, after the AMS)

- **Two classifications.** NCERT's list has no maritime arctic type. The Bergeron classification, which the AMS calls the most widely accepted, also lists arctic air from the sea (mA). For the examination, give NCERT's five.

2.4 Modification of air masses

An air mass does not keep its properties for ever. As it moves away from its source region, the surface below changes it (NOAA; MetLink).

- **Moisture:** over a sea track the air gains moisture, mainly in its lower layers, by evaporation. Over a long land track it stays dry.
- **Temperature and stability:** cold air moving over a warmer surface is heated from below and becomes less stable near the ground. Warm air moving over a cooler surface is cooled from below and becomes more stable.
- **The letters k and w (AMS):** in the Bergeron classification a further letter shows whether the air mass is colder (k) or warmer (w) than the surface beneath it, for example mPk or mTw. This tells the stability of the lowest layers and the kind of weather in the air mass.

2.5 Fronts: meaning and frontogenesis

- **NCERT:** when two different air masses meet, the boundary zone between them is called a front. The process of formation of fronts is known as **frontogenesis**.

- **Britannica:** a front is the interface or transition zone between two air masses of different density and temperature. Norwegian meteorologists gave it the name during World War I, because its weather looked like fighting along a battle line.
- **What a front does (NCERT):** fronts occur in the middle latitudes and have a steep gradient in temperature and pressure. They bring abrupt changes in temperature, and they make the air rise to form clouds and give precipitation.
- **A front is named after the air that advances (NCERT).** If the cold air moves towards the warm air, the contact zone is a cold front. If the warm air moves towards the cold air, it is a warm front. If the front does not move, it is a stationary front.
- Whichever air advances, the warm air is the air that rises: at a cold front the denser cold air pushes under the warm air; at a warm front the lighter warm air rides up over the cold air (Met Office).

2.6 The four types of fronts

Point	Cold front	Warm front	Stationary front	Occluded front
How it forms	Cold air advances and undercuts the warm air, forcing it up (NCERT; Britannica)	Warm air advances and glides up over the retreating cold air (NCERT; Britannica)	A cold front or a warm front stops moving, so neither air mass replaces the other (NOAA)	A cold front overtakes a warm front, and the warm air is lifted off the surface (NOAA; Met Office)
Slope and speed	Steep: about 1 in 50 to 1 in 100. It moves up to twice as fast as a warm front (Britannica; UCAR)	Much gentler: at a height of about 1.5 km the front lies about 320 km ahead of its surface position. It moves more slowly (Britannica; UCAR)	The colder air has little or no horizontal motion (Britannica)	The warm air is held aloft, above the surface (Met Office)
Clouds	Towering cumulonimbus (MetLink). NCERT writes that cumulus clouds develop along the cold front	First high cirrus, then cirrostratus as much as 600 miles (about 965 km) ahead; then altostratus and nimbostratus, with the cloud base lowering (MetLink)	The sky along it is often cloudy (UCAR)	It has the features of both a cold front and a warm front (Met Office)
Rainfall	Heavy showers in a narrow band, often with thunder, squalls and at times hail; the showers end abruptly (Britannica; MetLink)	Drizzle at first, then continuous rain that spreads over a wide belt (Britannica; MetLink)	Rain or snow often falls along it (UCAR)	Precipitation often falls along it, from cumulonimbus or nimbostratus clouds; after it passes the sky is usually clearer and drier (UCAR)
After it passes	Temperature falls and pressure rises; the wind shifts, the rain ends and skies clear; a few showers may follow (NOAA; MetLink)	Temperature rises and pressure steadies; the rain stops and the cloud thins (NOAA; MetLink)	It may stay put for days; then it may break up, or turn into a cold front or a warm front (UCAR)	It marks a mature system that is weakening (NOAA)

Point	Cold front	Warm front	Stationary front	Occluded front
Symbol on a weather map	A blue line with triangles pointing in the direction of motion	A red line with semicircles pointing in the direction of motion	A line of alternating red semicircles and blue triangles, pointing in opposite directions	A purple line with alternating triangles and semicircles, on the side towards which it moves

- **Clouds at the cold front.** NCERT names cumulus; MetLink, which reproduces Met Office material, names towering cumulonimbus; UCAR gives both. Both belong to NCERT's group of clouds with extensive vertical development (Day 8, Topic 75): a cumulonimbus is a cumulus that has grown into a thunder cloud. If a question follows NCERT, answer "cumulus".
- **NCERT's wording for an occluded front:** "If an air mass is fully lifted above the land surface, it is called the occluded front."

2.7 Fronts, temperate cyclones and western disturbances

- **Only in the middle latitudes.** NCERT places fronts in the middle latitudes. The extra-tropical cyclones of these latitudes have a clear frontal system, which, NCERT says, is not present in tropical cyclones.
- **The polar front** is the boundary between polar and tropical air masses in the middle and high latitudes. It generally lies poleward of about 30° latitude in both hemispheres. The thermal contrast along it supplies the energy for the cyclones that form on it (Britannica). The polar front jet is associated with it (Day 7, Topic 65).
- **Polar front theory.** The AMS calls it a theory of the Scandinavian school of meteorologists: cyclonic disturbances form on the polar front, grow and move along it through a life cycle (J. Bjerknes and H. Solberg, 1922). MetLink adds that Vilhelm Bjerknes led this work at an institute he founded in Bergen during World War I, and that in 1919 his son Jacob Bjerknes published a paper that explained how fronts are related to extra-tropical depressions. Tor Bergeron is credited with discovering the occlusion process; by 1922 he had convinced Jacob Bjerknes of its importance to extra-tropical cyclones (*Complete Dictionary of Scientific Biography*).
- **Extra-tropical cyclones (temperate cyclones)** form along the polar front and move from west to east (NCERT). Their detail comes on Day 13 (Topic 125).
- **Western disturbances.** The western disturbances that reach India in winter originate in the Mediterranean region, outside the tropics. Over north-west India their precipitation falls mainly as snow in the higher reaches of the western Himalayas, and as rain on the plains (IMD). Their tracks and the westerly jet came on Day 7 (Topic 65).

3. Extra section: what a frontal depression brings as it passes (a process)

A **frontal depression** is the low pressure system of the middle latitudes that carries a warm front and a cold front, with a **warm sector** of warm air between them. The table is MetLink's sequence for an observer on the ground as a mature depression passes.

Stage	Clouds	Pressure	Temperature	Rain and sky
Ahead of the warm front	High cirrus streaks; cirrostratus as much as 600 miles (about 965 km) ahead	Falls steadily	Rises	No rain yet

Stage	Clouds	Pressure	Temperature	Rain and sky
Warm front passes	Altostratus, then nimbostratus; the cloud thickens and its base lowers	Falls	Rises	Drizzle, then continuous rain
Warm sector	Some stratus or stratocumulus; the cloud thins	Steadies	Warm	The rain stops; mostly fine
Cold front passes	Towering cumulonimbus	Rises	Falls	Heavy downpours and squalls, at times hail and thunder
Behind the cold front	A few small cumulus	Keeps rising	Cool	The rain eases; generally fine, with a few showers

The same fronts through the life of a depression (NOAA, the Norwegian cyclone model):

1. **Start:** a front, often stationary, separates warm air towards the equator from cold air towards the pole.
2. **A wave forms:** a disturbance in the upper air forms a wave and a kink on the front. The stationary front becomes a cold front and a warm front, and precipitation begins.
3. **Mature stage:** the cold front moves faster than the warm front, catches up with it and overtakes it. This forms an occluded front.
4. **End:** the occlusion grows and cuts off the supply of warm, moist air to the low, and the low weakens. NCERT puts it this way: the warm air is completely lifted up, the front is occluded and the cyclone dissipates.

So a stationary front stands at the start of the life cycle and an occluded front at its end.

4. Three common exam traps

1. **Mixing up what the letters tell.** "Continental" and "maritime" tell the moisture of an air mass (dry or moist). "Tropical", "polar" and "arctic" tell its temperature. Both parts of the name come from the source region, where the air mass formed, not from the place it is moving to. A cP air mass that has crossed a warm sea is a modified air mass; it does not become a tropical one.
2. **"At a warm front, the warm air pushes the cold air away along the ground."** It does not. At a warm front the lighter warm air rides up over the colder air. At a cold front the denser cold air pushes under the warm air and lifts it. At both fronts it is the warm air that rises, and that is why fronts give clouds and precipitation. A front takes its name from the air that is advancing.
3. **"Fronts form in every latitude, the tropics included."** NCERT says fronts occur in the middle latitudes, and that the clear frontal system of extra-tropical cyclones is not present in tropical cyclones. The western disturbances that bring winter rain and snow to north India come from the Mediterranean region, outside the tropics; they are not tropical systems.

DAY 12 · TOPIC 116

Continents and oceans: major physical features of the world

1. Concept in one line

The earth's surface is about 71 per cent ocean and about 29 per cent land, and this land and water are usually divided into seven continents and five oceans. The examination asks where the major features (peaks, lowest points, rivers, deserts, plateaus, trenches) lie, how the continents and oceans rank by size, and the record holders of the world.

2. Revision notes

2.1 Land and water on the earth's surface

- The ocean covers about 71 per cent of the earth's surface (NOAA), an area of some 361 million km^2. The remaining land, about 29 per cent, is divided into seven continents with a total area of about 149.7 million km^2.
- The Pacific Ocean alone (about 168.7 million km^2) is larger than all the continents put together (about 149.7 million km^2).
- NCERT's Class VI book notes that the greater part of the earth's landmass lies in the Northern Hemisphere, and that two continents lie entirely in the Southern Hemisphere: Australia and Antarctica.

2.2 Land hemisphere and water hemisphere

- The earth can be cut into two halves in a way that puts the largest possible area of land in one half. That half is the **land hemisphere**; the opposite half, with the largest possible area of ocean, is the **water hemisphere**.
- **Land hemisphere:** in a 1945 determination its centre lies in the city of Nantes, France. It holds about 80 per cent of the world's land (80.1 per cent), yet it is still 53 per cent water and 47 per cent land. So even in the land hemisphere, water covers a larger area than land.
- **Water hemisphere:** its centre is the opposite point on the globe, near New Zealand's Bounty Islands in the Pacific Ocean. It is about 89 per cent water, with about 6 per cent dry land and 5 per cent polar ice cap.
- Other studies (1913, 2002) placed the centre of the land hemisphere at slightly different points, so remember Nantes and the 1945 figures together.

2.3 The seven continents

Areas are Britannica's figures as reproduced on Wikipedia. Heights of peaks follow the "Seven Summits" list, except Denali (the United States Geological Survey figure from the 2015 survey) and Aconcagua (Britannica's figure); the lowest points follow one list of places below sea level, so each column comes from one source.

Continent	Area (million km²) and rank	Highest point	Lowest point	Longest river (km)	Largest desert (million km²)	A major mountain range
Asia	44.61 (1st)	Mount Everest, 8,849 m	Dead Sea shore, 430 m below sea level	Yangtze (Chang Jiang), 6,300	Arabian Desert, 2.33	Himalayas
Africa	30.37 (2nd)	Kilimanjaro, 5,895 m	Lake Assal (Djibouti), 153 m below sea level	Nile, 6,650	Sahara, 9.2	Atlas Mountains (north-western Africa)
North America	24.23 (3rd)	Denali, 6,190 m	Badwater Basin, Death Valley, 86 m below sea level	Mississippi-Missouri system, 6,275	Great Basin Desert, 0.49	Alaska Range (Denali)
South America	17.81 (4th)	Aconcagua, 6,959 m	Laguna del Carbon (Argentina), 105 m below sea level	Amazon, 6,400	Patagonian Desert, 0.67	Andes
Antarctica	14.20 (5th)	Mount Vinson, 4,892 m	Canyon under the Denman Glacier, bedrock about 3,500 m below sea level, under ice	Not listed	Antarctic Desert (polar), 14.2	Sentinel Range (Vinson)
Europe	10.00 (6th)	Mount Elbrus, 5,642 m (Mont Blanc, 4,810 m, in some lists)	Caspian Sea shore, 28 m below sea level	Volga, 3,645	Only the polar Arctic Desert reaches northern Europe	Caucasus (Elbrus); Alps (Mont Blanc)
Australia	8.51 (7th)	Mount Kosciuszko, 2,228 m, on the mainland	Lake Eyre, 16 m below sea level	Murray-Darling system, 3,672	Great Australian Desert, 1.37	Great Dividing Range (Kosciuszko)

How to read the table:

- **Rank by area:** Asia, Africa, North America, South America, Antarctica, Europe, Australia (Britannica). Asia alone has about 29.8 per cent of the world's land. Antarctica (14.2) is larger than Europe (10.0) and Australia (8.51).
- **The Australia figure** (8.51 million km²) is given for "Oceania/Australia", that is, with the nearby islands. The peak in the same row, Kosciuszko, is the highest of the mainland only: the area is Oceania's, the peak is the mainland's.
- **Everest:** 8,848.86 m is the height set by the authorities of Nepal and China in 2020; lists round it to 8,849 m.
- **Denali / Mount McKinley:** the same Alaskan peak. US federal usage restored the name Mount McKinley in 2025; Denali remains widely used. The location and elevation are unchanged, so either name identifies the North American peak in the question.

- **Europe's highest point depends on the boundary.** Elbrus stands in the Caucasus Mountains, and whether it counts as European depends on where the Europe-Asia line is drawn. Lists that leave it out give Mont Blanc in the Alps.
- **Australia's highest point depends on what "Australia" means.** Kosciuszko (Great Dividing Range) is the highest peak of the Australian mainland. Lists that take the continent with New Guinea give Puncak Jaya (4,884 m, Sudirman Range, Indonesia).
- **Lowest points:** the Dead Sea shore is the lowest exposed land in the world. The canyon under the Denman Glacier in Antarctica is lower, but it is bedrock covered by ice.
- **Deserts:** the Antarctic Desert is a polar desert. The Sahara is the largest subtropical (hot) desert. In Asia the Arabian Desert (2.33) is larger than the Gobi (1.295). In Australia the separate deserts make up the Great Australian Desert; its largest named part is the Great Victoria Desert (about 0.35). In North America the Great Basin is the largest desert that lies wholly in the continent; the polar Arctic Desert also covers the far north.
- **Rivers:** the Mississippi-Missouri and Murray-Darling lengths are for the whole river system, not one river.

2.4 Where the continents meet

- **Europe and Asia:** the Ural Mountains separate them (NCERT). Together they are called **Eurasia**, and some count them as one continent. Whether Elbrus, in the Caucasus Mountains, counts as European depends on where the Europe-Asia line is drawn; that is why some lists leave it out of Europe.
- **Africa and Asia:** joined by the **Isthmus of Suez**. Earlier the boundary was generally taken as the Nile.
- **North America and South America:** joined by the **Isthmus of Panama**.
- **Asia and North America:** the **Bering Strait** separates them at their closest point; it is about 85 km wide and links the Arctic Ocean with the Bering Sea. During the ice ages they were joined by the Bering Land Bridge, on the continental shelf in and around the Bering Sea.

2.5 The five oceans

Ocean	Area (million km²)	Share of ocean area	Rank	Deepest point
Pacific	168.72	46.6 per cent	1st	Challenger Deep, Mariana Trench, about 10,935 m
Atlantic	85.13	23.5 per cent	2nd	Brownson Deep, Puerto Rico Trench, 8,376 m
Indian	70.56	19.5 per cent	3rd	Sunda Trench (Java Trench)
Southern	21.96	6.1 per cent	4th	Southern end of the South Sandwich Trench, 7,434 m
Arctic	15.56	4.3 per cent	5th	Molloy Deep, 5,550 m

- **Depth figures differ by survey.** For the Challenger Deep, a revised estimate gives about 10,935 m; the 2019 Five Deeps dive recorded 10,928 m; another list gives 11,034 m. The deepest point of the Southern Ocean is given as 7,434 m (named the "Factorian Deep" by the 2019 expedition) and elsewhere as 7,236 m. Britannica names the deepest point of the Atlantic, in the Puerto Rico Trench, the Milwaukee Depth, at 8,380 m.

- **The Southern Ocean.** Historically there were four named oceans: Atlantic, Pacific, Indian and Arctic (NOAA). The Southern (Antarctic) Ocean is the "newest" named ocean and most countries, including the United States, now recognise it as the fifth.
  - The **US Board on Geographic Names** has recognised it since 1999, as the water extending from the coast of Antarctica to the line of latitude at 60° S.
  - The **National Geographic Society** recognised it officially in June 2021.
  - The **International Hydrographic Organization (IHO)** left it out of its 1953 edition of the limits of oceans and seas. Boundaries were proposed to it in 2000 (the waters south of 60° S), but these have not been ratified by its members (NOAA).
- **Ridges.** Every ocean basin has a mid-ocean ridge, which forms a long mountain range beneath the ocean. The **Mid-Atlantic Ridge** runs along the north-south axis of the Atlantic Ocean, from the Arctic Ocean to near the southern tip of Africa, for about 16,000 km.

2.6 Major landforms: mountains and plateaus

- **Mountain ranges** named in this topic: Himalayas (Asia), Atlas (Africa), Andes (South America), Alaska Range (North America), Caucasus and Alps (Europe), Great Dividing Range (Australia), Sentinel Range (Antarctica). The great ranges of the world, plate movement and volcanoes are taught on other days.
- **Plateaus** are classified by how they are bounded or formed:

Type	What it is	Examples
Intermontane plateau	Enclosed by fold mountains; among the highest and most extensive plateaus	Tibetan Plateau (Asia); Altiplano (South America, mostly in Bolivia and Peru)
Lava (volcanic) plateau	Built up from lava that spread out from cracks and weak areas	Deccan lava plateau (the Deccan Traps), in much of the north-western part of the Indian peninsula (Asia); Columbia Plateau (North America, United States)
Continental plateau	Bordered on all sides by plains or oceans, away from mountains	Antarctic Plateau (Antarctica)
Piedmont plateau	Mountains on one side, a plain or sea on the other	Piedmont Plateau (eastern United States)

- **Tibetan Plateau:** the largest and highest plateau in the world, about 2.5 million km^2, at about 5,000 m above sea level.
- **Altiplano:** the most extensive area of high plateau on earth outside Tibet.
- **Antarctic Plateau:** a vast ice-covered high plateau in East Antarctica. Its apparently smooth ice surface must not be confused with the bedrock beneath it: known subglacial mountain ranges include the Gamburtsev Mountains, mapped beneath kilometres of ice.
- **Western Plateau of Australia:** part of an ancient craton (a very old, stable block of the crust), with an average elevation of about 305 to 460 m.
- **Ethiopian Highlands:** the highest plateau of Africa, sometimes called the "Roof of Africa".

3. Extra section: the world's record holders, with the figure each source gives

Record	Holder	Figure and note
Highest point	Mount Everest (Himalayas)	8,849 m (8,848.86 m, set in 2020)
Deepest point of the ocean	Challenger Deep, Mariana Trench, Pacific	About 10,935 m (other surveys: 10,928 m; 11,034 m)
Lowest exposed land	Dead Sea shore, Asia	430 m below sea level in the list used
Lowest natural point on land, under ice	Canyon under the Denman Glacier, Antarctica	Bedrock about 3,500 m below sea level
Largest ocean	Pacific	About 168.7 million km^2, 46.6 per cent of ocean area; larger than all land together
Smallest ocean	Arctic	About 15.6 million km^2, 4.3 per cent of ocean area
Largest continent	Asia	44.61 million km^2, about 29.8 per cent of land
Smallest continent	Australia	8.51 million km^2 (with Oceania)
Largest island	Greenland	Lies in the North Atlantic Ocean
Largest lake by area	Caspian Sea	About 371,000 km^2; called a sea, but geographers treat it as a huge inland salt lake
Deepest lake	Lake Baikal, Siberia	Bottom at 1,637 m; also the largest freshwater lake by volume (23,600 km^3)
Largest desert	Antarctic Desert (polar)	14.2 million km^2
Largest subtropical (hot) desert	Sahara, Africa	9.2 million km^2
Longest river	Nile (traditional view)	6,650 km in the list used; the Amazon's claim is disputed
Largest average discharge among the world's longest rivers	Amazon	About 230,000 cubic metres per second
Largest and highest plateau	Tibetan Plateau	About 2.5 million km^2, about 5,000 m

The Nile and Amazon dispute: the Nile has traditionally been taken as the longer river. In 2007 and 2008 some scientists claimed the Amazon is longer; a 2009 peer-reviewed study (Liu and others, *International Journal of Digital Earth*) concluded that the Nile is longer, and Britannica (2020) says the Amazon's length remains open to debate. Much depends on whether a channel south of Marajo Island is counted as part of the Amazon. When a question follows the textbooks, give the Nile as the longest river and the Amazon as the river with the largest flow.

4. Three common exam traps

1. **"The Sahara is the world's largest desert."** Deserts are not only hot: the lists of deserts by area include polar deserts too. The Sahara is the largest subtropical (hot) desert, but the polar Antarctic Desert is larger. Read whether the question says "hot desert" or just "desert".
2. **"The Amazon is both the longest river and the river with the largest flow."** The flow is not disputed: among the world's longest rivers, the Amazon carries by far the most water. The length is disputed: the traditional answer, and the one a 2009 study supports, is the Nile. Do not mix the two records.
3. **"The Caspian Sea is a sea, and Lake Superior is the deepest or largest lake."** The Caspian Sea is a lake: the largest lake by area. The deepest lake is Lake Baikal, which also holds the largest volume of fresh water. Do not let the word "sea" in a name decide the answer.

DAY 12 · TOPIC 117

Solar energy: National Solar Mission and the International Solar Alliance

1. Concept in one line

The Jawaharlal Nehru National Solar Mission, launched in 2010, is India's programme for building solar power capacity, and the International Solar Alliance (ISA), launched by India and France in 2015, is an organisation of countries that promotes solar energy across the world. The examination asks for the Mission's targets and schemes, India's dated capacity figures, and the ISA's origin, legal basis, governance and initiatives.

2. Revision notes

Units: 1 GW = 1,000 MW, so 1,00,000 MW = 100 GW. Topic 97 explained the technology and the PV terms used here.

2.1 The National Solar Mission and its first target

- **Its parent plan:** the National Action Plan on Climate Change (NAPCC), prepared under the Prime Minister's Council on Climate Change in 2008, set out eight National Missions. The National Solar Mission is the first of them. The other seven are: Enhanced Energy Efficiency; Sustainable Habitat; Water; Sustaining the Himalayan Ecosystem; Green India; Sustainable Agriculture; and Strategic Knowledge for Climate Change. The NAPCC as a whole is Topic 207.
- **What the NAPCC wanted from it:** to "significantly increase the share of solar energy in the total energy mix". Its technical goals up to 2017 included at least 1,000 MW of concentrating solar power and local production of PV of 1,000 MW a year.
- **Launch:** MNRE (Ministry of New and Renewable Energy) says the Mission was launched on 11 January 2010. Its full name is the Jawaharlal Nehru National Solar Mission (JNNSM). Its objective is to establish India as a global leader in solar energy.
- A Cabinet release of 2015 speaks of the Mission as launched in 2009. For the examination, give MNRE's date, 11 January 2010.
- **Original target:** 20,000 MW (20 GW) of solar power by 2021-22, usually written "20 GW by 2022".
- **Three phases:** Phase 1 from 2010 to 2013, Phase 2 from 2013 to 2017, Phase 3 from 2017 to 2022. Phase 1 aimed at 1,100 MW of grid-connected solar power by 2013. The 20 GW was the target for the end of Phase 3.

2.2 The revision of 2015 and what came of it

- **17 June 2015:** the Union Cabinet raised the target fivefold, from 20,000 MW to 1,00,000 MW (100 GW) by 2022.
- **The split of the 100 GW:** 40 GW from rooftop solar, and 60 GW from large and medium scale grid-connected solar power projects (the ground-mounted plants).
- **Investment:** about ₹6,00,000 crore for the 100 GW, as the Cabinet release estimated.

- **Result:** the 100 GW was not reached by 2022. MNRE put India's installed solar capacity at around 70.10 GW as on 30 June 2023. By 31 January 2025, installed solar capacity had reached 100.33 GW (MNRE/PIB, 7 February 2025). The shortfall came mainly from rooftop solar.
- Rooftop is still the weak part: on 30 September 2026 grid-connected rooftop capacity stood at 33.41 GW (2.5).

2.3 The targets that came after the Mission

Commitment	Where and when	What it says
Panchamrit (five commitments)	The Prime Minister's National Statement at COP26, Glasgow, 1 November 2021	(1) Non-fossil energy capacity of 500 GW by 2030. (2) 50 per cent of energy requirements from renewable energy by 2030. (3) Total projected carbon emissions cut by one billion tonnes from then till 2030. (4) Emissions intensity of GDP cut by 45 per cent from the 2005 level by 2030, as India's updated NDC of August 2022 puts it. (5) Net zero by 2070
Updated NDC (nationally determined contribution)	Submitted to the UNFCCC in August 2022	About 50 per cent of cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030; emissions intensity of GDP cut by 45 per cent from the 2005 level by 2030
India's first NDC	Submitted in 2015	40 per cent of installed electric power capacity from non-fossil resources by 2030

- **Two different "50 per cent" targets:** Panchamrit speaks of energy requirements met from renewable energy; the NDC speaks of installed electric power capacity from non-fossil sources (renewables, large hydro and nuclear).
- **Progress:** MNRE announced on 14 July 2025 that non-fossil sources made up 50.08 per cent of installed capacity as on 30 June 2025, five years ahead of the NDC target. PIB (25 March 2026): the share was 52.57 per cent in February 2026. The first NDC's 40 per cent target was met nine years ahead of schedule.
- **Against 500 GW:** on 30 September 2026 non-fossil capacity stood at 308.03 GW: renewable energy with large hydro 299.25 GW, plus nuclear 8.78 GW (MNRE).
- The NDC for 2031 to 2035 is in Topic 80.

2.4 The main schemes

Scheme	Date	Target or main feature
PM-KUSUM: Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan	Administrative approval on 8 March 2019	Component A: 10,000 MW of decentralised ground or stilt-mounted grid-connected solar or other renewable plants. Component B: 14 lakh standalone solar agriculture pumps. Component C: solarisation of 35 lakh grid-connected agriculture pumps, including feeder-level solarisation. The guidelines set an aggregate target of 34,800 MW by March 2026, with central support of ₹34,422 crore

Scheme	Date	Target or main feature
PM Surya Ghar: Muft Bijli Yojana	Launched by the Prime Minister on 13 February 2024; approved by the Union Cabinet on 29 February 2024	Rooftop solar for one crore households, which get up to 300 units of free electricity a month. Outlay ₹75,021 crore. A model solar village in each district
Production Linked Incentive (PLI) for high-efficiency solar PV modules, Tranche I	Cabinet approval on 7 April 2021	₹4,500 crore; 8,737 MW awarded to three bidders
PLI, Tranche II	Cabinet approval on 21 September 2022	₹19,500 crore; 39,600 MW awarded to 11 bidders

- **PM-KUSUM:** MNRE's order of 28 September 2026 sets 31 March 2027 as the completion deadline for projects whose Power Purchase Agreement (PPA) was signed or Notice to Proceed (NTP) issued on or before 31 December 2025. Financial closure for Components A and C is due by 30 November 2026. This is a conditional project-completion extension. Rooftop solar and PM-KUSUM in detail are Topic 537.
- **PM Surya Ghar subsidy:** under the 2024 guidelines, an individual residential household receives CFA equal to 60 per cent of benchmark cost for the first 2 kW and 40 per cent of benchmark cost for the additional capacity up to 3 kW. There is no additional CFA above 3 kW. Standard-state amounts are ₹30,000 for 1 kW, ₹60,000 for 2 kW and ₹78,000 for 3 kW or more; special-category states have higher rates. Separate provisions apply to group housing societies/resident welfare associations (GHS/RWAs), so the individual-household cap must not be generalized to them.
- **PLI:** the National Programme on High Efficiency Solar PV Modules has a total outlay of ₹24,000 crore in two tranches. The incentive is paid for five years after commissioning, on the manufacture and sale of high-efficiency modules.
- **Grid-connected rooftop solar:** MNRE lists a Grid Connected Solar Rooftop Scheme among its solar schemes; rooftop was to give 40 GW of the 100 GW of 2015.
- **Solar Park Scheme:** another MNRE scheme. Solar parks make land available to the developers of large solar plants.
- **Green Energy Corridor:** dedicated transmission lines for large solar and wind plants. A 2012 study by the Power Grid Corporation of India (PGCIL) found the transmission near the best sites inadequate; PGCIL submitted its report in September 2012, and work began in 2015. MNRE runs it as two intra-State schemes, Phase I and Phase II. Phase II is to integrate about 20 GW of renewable capacity in seven States, at a cost of ₹12,031.33 crore, 33 per cent of it from MNRE.
- **ALMM (Approved List of Models and Manufacturers):** the list of approved solar modules and cells explained in Topic 97 (2.9).

2.5 Where India stands (MNRE, as on 30 September 2026)

Category	Capacity (GW)
Ground-mounted	125.65

Category	Capacity (GW)
Grid-connected rooftop	33.41
Hybrid projects (solar component)	5.36
Off-grid solar	6.63
Total solar	171.05

- Solar is the largest part of the 299.25 GW of renewable capacity (large hydro included).
- The State-wise order is in Topic 97: Rajasthan leads, and Andhra Pradesh comes sixth.

2.6 The International Solar Alliance: origin and legal basis

- **Launch:** in 2015, by India and France, at COP21 (the 21st Conference of the Parties to the UNFCCC) in Paris, on 30 November 2015.
- **Headquarters:** on the campus of the National Institute of Solar Energy (NISE) at Gwal Pahari, Gurugram, Haryana. Prime Minister Narendra Modi and the then French President Francois Hollande laid its foundation stone in January 2016.
- **Framework Agreement:** the treaty that set up the ISA. It was opened for signature at Marrakesh, Morocco, on 15 November 2016, at COP22.
- **Treaty-based status:** the Framework Agreement entered into force on 6 December 2017, and on that date the ISA became a treaty-based international intergovernmental organisation. It is the first treaty-based international intergovernmental organisation to be headquartered in India.
- **Founding Conference:** held in New Delhi on 11 March 2018.
- **Members and signatories:** a member country has both signed and ratified the Framework Agreement; a country in ISA's separately listed signatory category has signed but not yet ratified.
- **Membership opened to all:** an amendment to the Framework Agreement, adopted at the first Assembly in New Delhi on 3 October 2018, opened membership to all member states of the United Nations. It entered into force on 8 January 2021.
- **How many:** the 6 November 2024 MNRE backgrounder reported 120 member and signatory countries, including 102 ratified members. These are figures attributed to that dated backgrounder, not a current membership total.

2.7 The ISA: governance and initiatives

- **Assembly:** its seventh session, in New Delhi from 3 to 6 November 2024, chose India as President and France as Co-President for 2024 to 2026. The eighth session was opened in New Delhi by President Droupadi Murmu on 28 October 2025, with India as President of the Assembly.
- **Director General:** heads the Secretariat. Ashish Khanna of India was selected as the third Director General on 4 November 2024; MNRE's 12 March 2026 release identifies him as the serving Director General.
- **'Towards 1000' strategy, for 2030:** US$1 trillion of solar investment; energy access for 1 billion people; 1,000 GW of solar capacity; and a cut of 1,000 million tonnes of CO2 a year.
- **Programmes:** the November 2024 MNRE backgrounder described nine programmes in three areas: analytics and advocacy, capacity building, and programmatic support.

- **One Sun One World One Grid (OSOWOG):** the idea of a worldwide grid from which clean energy is available everywhere at all times. Prime Minister Modi and UK Prime Minister Boris Johnson jointly launched the Green Grids Initiative, One Sun One World One Grid (GGI-OSOWOG), at COP26 in Glasgow on 2 November 2021.
- **STAR-C:** the ISA initiative that builds solar technology skills in developing economies.
- **Other initiatives:** the Global Solar Facility (investment in underserved regions, especially Africa); viability gap funding for least developed countries and small island developing States; the SolarX Startup Challenge (introduced at COP27).
- **World Solar Report:** a set of reports from the ISA; the third edition, launched at the seventh Assembly, had four parts: the World Solar Market Report, the World Investment Report, the World Technology Report, and a Green Hydrogen Readiness Assessment for African countries.

3. Extra section: chronology, 2008 to 2026

Date	Event
2008	The NAPCC sets out eight National Missions, the National Solar Mission among them
11 January 2010	The Jawaharlal Nehru National Solar Mission is launched; target 20,000 MW by 2022
2010 to 2022	Phase 1 (2010 to 2013), Phase 2 (2013 to 2017), Phase 3 (2017 to 2022)
September 2012	PGCIL submits its report on the Green Energy Corridor; work begins in 2015
17 June 2015	The Union Cabinet raises the target to 1,00,000 MW by 2022
30 November 2015	India and France launch the ISA at COP21 in Paris
15 November 2016	The ISA Framework Agreement is opened for signature at Marrakesh (COP22)
6 December 2017	The Framework Agreement enters into force; the ISA becomes a treaty-based international organisation
11 March 2018	The ISA's Founding Conference in New Delhi
8 March 2019	Administrative approval of PM-KUSUM
8 January 2021	The amendment opening ISA membership to all UN member states (adopted 3 October 2018) enters into force
7 April 2021	Cabinet approves PLI Tranche I
1 November 2021	Panchamrit announced at COP26, Glasgow
2 November 2021	India and the UK launch GGI-OSOWOG at COP26, Glasgow
August 2022	India's updated NDC: about 50 per cent non-fossil installed capacity by 2030
21 September 2022	Cabinet approves PLI Tranche II
30 June 2023	Installed solar capacity around 70.10 GW

Date	Event
13 February 2024	PM Surya Ghar: Muft Bijli Yojana launched (Cabinet approval on 29 February 2024)
November 2024	Seventh ISA Assembly: India President, France Co-President for 2024 to 2026
31 January 2025	Installed solar capacity is 100.33 GW, above the 100 GW target set for 2022
30 June 2025	Non-fossil share of installed capacity reaches 50.08 per cent
28 October 2025	Eighth ISA Assembly opens in New Delhi
February 2026	Non-fossil share of installed capacity at 52.57 per cent
30 September 2026	Installed solar capacity 171.05 GW

How to read the table:

- India's solar targets grew in three steps: 20 GW for 2022 (2010), 100 GW for 2022 (2015), and then targets for all non-fossil capacity: 500 GW and about 50 per cent of installed capacity, both for 2030 (2021 and 2022).
- From its launch to its Founding Conference the ISA took three years: launch (2015), treaty opened for signature (2016), treaty-based status (2017), Founding Conference (2018).

4. Three common exam traps

1. **Mixing up the "500 GW" and the "50 per cent" targets.** The 500 GW of 2030 is non-fossil capacity, not solar capacity alone. Panchamrit's 50 per cent is about energy requirements met from renewable energy; the NDC's 50 per cent is about installed electric power capacity from non-fossil sources, which include large hydro and nuclear. It is the NDC figure that PIB says was met five years early, with 52.57 per cent in February 2026.
2. **Taking a target for an achievement.** The Mission's revised target was for 2022, but MNRE counted only around 70.10 GW in June 2023. MNRE/PIB reported 100.33 GW as on 31 January 2025. The 171.05 GW of 30 September 2026 is installed capacity of every kind: ground-mounted, rooftop, hybrid and off-grid.
3. **Getting the ISA's institutions wrong.** The ISA was launched in 2015, became treaty-based on 6 December 2017 and held its Founding Conference in March 2018: three different events. Its President and Co-President are countries (India and France for 2024 to 2026), not persons; the Secretariat is headed by the Director General. A "member" has ratified the Framework Agreement; a country in ISA's separate "signatory" category has signed but not yet ratified.

DAY 12 · TOPIC 118

Syllogisms: 'possibility' and 'either-or' cases

1. Concept in one line

A 'possibility' conclusion follows when at least one diagram that fits the statements makes it true, and the answer 'Either I or II follows' is correct when two conclusions about the same two groups do not follow singly but exactly one of them must be true in every diagram.

2. Revision notes

2.1 Recall from Topic 18, and what is new

- Topic 18 (Day 2): the four standard statements (All, No, Some, Some ... not) and the five diagrams of two groups; a conclusion follows only if it is true in every diagram that fits the statements. As there, every group named is taken to have at least one member.
- New today: conclusions that claim only that something can be true, and answers in which two conclusions follow as a pair but not one by one.

2.2 Definite conclusions and possibility conclusions

- A definite conclusion ("Some X are Y", "No X is Y") must be true in every diagram that fits the statements.
- A possibility conclusion is worded "Some X being Y is a possibility", "All X being Y is a possibility" or "All X can be Y". It claims only that the statements allow it. So it follows if at least one diagram that fits the statements makes it true. It fails only when the statements make it impossible.

Point	Definite conclusion	Possibility conclusion
Must be true in	Every diagram that fits the statements	At least one diagram that fits the statements
One counter-example diagram	Rejects it	Does not reject it
Rejected when	Any one diagram makes it false	No diagram can make it true
What to draw	Try to break it	Try to build it

Worked example. Statements: All roses are flowers. Some flowers are leaves.

- "Some roses are leaves" does not follow. Sketch: the Roses circle inside Flowers; the Leaves circle cuts only the part of Flowers outside Roses.
- "Some roses being leaves is a possibility" follows. Sketch: the Leaves circle cuts Flowers across the Roses circle.
- "All roses being leaves is a possibility" also follows. Sketch: the Leaves circle wraps the whole Roses circle and part of the rest of Flowers.

Where books differ. Some guides mark a possibility conclusion as not following when the same thing already follows definitely. These notes follow the plain meaning: what must be true can be true. The questions here avoid this case.

2.3 Rules for possibility conclusions

Rule 1. A definite statement, given or derived, that contradicts a possibility makes it false.

Possibility	Made false by
Some X being Y	No X is Y
All X being Y	No X is Y; Some X are not Y
No X being Y	All X are Y; Some X are Y
Some X being not Y	All X are Y

Rule 2. "All X being Y" fails when "Some X are not Y" is given or can be derived. Statements: Some apples are mangoes. No mango is a grape.

- Follow the apple that is a mango. It lies in the Mangoes circle, which never touches Grapes. So "Some apples are not grapes" is definite, and "All apples being grapes is a possibility" does not follow.
- "Some apples being grapes is a possibility" follows. Sketch: the Grapes circle overlaps Apples on the side away from Mangoes.
- "All grapes being apples is a possibility" follows. Sketch: the Grapes circle lies inside Apples, clear of Mangoes. The derived "not" blocks only one direction.

Rule 3. Two groups with no statement between them: assume every relation is possible, then check through the third group. Statements: All lions are cats. Some dogs are not cats.

- "All lions being dogs is a possibility" follows. Sketch: a large Dogs circle wraps the Lions circle and sticks out of Cats.
- "All dogs being lions is a possibility" does not follow. If every dog were a lion, every dog would be a cat, because all lions are cats. But some dogs are not cats.
- "Some dogs being lions is a possibility" follows. Sketch: Dogs overlaps Lions and also has a part outside Cats.

Rule 4. "Some X are not Y" and its possibilities. It allows diagrams 3, 4 and 5 of Topic 18. So "Some X being Y" (diagram 3 or 4), "No X being Y" (diagram 5) and "All Y being X" (diagram 3) are all possibilities. Only "All X being Y" is ruled out. Nothing definite follows about "Y ... X".

Rule 5. "All X are Y" leaves "All Y being X" open. X and Y may be one circle (diagram 1). So "All Y being X is a possibility" follows. Students often miss it.

Two wordings. "At least some X are Y" is the plain "Some X are Y". "Some X are definitely Y" is a definite claim: it follows only when "Some X are Y" must be true; that it can be true is not enough.

2.4 What each statement gives: definite and possible

Statement	Diagrams it allows	Definitely follows	Possibility follows	Possibility does not follow
All X are Y	1, 2	Some X are Y; Some Y are X	All Y being X; Some Y being not X	No X being Y; Some X being not Y
Some X are Y	1, 2, 3, 4	Some Y are X	All X being Y; All Y being X; Some X being not Y	No X being Y
No X is Y	5	No Y is X; Some X are not Y; Some Y are not X	Nothing about X and Y being together	Some X being Y; All X being Y; All Y being X
Some X are not Y	3, 4, 5	Nothing about "Y ... X"	Some X being Y; No X being Y; All Y being X	All X being Y
Only a few X are Y	3, 4	Some X are Y; Some Y are X; Some X are not Y	All Y being X; Some Y being not X	All X being Y; No X being Y
Only X are Y	1, 3	All Y are X; Some X are Y; Some Y are X	All X being Y; Some X being not Y	No X being Y; Some Y being not X

- Conventions used here. "Only a few X are Y" means two things together: some X are Y, and some X are not Y. "Only X are Y" means "All Y are X". Some guides add to "Only" a rule that Y can touch no group other than X. That is not part of the plain meaning, and these notes do not use it.

2.5 'Either-or' answers: complementary pairs

Mark "Either I or II follows" only when all three conditions hold:

1. Both conclusions are about the same two groups. For "Some ... are" with "No", either order works, because both statements turn round as they stand (Topic 18). For "All" with "Some ... not", the subject and the predicate must be the same in both.
2. Neither conclusion follows by itself.
3. The two form a complementary pair: in every diagram exactly one of them is true. The usual pairs are:

Pair	Diagrams where the first is true	Diagrams where the second is true
Some X are Y; No X is Y	1, 2, 3, 4	5
All X are Y; Some X are not Y	1, 2	3, 4, 5

Between them, each pair covers all five diagrams, and no diagram makes both true.

Worked example 1. Statements: All kites are birds. Some birds are planes. Conclusions: I. Some kites are planes. II. No kite is a plane.

- I does not follow: Planes may cut only the part of Birds outside Kites. II does not follow: Planes may cut Kites.
- Same two groups, the "Some" and "No" pair. Answer: either I or II follows.

Worked example 2. Statements: Some vans are trucks. All trucks are cars. Conclusions: I. All vans are cars. II. Some vans are not cars.

- "Some vans are cars" is definite. But I does not follow (part of Vans may stick out of Cars), and II does not follow (Cars may wrap all of Vans).
- Same subject (vans), same predicate (cars), the "All" and "Some ... not" pair. Answer: either I or II follows.

2.6 Pairs that look like 'either-or' but are not

Case	Example	Correct answer
One conclusion already follows	All vans are trucks; All trucks are cars. I. Some vans are cars. II. No van is a car.	Only I follows
"All" with "No": both can be false	All kites are birds; Some birds are planes. I. All kites are planes. II. No kite is a plane.	Neither follows: Planes may cut only part of Kites
"Some" with "Some ... not": both can be true	Same statements. I. Some kites are planes. II. Some kites are not planes.	Not a pair under the test used here (both can be true), though some books accept it; neither follows by itself
Different groups	Same statements. I. Some kites are planes. II. No plane is a bird.	Not a pair; II is impossible, I does not follow

2.7 Common traps at a glance

Trap	What goes wrong	Correct view
Possibility read as definite	"Some X can be Y" turned into "Some X are Y"	A definite conclusion must hold in every diagram
Definite read as possibility	"Some X are Y" accepted because it can happen	It needs every diagram
Derived "not" missed	"All X being Y" accepted after a chain that gives "Some X are not Y"	Follow the "some" member through the chain first
Direction swapped	"All Y being X" rejected because "Some X are not Y"	That statement blocks only "All X being Y"
Either-or forced	"All" paired with "No", or a pair where one already follows	Check the three conditions in 2.5
"Only a few" read as "Some"	"All X being Y" accepted after "Only a few X are Y"	"Only a few" also says some X are not Y

3. Extra section: a drill of six problems with answers

Cover the answer line, draw the circles, and then check.

1. Statements: All pens are pencils. No pencil is an eraser. Conclusions: I. No pen is an eraser. II. Some erasers being pens is a possibility.

- Answer: only I follows. Pens lie inside Pencils, and Erasers never touch Pencils, so no pen can be an eraser. II is made false by I (Rule 1).

2. Statements: Some books are files. All files are boxes. Conclusions: I. Some boxes are books. II. All books being boxes is a possibility.

- Answer: both follow. The book that is a file is a box, so I is definite. II: draw Boxes large enough to wrap the whole Books circle.

3. Statements: Only a few seeds are fruits. All fruits are plants. Conclusions: I. All seeds being fruits is a possibility. II. Some plants are seeds.

- Answer: only II follows. "Only a few" says some seeds are not fruits, so I is impossible. The seed that is a fruit is a plant, so II is definite.

4. Statements: Some hills are rivers. Some rivers are lakes. Conclusions: I. Some hills are lakes. II. No hill is a lake.

- Answer: either I or II follows. Two "some" statements link nothing, so neither is definite; the "Some" and "No" pair covers every diagram.

5. Statements: All chairs are tables. Some tables are not desks. Conclusions: I. All chairs are desks. II. Some chairs are not desks.

- Answer: either I or II follows. Chairs may sit in the part of Tables inside Desks (I true) or outside it (II true). Neither is forced, and the "All" and "Some ... not" pair has the same subject and predicate.

6. Statements: No stone is a brick. All bricks are tiles. Conclusions: I. No stone is a tile. II. All stones are tiles.

- Answer: neither follows. Stones may lie inside Tiles clear of Bricks (II true) or wholly outside Tiles (I true), or cut across. "All" with "No" is not a complementary pair, because in the last diagram both are false. What does follow: "Some tiles are not stones".

4. Three common exam traps

1. **Treating "can be" as "is".** From "All maps are charts; Some charts are plans", the conclusion "Some maps being plans is a possibility" follows, but "Some maps are plans" does not. A possibility needs one diagram; a definite conclusion needs all of them. Read the wording of each conclusion before you draw.
2. **Forcing an 'either-or'.** Two conclusions that sound opposite are not enough. "All A are C" and "No A is C" can both be false, so they are never a pair. And if one conclusion of a "Some" and "No" pair already follows, the answer is that one alone, not "either-or".
3. **Reading "only a few" as plain "some".** "Only a few A are B" also says that some A are not B. So "All A being B is a possibility" is false after it, though it would follow after "Some A are B".

DAY 12 · TOPIC 119

Data interpretation: reading tables and calculating quickly

1. Concept in one line

A data-interpretation question gives a table of figures and asks for a share, a change, a ratio or an average worked out from it. The exam tests whether you read the right row, column and unit, divide by the right base, and calculate fast enough to pick the right option.

2. Revision notes

2.1 What a data-interpretation set is, and how to read a table

- A data-interpretation (DI) set gives one table and asks two or more questions on it. Each question needs one or two short calculations from the figures in the table.
- Before you calculate anything, read the table in this order:

Part of the table	What it tells you	What to check
Table number and title	What the figures are about: what, where and when	Which years, which place, which item
Unit (in the title, in a headnote under it, or above a column)	What one unit of a cell means: number, thousand, lakh, crore, tonnes, per cent	Whether all the columns are in the same unit
Column headings (captions)	What each column holds, often years	Which column is the earlier year
Row headings (stubs)	What each row holds: districts, items, groups	Which row the question names
Body	The figures themselves	Read along the right row and down the right column
Total row or column	The sum of the rows or columns	Use it as the base for a share; check whether it includes rows not shown, such as "others"
Footnote and source	Notes on the figures and where they come from	Whether some figures are estimates or differ in definition

- A table puts figures in rows and columns so that the reader can find a figure at a glance.

Table 1. New vehicles registered in a town, by type, 2023 to 2025 (number of vehicles). Illustrative figures.

Type of vehicle	2023	2024	2025
Two-wheelers	3,200	3,520	3,872

Type of vehicle	2023	2024	2025
Cars	2,400	2,520	2,772
Autorickshaws	1,600	1,600	1,756
Goods vehicles	800	960	1,200
Total	8,000	8,600	9,600

Note: the figures are made up for practice; they are not official data.

2.2 The calculations, with examples from Table 1

What is asked	How to work it	Example	Answer
Share (percentage of a total)	Part ÷ total × 100	Two-wheelers in 2023	3,200/8,000 × 100 = 40%
Percentage change	(New - old) ÷ old × 100	Goods vehicles, 2023 to 2024	160/800 × 100 = a rise of 20%
Change in a share	New share - old share, in percentage points	Share of goods vehicles, 2023 to 2025	12.5% - 10% = 2.5 percentage points
Ratio	Divide, then reduce (Topic 59)	Cars to autorickshaws, 2023	2,400 : 1,600 = 3 : 2
Average	Total ÷ number of items	Vehicles per type, 2023	8,000 ÷ 4 = 2,000
Change over two periods	Multiply the growth factors	Two-wheelers, 2023 to 2025	1.1 × 1.1 = 1.21, a rise of 21%
Largest increase	Subtract in each row, then compare	2023 to 2025	Two-wheelers +672 (largest in number); goods vehicles +400, which is +50% (largest in per cent)

- **Share.** The base is the total of the same column (the same year). When the total is the sum of the rows shown, the shares of all the rows add up to 100% (Topic 29).
- **Percentage change.** Percentage change = (new value - old value) ÷ old value × 100. The old value (the base year, the earlier year) is the denominator, because the change is measured against the starting value. Dividing the same rise of 160 by the new value, 960, gives 16 2/3%, which is wrong. A fall gives a negative change: a figure that falls from 500 to 400 has fallen by 20%.
- **Percentage points.** When the figures in the table are themselves percentages (shares, rates, coverage), the plain difference between two of them is in percentage points (Topic 29). The share of goods vehicles went from 800/8,000 = 10% to 1,200/9,600 = 12.5%. That is a rise of 2.5 percentage points. Measured against the old share it is 2.5/10 × 100 = a rise of 25 per cent.
- **Ratio.** Write the two figures in the order the question names them and reduce (Topic 59). Within one year, the ratio of two shares is the same as the ratio of the two figures, because both shares have the same total.

- **Average and weighted average.** The average of the items in a column is their total ÷ their number (Topic 69). When groups of different sizes are put together, each value must count as many times as its weight: the combined average = total of (value × weight) ÷ total of the weights, the same working as Σfx ÷ Σf in Topic 69. One section of 40 students averages 60 marks and another of 10 students averages 80: the combined average is (40 × 60 + 10 × 80) ÷ 50 = 64, not 70. In the same way, a rate for a whole group (yield per hectare, coverage of households) is the total of the top figures ÷ the total of the bottom figures, not the plain average of the separate rates. Weighted averages are taken up fully in Topic 349.
- **Change over two periods.** A change of a% followed by a change of b% multiplies the value by (1 + a/100) × (1 + b/100), as with growth factors in Topic 99. The overall change is a + b + ab/100 per cent, not a + b. Two-wheelers rose by 10% in each year: 10 + 10 + 100/100 = 21%, not 20%. A rise of 50% followed by a fall of 50% leaves 1.5 × 0.5 = 0.75 of the value, a fall of 25%, not "no change". The order of the two changes does not alter the result. Successive changes are treated in full in Topic 159.
- **Difference and the largest increase.** "Increase" may mean the increase in number or the increase in per cent, and the two can point to different rows. Read which one the question asks for.

2.3 Calculating quickly

- **Two significant figures.** A useful working habit for estimating is to round each figure to two significant figures, that is, to its first two digits, not counting zeros at the start: 3,872 becomes 3,900 and 0.0468 becomes 0.047. Rounding to two significant figures changes a figure by at most about 5 per cent (for a figure that begins with 1) and by about half of 1 per cent for one that begins with 9. Use the estimate to strike out options that lie well away from it; when two options are close, work with the exact figures. Rounding before a subtraction can change the answer a great deal (next point).
- **Never round before you subtract two close figures.** Autorickshaws rose from 1,600 to 1,756, that is, by 156, or 9.75%. Rounded first to 1,600 and 1,800, the rise becomes 200, or 12.5%. Subtract the exact figures, then round the difference if you need to.
- **Fraction equivalents (Topic 29).** 1,200/9,600 = 1/8 = 12 1/2%. 160/960 = 1/6 = 16 2/3%. Spotting the fraction saves a long division.
- **Comparing two fractions by cross-multiplication (Topic 59).** Did the share of two-wheelers rise from 2023 to 2025? Compare 3,872/9,600 with 3,200/8,000: 3,872 × 8,000 = 30,976,000 and 3,200 × 9,600 = 30,720,000. The first product is larger, so the share rose (from 40% to 40.33%, approximately).
- **10 per cent and 1 per cent steps.** 10% of 3,200 is 320 and 1% is 32, so 21% of 3,200 = 320 + 320 + 32 = 672.
- **Eliminating options by bounds.** The total rose from 8,600 to 9,600, by 1,000. 11% of 8,600 is 946 and 12% is 1,032, so the rise lies between 11% and 12% (it is 11.63%, approximately). Any option outside that range can be struck out without a long division.

2.4 Units: thousand, lakh and crore

- One lakh is one hundred thousand (100,000, written 1,00,000 in the Indian grouping) and one crore is ten million (10,000,000, written 1,00,00,000). So 1 crore = 100 lakh, and 10 lakh = 1 million.
- In the Indian grouping the first three digits to the left of the decimal point form one group, and after that the digits are grouped in twos.
- A column headed "in thousand" or "('000)" means that every cell is to be multiplied by 1,000. 4,500 thousand tonnes = 4,500,000 tonnes = 45 lakh tonnes = 0.45 crore tonnes.

- When two figures in the same unit are divided, the unit cancels: thousand tonnes ÷ thousand hectares gives tonnes per hectare.
- When two columns are in different units (one in lakh, one in crore), convert one of them before you add, subtract or compare.

2.5 Common errors with a table

Error	Example from Table 1	Correct working
Wrong base	Goods vehicles, 2023 to 2024: 160/960 = 16 2/3%	Divide by the earlier year: 160/800 = 20%
Percentage points taken as per cent	Share of goods vehicles, 10% to 12.5%: "a rise of 2.5%"	2.5 percentage points, or a rise of 25 per cent of the old share
Adding percentages of different bases	Cars +5% and autorickshaws 0%, 2023 to 2024: "together +5%"	Together 4,000 became 4,120: a rise of 3%
Wrong unit	A cell of 3.5 in a column "in lakh" read as 3.5 crore	3.5 lakh = 350,000 = 0.035 crore
Wrong row or column	The 2024 figure used for 2023	Read the row heading and the column heading of every figure you use

Other days cover bar graphs (Topic 149), pie charts (Topic 249), line graphs (Topic 449), trends and the limits of inference (Topic 579), mixed and caselet sets (Topic 749), data sufficiency (Topic 369) and further approximation shortcuts (Topic 929).

3. Extra section: a drill of six questions on one table

Table 2. Households and tap water connections in four mandals of a district, 2024 and 2025 (number). Illustrative figures.

Mandal	Households	Tap connections, 2024	Tap connections, 2025
A	12,000	7,200	8,400
B	8,000	5,600	6,000
C	15,000	7,500	9,000
D	5,000	3,500	4,600

Note: the number of households is taken as the same in both years. Coverage means tap connections as a percentage of households.

1. **What share of all the tap connections of 2025 were in Mandal C?** Total for 2025 = 8,400 + 6,000 + 9,000 + 4,600 = 28,000. Share of C = 9,000/28,000 × 100 = 9/28 × 100 = 32.14%, approximately.
2. **By what percentage did tap connections rise in Mandal C from 2024 to 2025?** Rise = 9,000 - 7,500 = 1,500. Base = 7,500, the earlier year. 1,500/7,500 = 1/5 = 20%.

3. **By how much did coverage rise in Mandal A?** 2024: 7,200/12,000 = 60%. 2025: 8,400/12,000 = 70%. The rise is 10 percentage points. Measured against the old coverage it is 10/60 × 100 = 16 2/3 per cent.
4. **What was the ratio of tap connections in Mandal B to those in Mandal D in 2025?** 6,000 : 4,600 = 60 : 46 = 30 : 23.
5. **What was the coverage of the four mandals taken together in 2025?** Total households = 40,000; total connections = 28,000. Coverage = 28,000/40,000 × 100 = 70%. The plain average of the four coverages, (70 + 75 + 60 + 92) ÷ 4 = 74.25%, is wrong, because the mandals have different numbers of households.
6. **Which mandal had the largest percentage increase in tap connections from 2024 to 2025?** Mandal C had the largest increase in number (1,500), but the question asks for per cent. Compare C (9,000/7,500) with D (4,600/3,500) by cross-multiplication: 9,000 × 3,500 = 31,500,000 and 4,600 × 7,500 = 34,500,000. D is larger. D rose by 1,100/3,500 × 100 = 31.43%, approximately; C by 20%, A by 16 2/3% and B by 7.14%, approximately. Answer: Mandal D.

A check by bounds on the whole table: total connections rose from 23,800 to 28,000, by 4,200. 10% of 23,800 is 2,380 and 20% is 4,760, so the rise lies between 10% and 20% (it is 17.65%, approximately).

4. Three common exam traps

1. **Divide by the earlier year.** A percentage change is measured against the starting value. A figure that rises from 400 to 500 has risen by 25%; when it falls back from 500 to 400 it has fallen by 20%. The same difference of 100 gives two answers because the base changes. A share, too, has its base in the total of the same year, not in another row.
2. **Percentage points are not per cent.** When a table already holds percentages, the difference between two of them is in percentage points. Coverage that goes from 60% to 70% has risen by 10 percentage points, but by 16 2/3 per cent of its old value. A question may give one and ask for the other.
3. **Read the unit before the figure.** "In thousand", "in lakh" and "in crore" change the value of every cell. 1 lakh = 100,000 and 1 crore = 100 lakh, so 3.5 lakh is 0.035 crore, not 3.5 crore. Two columns in different units must be brought to one unit before they are added or compared.

DAY 12 · TOPIC 120

Current affairs: Ponduru Khadi of Srikakulam gets the GI tag (December 2025)

1. Concept in one line

Ponduru Khadi, the hand-spun and hand-woven cotton cloth of Ponduru in Srikakulam district, was registered as a geographical indication (GI) on an application filed by the Khadi and Village Industries Commission (KVIC); its Certificate of Registration is dated 5 November 2025, and the news was made public in December 2025. The examination asks about the product and its registration, the GI law of India, and the other GIs of Andhra Pradesh.

2. Revision notes

2.1 The news

- **The announcement:** On Saturday, 13 December 2025, the Union Minister of Civil Aviation, Kinjarapu Ram Mohan Naidu, who is from Srikakulam, announced that Ponduru Khadi had received the GI tag. He thanked the KVIC for its support. This is from a news agency report (UNI).
- **The record of the Geographical Indications Registry:**

Point	As the Registry's record gives it
Application number	1049
Name of the GI	Ponduru Khadi
Class and goods	Class 23; goods: textiles. The Registry's list of registrations shows it under "Handicraft"
Applicant	Khadi and Village Industries Commission, with its address at Irla Road, Vile Parle (West), Mumbai
Date of filing	31 January 2023
GI Journal	Journal No. 203; the journal copy is dated 4 July 2025
Certificate of Registration	The document is dated 5 November 2025
Status	Registered
Place in the Registry's list of registrations	Serial number 700, Andhra Pradesh, financial year April 2025 to March 2026

- **Who applied:** the applicant on the Registry's record is the KVIC, with its address in Mumbai. The local society, the Andhra Fine Khadi Karmikabhivruddhi Sangham (see 2.2), is not named as the applicant on that record.

- **Before the application:** in the Seventeenth Lok Sabha, Bellana Chandra Sekhar, member for Vizianagaram, asked the Ministry of Commerce and Industry to take steps to give Ponduru Khadi a GI tag. He said it would give the cloth prominence in domestic and international markets and legal protection.

2.2 Ponduru and its khadi

- **Place:** Ponduru is a census town in Srikakulam district and the headquarters of Ponduru mandal.
- **The cloth:** cotton khadi that is spun by hand and woven by hand. The MAP Academy, an online encyclopedia of Indian art, calls it Patnulu khadi.
- **Count:** the count of a yarn tells how fine it is; a higher count is a finer yarn. The MAP Academy calls 44 a coarse count and 100 a finer count.

Feature	What the sources say
Cotton	Short-staple cotton grown in the district: Punasa cotton and hill cotton, both white and red, grown without pesticides or fertilisers (Gonela and Ravindran). The MAP Academy names konda patti ("hill cotton") for finer counts and yerra patti ("red cotton") for coarser counts. The Lok Sabha speech speaks of indigenous red and hill cotton
Cleaning the cotton	Cleaned and combed with the jawbone of the valuga fish (Gonela and Ravindran). The MAP Academy calls it the jawbone of the catfish, used to separate seeds and impurities from the cotton
Spinning	On the single-spindle charkha with 24 spokes (Gonela and Ravindran). The MAP Academy says the single-spindle Gandhi charkha, not the multi-spindle Ambar charkha. The Lok Sabha speech also says single spindle
Fineness	Up to 120 counts in white cotton and 60 in red cotton (Gonela and Ravindran). From 44 to 100 (MAP Academy). The sources differ on the highest count
Weavers	Weaver families of the Padmasali and Devanga communities (Lok Sabha speech)

- **The society:** the Andhra Fine Khadi Karmikabhivruddhi Sangham (AFKKS) was established in 1949. AFKKS supports local fine-khadi production and is aided by KVIC.
- **Spinners and weavers:** no official count is available. The MAP Academy, whose sources run up to 2021, gives over 300 spinners and 350 weavers in Srikakulam and neighbouring Vizianagaram districts, and about 50 spinners and 15 weavers in Ponduru itself. Gonela and Ravindran write that the number of spinners fell from 2,000 fifteen years earlier to about 800, and fine khadi weavers from over 150 to 45 to 50. Treat all these figures as approximate.

2.3 Gandhi's link

- The UNI report says Ponduru Khadi "was cherished by Mahatma Gandhi".
- **The accounts differ on how the link began.** The MAP Academy says Gandhi visited the village in the 1920s and sent his son Devdas Gandhi to research the process. Gonela and Ravindran say he visited the village and inspected the handlooms, and give no year. A report in The Hindu (7 May 2011) says a dhoti of Ponduru khadi was gifted to Gandhi when he stopped at Dusi railway station in 1942.
- None of these accounts quotes Gandhi's own words about Ponduru, so do not attach a year or a quotation to his link with the cloth.

2.4 The GI system in India

- **TRIPS:** Article 22(1) of the World Trade Organization's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) reads: "Geographical indications are, for the purposes of this Agreement, indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin."
- **The Act:** the Geographical Indications of Goods (Registration and Protection) Act, 1999 (Act No. 48 of 1999). It received assent on 30 December 1999 and came into force on 15 September 2003. It covers agricultural, natural and manufactured goods.
- **The Registry:** the Geographical Indications Registry is at Chennai, in the Intellectual Property Office Building, Guindy.
- **Who can apply:** an association of persons or producers, or any organisation or authority established by or under any law, that represents the interest of the producers.
- **The register:** Part A records registered GIs. Part B records registered authorised users, that is, those registered to use the GI.
- **How long:** a registered GI is valid for ten years and can be renewed from time to time on payment of a renewal fee. Under Section 16 of the Act, a GI, when registered, is registered as of the date on which the application was made, so the ten years run from the date of filing. For example, the Registry's record of Allagadda Stone Carving shows filing on 6 March 2015 and a certificate dated 28 March 2018, so it was registered for ten years from 6 March 2015.
- **No transfer:** a registered GI cannot be transferred, mortgaged, assigned or licensed. The one exception is inheritance on the death of an authorised user.
- **The first GI:** Darjeeling tea of West Bengal is the first entry in the Registry's list (serial numbers 1 and 2, application numbers 1 and 2), in the year April 2004 to March 2005.
- **How many:** the Registry's list of registrations, which runs up to the financial year April 2025 to March 2026, numbers its entries up to 822 (as on 16 October 2026).

2.5 Andhra Pradesh's GIs in the Registry's list

The Registry's list gives each GI with its application number, its kind of goods and the financial year under which it was registered. The list does not give districts. The entries that name Andhra Pradesh, as on 16 October 2026:

Serial No.	GI as named in the list	Goods	Application No.	Year
29	Srikalahasthi Kalamkari	Handicraft	28	2005-06
30	Kondapalli Bommallu	Handicraft	44	2005-06
71	Machilipatnam Kalamkari	Handicraft	90	2008-09
88	Budithi Bell and Brass Metal Craft	Handicraft	89	2008-09
93	Andhra Pradesh Leather Puppetry	Handicraft	107	2008-09
106	Uppada Jamdani Sarees	Handicraft	122	2008-09
107	Tirupathi Laddu	Food stuff	121	2009-10

Serial No.	GI as named in the list	Goods	Application No.	Year
122	Guntur Sannam Chilli	Agriculture	143	2010-11
151	Venkatagiri Sarees	Handicraft	189	2011-12
163	Bobbili Veena	Handicraft	203	2011-12
180	Mangalagiri Sarees and Fabrics	Handicraft	198	2012-13
207	Dharmavaram Handloom Pattu Sarees and Paavadas	Handicraft	215	2013-14
286	Bandar Laddu	Food stuff	433	2016-17
288	Udayagiri Wooden Cutlery	Handicraft	522	2016-17
295	Banaganapalle Mangoes (shared with Telangana)	Agriculture	241	2017-18
298	Durgi Stone Carvings	Handicraft	481	2017-18
299	Etikoppaka Toys	Handicraft	482	2017-18
310	Allagadda Stone Carving	Handicraft	524	2017-18
334	Araku Valley Arabica Coffee (shared with Odisha)	Agriculture	607	2018-19
483	Atreyapuram Pootharekulu	Food stuff	804	2023-24
565	Narasapur Crochet Lace Products	Handicraft	713	2023-24
700	Ponduru Khadi	Handicraft	1049	2025-26

- **Count:** the Registry's list, as on 16 October 2026, shows 22 entries that name Andhra Pradesh; two of them are shared with another State. The entries up to 2013-14 were registered before the State was divided in 2014 (Topic 14).
- **Kinds:** handicrafts, which in this list include handloom sarees and fabrics, are the largest group; there are three food stuffs and three agricultural goods.
- **Application number and serial number are different things:** Bobbili Veena has serial number 163 but application number 203, and Ponduru Khadi has application number 1049 but serial number 700.

3. Extra section: chronology of the Ponduru GI, and four crafts of Andhra Pradesh with their places

Date	What happened
1949	The Andhra Fine Khadi Karmikabhivruddhi Sangham is established
30 December 1999	The Geographical Indications of Goods (Registration and Protection) Act, 1999 receives assent

Date	What happened
15 September 2003	The Act comes into force
April 2004 to March 2005	Darjeeling tea, the first entry in the Registry's list, is registered
31 January 2023	The KVIC files application No. 1049 for Ponduru Khadi
4 July 2025	The application appears in GI Journal No. 203
5 November 2025	Date of the Certificate of Registration on the Registry's record
13 December 2025	The Union Minister of Civil Aviation announces the GI tag (news agency report)

Four handicraft GIs of Andhra Pradesh: two wooden toy crafts and two stone carving crafts. The districts are the present districts as on 16 October 2026. They were formed in April 2022. As reported in the press, the State Cabinet decided in December 2025 to form two more districts, Polavaram and Markapuram. The final notification was to be issued on 31 December 2025, and the change was to take effect from 1 January 2026, making 28 districts. Madanapalle did not become a new district; the headquarters of Annamayya district was moved from Rayachoti to Madanapalle. These changes did not move the four places below to other districts.

GI (application No., year)	Place	Present district	What it is made of
Etikoppaka Toys (482, 2017-18)	Etikoppaka village, on the banks of the Varaha river	Anakapalli	Soft wood and lacquer colour; natural dyes from seeds, lacquer, roots and leaves
Kondapalli Bommallu, that is, Kondapalli toys (44, 2005-06)	Kondapalli, in Ibrahimpatnam mandal	NTR	Light local softwood called tella poniki, painted with vegetable dyes and enamel colours
Durgi Stone Carvings (481, 2017-18)	Durgi, headquarters of Durgi mandal, Gurazala revenue division	Palnadu	Stone carving; a tradition traced to the 15th century, when local sculptors turned to soft limestone
Allagadda Stone Carving (524, 2017-18)	Allagadda, headquarters of Allagadda mandal	Nandyal (Allagadda was placed in the new Nandyal district in April 2022)	Stone carving; the applicant on the Registry's record is the Andhra Pradesh Handicrafts Development Corporation Limited

Ponduru, for comparison, is in Srikakulam district.

4. Three common exam traps

1. **"Got the GI tag in December 2025" is the news date, not the registration paperwork.** For Ponduru Khadi there are four different dates: three on the Registry's record (filing on 31 January 2023, the GI Journal copy of 4 July 2025, the Certificate of Registration dated 5 November 2025), and then the public announcement reported in the news on 13 December 2025. A question on the date of the journal or of the filing is not answered by "December 2025".
2. **Popular lists and the Registry's list do not always give the same year.** The Registry's list puts Srikalahasthi Kalamkari and Kondapalli Bommallu under 2005-06, while some popular lists give 2004-05 and 2007-08 respectively. Darjeeling tea, not an Andhra Pradesh product, is the entry for 2004-05 at the head of the list. Give the Registry's year.
3. **1999 is the Act, 2003 is when it came into force, and a registered GI cannot be transferred.** The Act was passed in December 1999 but came into force only on 15 September 2003, so no GI was registered in India before 2004. A registered GI cannot be transferred, mortgaged, assigned or licensed; only the right of an authorised user can pass by inheritance on death.

DAY 12 · SOURCES AND REFERENCES

111. Ashoka: Dhamma, edicts and inscriptions

111-S1

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, the same copy as in Topic 102). https://ssgopalganj.in/online/Class VI\S Sc\Our Past I\ch7.pdf

Used for: The lions on notes and coins from the Sarnath pillar (p. 75); most inscriptions in Prakrit in Brahmi (p. 79); dhamma did not involve worship of a god or performance of a sacrifice; "just as a father tries to teach his children"; dhamma mahamatta; roads, wells, rest houses, medical treatment for human beings and animals; messengers to Syria, Egypt, Greece and Sri Lanka (p. 80); gentleness to slaves and servants, respect for elders, compassion for all creatures, gifts to brahmins and monks, the wrong of praising one's own religion or criticising another's; modern scripts from Brahmi (p. 81)

111-S2

Ven. S. Dhammika, *The Edicts of King Asoka: An English Rendering*, The Wheel Publication No. 386/387 (Buddhist Publication Society), on Access to Insight. https://www.accesstoinsight.org/lib/authors/dhammika/wheel386.html

Used for: Translation of Rock Edicts I, II, III, V, VIII, IX, XII and XIII and Pillar Edict VII: the Kalinga figures and remorse, the five Greek kings, the Cholas, Pandyas and Tamraparni; the ban on slaughter and sacrifice and on festivals, the royal kitchen; medical treatment for humans and animals, wells and trees, the neighbouring peoples; the mahamatras in the thirteenth year; the tour to Sambodhi ten years after coronation; respect for mother and father, generosity, moderation in spending and saving; servants and employees; respect for the doctrines of others; banyan trees, mango groves, wells and rest houses at eight krosas; the Bairat edict line on the Buddha's words; the title Devanampiya Piyadasi and its meaning; Prinsep's decipherment of a Delhi pillar inscription in 1837; confirmation of the name in 1915; more than thirty places; Magadhi in the east and a form closer to Sanskrit in the west; the five groups of edicts

111-S3

Vincent A. Smith, *Asoka: The Buddhist Emperor of India* (Rulers of India series), Oxford: Clarendon Press, 1901; scan in the Gokhale Institute of Politics and Economics digital library. https://dspace.gipe.ac.in/xmlui/bitstream/handle/10973/29589/GIPE-001257.pdf?sequence=3

Used for: Coronation about 270 BCE; dharma as the "law of piety", drafted to be acceptable to any Indian sect; the censors of the law of piety in the thirteenth year; the Bhabru edict as the only open avowal of devotion to Buddhism, addressed to the clergy; the Third Council resting on the Ceylonese chronicles and Tissa unknown in China, Tibet and Nepal; Mahendra as brother in Xuanzang; the Sri Lankan mission not mentioned by Ashoka; the Kalinga figures

111-S4

Wikipedia, "Ashoka" (citing the Mahavamsa, Thapar and others). https://en.wikipedia.org/wiki/Ashoka

Used for: Reign c. 268 to 232 BCE, coronation c. 269 BCE, death 232 BCE; consecration four years after becoming sovereign in the Mahavamsa; Devanampiya and Priyadarshi, shown by the Maski and Gujarra inscriptions; Kalinga in the 8th regnal year, c. 260 BCE; the Kalinga versions leaving out the remorse; Minor Rock Edict I and the lay follower; the Third Council under Moggaliputta Tissa in the 17th regnal year in Sri Lankan tradition, doubted by some historians; missions in the 18th year; Mahinda as son, and as younger brother in Xuanzang; Sanghamitta as daughter with a Bodhi sapling; dhamma mahamattas in the 13th year

111-S5

Wikipedia, "Edicts of Ashoka" (citing E. Hultzsch, *Inscriptions of Asoka*, 1925; Richard Salomon, *Indian Epigraphy*, 1998). https://en.wikipedia.org/wiki/Edicts_of_Ashoka

Used for: Classification and sites; Prakrit in Brahmi, Kharosthi in the north-west, Greek and Aramaic at Kandahar; Prakrit, not Dravidian, in the south; Lassen in 1836 and Prinsep's publication in March 1838, Kharosthi deciphered from bilingual coins; Maski found in 1915 by C. Beadon; Gujarra's "Devanampiya Piyadasi Asoka raja"; the regnal years of each group (Minor Rock Edicts, the first edicts in an Indian language, from year 11, Barabar and the Major Rock Edicts from year 12, Edict XIII in year 14, Rummindei and Nigali Sagar in years 19 to 20 and "anointed twenty years", the Pillar Edicts in years 26 to 27); Aramaic at Taxila and Laghman; Amaravati in the table of pillar inscriptions

111-S6

Wikipedia, "Major Rock Edicts" (citing Hultzsch 1925; Thapar; D. C. Sircar, *Asokan Studies*, 1979). https://en.wikipedia.org/wiki/Major_Rock_Edicts

Used for: The subject of each of the fourteen edicts: festive gatherings banned (I), medical care and roads (II), officials touring every five years (III), Dhamma Mahamatras for all sects (V), all sects to live everywhere (VII), the moral tours replacing pleasure tours (VIII), elaborate ceremonies (IX); sites and their states; Kharosthi at Shahbazgarhi and Mansehra; XI to XIII left out at Dhauli and Jaugada and replaced by two Separate Edicts; the Greek edict at Kandahar

111-S7

Wikipedia, "Minor Rock Edicts" (citing Thapar; Hultzsch 1925; Sircar; Chakrabarty; Charles Allen). https://en.wikipedia.org/wiki/Minor_Rock_Edicts

Used for: Sites and districts; Maski's "Devanampriya Asoka" and Gujarra's "Devanampiya Piyadasi Asokaraja"; Minor Rock Edict I (lay follower for more than two and a half years, little progress in the first year, closer to the Sangha); the Calcutta-Bairat (Bhabru) edict found by Captain Burt in 1840, in the Asiatic Society, "Piyadasi Raja Magadhe", faith in the Buddha, Dhamma and Sangha, seven texts; the edicts from the 11th regnal year; Rajula Mandagiri in Kurnool district

111-S8

Wikipedia, "List of edicts of Ashoka". https://en.wikipedia.org/wiki/List_of_edicts_of_Ashoka

Used for: Yerragudi near Gooty, Kurnool district, with Major and Minor Rock Edicts; Rajula Mandagiri near Pattikonda, Kurnool district; Sopara's fragments of VIII and IX; Sannati's Separate Edicts; pillar sites and edicts (Delhi-Topra I to VII, the others I to VI); the Delhi pillars moved by Firoz Shah and the Allahabad pillar from Kausambi probably moved by Jahangir; Rummindei and Nigali Sagar in Nepal; the Schism Edict at Sanchi, Sarnath and Allahabad and the Queen's Edict at Allahabad; Barabar gifts to the Ajivikas

111-S9

D. C. Sircar, "Erragudi Edicts of Asoka", *Epigraphia Indica*, Vol. XXXII (1957-58), No. 1 (first part of the article, on The Indian Analyst). https://whatisindia.com/inscriptions/epigraphica_indica/vol32_1957-1958/sircar.html

Used for: Erragudi in the Pattikonda taluk of Kurnool district; inscriptions on six large boulders; found at the end of 1928 by A. Ghose of the Geological Survey of India; announced on 11 February 1929

111-S10

Saurabh Saxena, "Edicts of Ashoka: Minor Rock Edicts", Puratattva. https://puratattva.in/the-mauryas-3/

Used for: Maski found by C. Beadon in 1915, the first edict found with the personal name; Gujarra and Nittur with the personal name; Rajula Mandagiri found in 1953-54, about 35 km from Yerragudi, approached from Pattikonda; Yerragudi beside the Gooty to Adoni road

111-S11

Andhra Pradesh Capital Region Development Authority (APCRDA), "History of Amaravati" (historical timeline). https://crda.ap.gov.in/APCRDADOCS/DataModuleFIles/History/01~10531.Historical timeline.pdf

Used for: A broken pillar with an edict of Asoka close to the Amaravati stupa

111-S12

Wikipedia, "Third Buddhist council" (citing the Mahavamsa; Snellgrove; Dhammajoti). https://en.wikipedia.org/wiki/Third_Buddhist_council

Used for: Held at Pataliputra in Ashoka's reign under Moggaliputta Tissa, in the Theravada commentaries and chronicles; the Kathavatthu added to the canon; the missions in the Mahavamsa (Majjhantika, Maharakkhita, Sona and Uttara, Mahinda); scholars' doubts

111-S13

Wikipedia, "Kandahar Bilingual Rock Inscription" (citing Scerrato 1958; Sircar 1979; Carratelli's translation). https://en.wikipedia.org/wiki/Kandahar_Bilingual_Rock_Inscription

Used for: Greek and Aramaic; Chehel Zina near Kandahar; found in 1958; "ten years having been completed"; eusebeia (piety) for dhamma; the king abstains from killing living beings, hunters and fishermen stop hunting; "Piodasses"

111-S14

Wikipedia, "State Emblem of India". https://en.wikipedia.org/wiki/State_Emblem_of_India

Used for: Adopted on 26 January 1950; an adaptation of the Lion Capital of Ashoka; three lions visible; wheel in the centre of the abacus, bull and horse; Satyameva Jayate from the Mundaka Upanishad in Devanagari; the capital carved from a single block of sandstone and erected at Sarnath

111-S15

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: The Mauryan kings donated several caves to Ajivika monks (p. 64)

111-S16

Encyclopaedia Britannica, "Ashoka". https://www.britannica.com/biography/Ashoka

Used for: Ashoka as the last major emperor of the Mauryan dynasty; "conquest by dharma" after Kalinga; death given as 238 BCE with a query

111-S17

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://www.ncert.nic.in/textbook/pdf/lehs102.pdf

Used for: Prinsep, an officer in the East India Company's mint, deciphered Brahmi and Kharosthi (p. 28) and deciphered Asokan Brahmi in 1838 (p. 46); dhamma as respect towards elders, generosity towards Brahmanas and those who renounced worldly life, and respect for religions and traditions other than one's own; Prakrit in Brahmi, Kharosthi in the north-west, Aramaic and Greek in Afghanistan (p. 32); principles "simple and virtually universally applicable" and the dhamma mahamatta (p. 34); Edict XIII in translation: eight years, one hundred and fifty thousand deported, a hundred thousand killed (p. 48)

111-S18

Lok Sabha, Unstarred Question No. 2122, answered on 9 December 2024 by the Minister of Culture, annexure of ASI-protected sites linked to Chandragupta Maurya and Ashoka. https://eparlib.sansad.in/bitstream/123456789/2985119/1/AU2122_1h07JO.pdf

Used for: Asokan inscription at Rajulamandagiri, Kurnool district; Ashokan edict at Maski, Raichur district; Gujjara (Datia), Rupnath, Nittur, Udegolam, Brahmagiri, Siddapura, Jatinga-Rameshwara, Sasaram, Ahraura, Kalsi and Dhauli as ASI-protected Ashokan inscription sites

111-S19

UNESCO World Heritage Centre, Tentative List, "Ashokan Edict Sites along the Mauryan Routes", submitted by the Permanent Delegation of India on 11 February 2025. https://whc.unesco.org/en/tentativelists/6803

Used for: Erragudi with both Major and Minor Rock Edicts, in Andhra Pradesh; Rajula Mandagiri (Minor); Maski (Minor, Karnataka); Jaugada, Dhauli, Girnar, Kalsi, Sopara (Major)

111-S20

UNESCO World Heritage Centre, Tentative List, "Shahbazgarhi Rock Edicts", submitted by Pakistan's Department of Archaeology and Museums on 30 January 2004. https://whc.unesco.org/en/tentativelists/1880

Used for: Fourteen major edicts of Asoka at Shahbazgarhi, written from right to left in the Kharosthi script

111-S21

Indira Gandhi National Centre for the Arts (IGNCA), documentation of the Asokan Rock Edicts at Jaugada, Ganjam district, Odisha (an ASI-protected monument). https://ignca.gov.in/asi_reports/organjam001.pdf

Used for: Eleven of the fourteen rock edicts at Jaugada; Edicts XI, XII and XIII left out and two Separate Edicts in their place, addressed to the Mahamatras of Samapa in the newly conquered Kalinga

111-S22

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

Used for: Consecration four years after Asoka won the sovereignty; the council under the thera Moggaliputta Tissa, the Kathavatthu, closed in the seventeenth year of the reign; Mahinda as the king's son and Sanghamitta as his daughter

111-S23

NCERT Class VI, Chapter 7, “From a Kingdom to an Empire”, reproduced by IIT Kanpur SATHEE. https://sathee.iitk.ac.in/sathee-railway-exams/student-corner/ncert-books/class-06/social-science/history-our-past-1/chapter-07-from-a-kingdom-to-an-empire/ ; independently readable NCERT chapter reproduction (Rationalised 2023–24, printed page 67): https://cdn1.byjus.com/wp-content/uploads/2023/05/ncert-textbook-for-class-6-social-science-history-chapter-7.pdf

Used for: Direct chapter text confirming the scope of dhamma in Q1 statement 4

DAY 12 · SOURCES AND REFERENCES

112. Supreme Court and High Courts: composition, jurisdiction and appointment of judges

112-S1

Government of India, Ministry of Law and Justice, Legislative Department, *The Constitution of India* [As on 1st May, 2024], official text (Contents only; the body text was cut off before Part V). https://cdnbbsr.s3waas.gov.in/s380537a945c7aaa788ccfcdf1b99b5d8f/uploads/2024/07/20240716890312078.pdf

Used for: Headings of Articles 124 to 147 and of Articles 124A to 124C in the Contents, for the table in 2.1

112-S2

Ministry of External Affairs, *The Constitution of India*, Part V (text with amendments up to 2003). https://www.mea.gov.in/Images/pdf1/Part5.pdf

Used for: Article 112(3)(d)(i) and (iii); Article 124(1) "not more than seven", with its footnote on the 1986 Act; 124(2), (3)(c), (4) and (7); 125(1); 127(1); 128; 129; 130; 131; 132(1), 133(1), 134(1); 134A; 136(1); 137; 139A(1) and (2); 141; 142(1); 143(1) and (2); 145; 146(3); 147

112-S3

Ministry of External Affairs, *The Constitution of India*, Part VI (text with amendments up to 2006). https://www.mea.gov.in/Images/pdf1/Part6.pdf

Used for: Article 202(3)(d); Articles 214, 215, 216, 217(1) and (2), 218, 221(1), 222(1), 223, 224, 224A, 226(1) and (2), 227(1), 228, 230, 231(1); the recasting of Articles 230 to 232

112-S4

constitutionofindia.net, "Article 124: Establishment and constitution of Supreme Court". https://www.constitutionofindia.net/articles/article-124-establishment-and-constitution-of-supreme-court/

Used for: Clauses (2) (age 65, resignation, CJI always consulted), (2A), (3) (a) to (c), (4), (5), (6) (oath before the President, Third Schedule) and (7)

112-S5

constitutionofindia.net, "Article 217: Appointment and conditions of the office of a Judge of a High Court". https://www.constitutionofindia.net/articles/article-217-appointment-and-conditions-of-the-office-of-a-judge-of-a-high-court/

Used for: Age 62 (sixty in 1950); provisos on resignation, removal and vacancy on appointment to the Supreme Court or transfer; 217(2) qualifications with no jurist route; 217(3) age question decided by the President after consulting the CJI; the consultation words of 1950

112-S6

Supreme Court of India, "Chief Justice and Judges" (page as on 16 October 2026). https://www.sci.gov.in/chief-justice-judges/

Used for: Justice Surya Kant "Sworn in as the Chief Justice of India on 24th November, 2025"; 36 other Judges listed, the latest appointed on 6 October 2026

112-S7

LiveLaw, "President Grants Assent To Law Increasing Strength Of Supreme Court Judges To 38", 12 August 2026. https://www.livelaw.in/amp/top-stories/president-grants-assent-to-law-increasing-strength-of-supreme-court-judges-to-38-545405

Used for: Supreme Court (Number of Judges) Amendment Act 2026; "33" replaced by "37"; 38 including the CJI; replaced the Ordinance of May 2026; Lok Sabha passed the Bill on 3 August 2026

112-S8

SCC Online blog (SCC Times), "Four More Judges for the Supreme Court: President's Ordinance Responds to India's Mounting Case Backlog", 18 May 2026. https://www.scconline.com/blog/?p=384446

Used for: Supreme Court (Number of Judges) Amendment Ordinance, 2026, under Article 123; 33 to 37 Judges besides the CJI; 34 to 38 in all

112-S9

Wikipedia, "Supreme Court of India" (citing the Court's own history pages and the Judges (Inquiry) Act, 1968). https://en.wikipedia.org/wiki/Supreme_Court_of_India

Used for: Inauguration on 28 January 1950; strength history 8, 11, 14, 18, 26, 31, 34, 38 (1950, 1956, 1960, 1978, 1986, 2009, 2019, 2026); retirement at 65; collegium of the CJI and the four senior-most Judges; notice of removal signed by 100 Lok Sabha or 50 Rajya Sabha members; Justice Surya Kant in office since 24 November 2025

112-S10

High Court of Andhra Pradesh, official website, home page. https://aphc.gov.in/

Used for: "Smt. Justice Lisa Gill" as Chief Justice; address Nelapadu, Amaravati, Guntur District

112-S11

Wikipedia, "Andhra Pradesh High Court" (citing The Hindu, "Lisa Gill appointed Chief Justice of A.P. High Court", 23 April 2026; The Hindu, 2 February 2019; The New Indian Express, 3 February 2019). https://en.wikipedia.org/wiki/Andhra_Pradesh_High_Court

Used for: Established on 1 January 2019 by a Presidential order under the Andhra Pradesh Reorganisation Act, 2014; the High Court of Judicature at Hyderabad as the earlier common High Court; 37 Judges, 28 permanent and 9 additional; Justice Lisa Gill from 25 April 2026; Justice Dhiraj Singh Thakur, 28 July 2023 to 24 April 2026

112-S12

Wikipedia, "High courts of India". https://en.wikipedia.org/wiki/High_courts_of_India

Used for: 25 High Courts; High Courts with jurisdiction over more than one State or Union territory (Punjab and Haryana, Gauhati and others); Andhra Pradesh row 37, 28, 9

112-S13

Wikipedia, "Collegium system" (citing the judgments on Indian Kanoon and The Hindu, 17 October 2015). https://en.wikipedia.org/wiki/Collegium_system

Used for: First Judges Case 1981; Second Judges Case 1993 and the collegium in use since then; reference by President K.R. Narayanan in July 1998 (Third Judges Case); 16 October 2015, 4 to 1, 99th Amendment and NJAC Act struck down, "restoring the previous collegium system"

112-S14

PRS Legislative Research, "Legislative Brief: The Constitution (One Hundred and Twentieth Amendment) Bill, 2013 and The Judicial Appointments Commission Bill, 2013", 26 March 2014. https://prsindia.org/files/bills_acts/bills_parliament/2013/Legislative_Brief--_Constitution_120th_Amendment_and_JAC_Bill,_2013.pdf

Used for: Holdings of the First (given as 1982), Second (1994) and Third (1999) Judges Cases; collegium of the CJI and four senior-most Judges for the Supreme Court and of the CJI and two senior-most Judges for the High Courts, with the Governor and the High Court Chief Justice consulted; Memoranda of Procedure prepared by the Department of Justice, covering appointments and transfers

112-S15

Earlier topics of this programme, read for consistency: Topic 42, "Salient features of the Constitution"; Topic 104, "Amendment procedure: Article 368"

Used for: Topic 42: integrated judiciary; Articles 124A to 124C still printed; Articles 32 and 226 for the Fundamental Rights. Topic 104: the NJAC case of 16 October 2015 (4 to 1; 99th Amendment Act, 2014 and NJAC Act, 2014 struck down); Chapter IV of Part V and Chapter V of Part VI

112-S16

Ministry of Law and Justice, Legislative Department, *The Supreme Court (Number of Judges) Amendment Ordinance, 2026* (No. 1 of 2026), Gazette of India Extraordinary, Part II, Section 1, 16 May 2026. https://www.legislative.gov.in/static/uploads/2026/05/43403bd5a664399763a253a82fdc9377.pdf

Used for: Promulgated on 16 May 2026; "thirty-three" replaced by "thirty-seven" in section 2 of the 1956 Act

112-S17

The Supreme Court (Number of Judges) Amendment Act, 2026 (No. 14 of 2026), Gazette of India Extraordinary, Part II, Section 1, 11 August 2026 (Gazette copy hosted by LiveLaw). https://www.livelaw.in/pdf_upload/2026/08/12/sc-number-of-judges-act-693336.pdf ; Gazette identifier CG-DL-E-11082026-275379, official URL: https://egazette.gov.in/WriteReadData/2026/275379.pdf

Used for: Act 14 of 2026; assent 11 August 2026; "thirty-three" replaced by "thirty-seven"; Ordinance repealed; deemed in force from 16 May 2026

112-S18

Department of Justice, statement of sanctioned and working strength of the High Courts as on 1 November 2025 (copy hosted by Supreme Court Observer). https://www.scobserver.in/wp-content/uploads/2025/11/High-Court-Vacancies_November-2025.pdf

Used for: Andhra Pradesh: sanctioned 37 (28 permanent, 9 additional); 25 High Courts listed

112-S19

High Court of Andhra Pradesh, "Chief Justice and Sitting Judges" (page as on 16 October 2026). https://aphc.gov.in/profiles.php

Used for: Justice Lisa Gill "sworn in as such on 25.04.2026" as Chief Justice

112-S20

High Court of Andhra Pradesh, "Former Chief Justices". https://aphc.gov.in/formerjudges.php?type=former_cj

Used for: Justice Dhiraj Singh Thakur sworn in as Chief Justice on 28 July 2023; laid down office on 24 April 2026

112-S21

High Court of Andhra Pradesh, "About Us: High Court". https://aphc.gov.in/aboutus.php?abt=hc

Used for: Order dated 26 December 2018; functioning from 1 January 2019, principal seat at Amaravati; the Hyderabad court as the common High Court from 2 June 2014

112-S22

The Constitution (Ninety-ninth Amendment) Act, 2014, text as hosted by PRS Legislative Research. https://prsindia.org/files/bills_acts/acts_parliament/2014/the-constitution-(99th-amendment)-act,-2014.pdf

Used for: Sections amending Articles 124(2), 127(1), 128, 217(1), 222(1), 224, 224A and 231(2), and inserting Articles 124A to 124C

112-S23

Supreme Court of India, S.P. Gupta v. President of India and Others, judgment of 30 December 1981, AIR 1982 SC 149, text on Indian Kanoon. https://indiankanoon.org/doc/1294854/

Used for: Date of the First Judges Case judgment and its AIR citation of 1982

112-S24

Wikipedia, "In re: Assent, Withholding or Reservation of Bills by the Governor and the President of India" (citing the Court's opinion in Special Reference No. 1 of 2025, 2025 INSC 1333, and The Hindu). https://en.wikipedia.org/wiki/In_re:_Assent,_Withholding_or_Reservation_of_Bills_by_the_Governor_and_the_President_of_India

Used for: Reference by President Droupadi Murmu under Article 143; five-Judge Bench; opinion of 20 November 2025; no court-fixed timelines; "deemed assent" rejected

112-S25

The Judges (Inquiry) Act, 1968 (No. 51 of 1968), bare text hosted by the Ministry of Railways (Railway Board). https://indianrailways.gov.in/railwayboard/uploads/directorate/security/rpf/Files/law/BareActs/judges1968.html

Used for: Section 3(1): notice signed by not less than 100 Lok Sabha or 50 Rajya Sabha members; admission by the Speaker or the Chairman; section 3(2): committee of a Supreme Court Judge, a High Court Chief Justice and a distinguished jurist

112-S26

Prime Minister's Office (pmindia.gov.in), "Cabinet approves increase in the Judge strength of the Supreme Court of India by Four to 37 from 33", 5 May 2026. https://www.pmindia.gov.in/en/news_updates/cabinet-approves-increase-in-the-judge-strength-of-the-supreme-court-of-india-by-four-to-37-from-33/

Used for: History of the 1956 Act: Judges other than the CJI raised to 17 "by The Supreme Court (Number of Judges) Amendment Act, 1977" (year of the 1977 row in Section 3)

112-S27

Legislative Department, official Constitution of India (2025 publication). https://www.legislative.gov.in/static/uploads/2025/08/7af1daa22d65f9d04c00ae9b9aa5a799.pdf

Used for: Articles 136(2), 139A(1), 227(4): Armed Forces exceptions and case-transfer conditions

DAY 12 · SOURCES AND REFERENCES

113. Human Development Index: dimensions, indicators and India's rank

113-S1

UNDP, Human Development Reports, "Human Development" (about the approach). https://hdr.undp.org/about/human-development

Used for: "Expanding the richness of human life"; more freedom to live lives people value; more choice; Mahbub ul Haq; Amartya Sen's work on capabilities; the first HDR in 1990 introduced the approach and the HDI

113-S2

UNDP, Human Development Reports, "Human Development Index (HDI)". https://hdr.undp.org/data-center/human-development-index

Used for: HDI created to make people and their capabilities the ultimate criteria; summary measure of average achievement; three dimensions and their indicators; geometric mean of normalised indices; logarithm of income for its diminishing importance; does not reflect inequalities, poverty, human security, empowerment

113-S3

UNDP, Human Development Report 2025, Technical Notes. https://hdr.undp.org/sites/default/files/2025_HDR/HDR25_Technical_Notes.pdf

Used for: Goalposts (20 and 85; 0 and 18; 0 and 15; 100 and 75,000 in 2021 PPP dollars); dimension index formula; arithmetic mean of the two education indices; natural logarithm for income; geometric mean; four group cut-offs; IHDI with the Atkinson measure and the loss; GDI as the ratio of female to male HDI and its five groups; GII dimensions and indicators; PHDI adjustment factor from carbon dioxide emissions and material footprint per capita

113-S4

UNDP, "Human Development Report 2025: A matter of choice: People and possibilities in the age of AI" (report page). https://hdr.undp.org/content/human-development-report-2025

Used for: Title and release date (6 May 2025)

113-S5

UNDP India, press release "India's human development continues to make progress, ranks 130 out of 193 countries", 6 May 2025. https://www.undp.org/node/521916

Used for: India's rank 130 of 193 and HDI 0.685 for 2023; 0.676 and rank 133 for 2022; life expectancy, expected and mean years of schooling, GNI per capita in 2021 PPP dollars for 2022 and 2023; medium group, near the 0.700 threshold; loss of 30.7 per cent to inequality; rise of over 53 per cent since 1990; 1990 figures for life expectancy, expected schooling and GNI per capita

113-S6

UNDP India, press release "India shows progress in Human Development Index, ranks 134 out of 193 countries", 14 March 2024. https://www.undp.org/node/453371

Used for: HDR 2023/24 title and release date; rank 134 of 193 and HDI 0.644 for 2022; medium group; GII 0.437, rank 108 of 166; loss of 31.1 per cent; 0.434 in 1990 and a rise of 48.4 per cent; the editor's note that values and ranks from different editions should not be compared

113-S7

UNDP, Human Development Reports, "Reports and Publications" (opened 16 October 2026). https://hdr.undp.org/reports-and-publications

Used for: HDR 2025 as the latest global report listed; titles of HDR 2023/24 and earlier reports; the 2026 Global MPI as a separate statistical update

113-S8

UNDP, Human Development Reports, "Documentation and downloads". https://hdr.undp.org/data-center/documentation-and-downloads

Used for: HDR 2025 statistical annex tables for the HDI, IHDI, GDI, GII and PHDI, with time series from 1990 to 2023

113-S9

NCERT, *Understanding Economic Development* (Class X), Chapter 1, "Development", reprint 2026-27. https://ncert.nic.in/textbook/pdf/jess201.pdf

Used for: HDR compares countries by education, health and per capita income; the meaning of prefixing "Human"; Table 1.6 from HDR 2025 (India 9,047 dollars, 72 years, 6.9 years, rank 130; Sri Lanka 89; Bangladesh 130; rank column headed 2021-22); PPP dollars defined; mean years of schooling for age 25 and above

113-S10

Global Data Lab, Subnational Human Development Index, version 10.2, table for India. https://globaldatalab.org/shdi/table/shdi/IND/?levels=1+4&interpolation=0&extrapolation=0

Used for: Andhra Pradesh 0.681 (2023), 0.673 (2022) and 0.439 (1990); India total 0.685, 0.676 and 0.446

113-S11

Wikipedia, "Human Development Index" (citing UNDP, HDR 2010; Wolff, Chong and Auffhammer, *Economic Journal*, 2011; Harttgen and Klasen, 2012; Kovacevic, 2011; WWF, *Living Planet Report 2014*; Leiwakabessy and Amaluddin, 2020). https://en.wikipedia.org/wiki/Human_Development_Index

Used for: The change of indicators in the 2010 report; the pre-2010 indicators (adult literacy with two-thirds weight, gross enrolment with one-third, GDP per capita in PPP) and equal weights of one third; criticisms: misclassification from data errors and formula changes, inequality, sustainability, quantity not quality of schooling, unemployment and democracy

113-S12

Wikipedia, "List of countries by inequality-adjusted Human Development Index" (citing UNDP, HDR 2025, pp. 283-287). https://en.wikipedia.org/wiki/List_of_countries_by_inequality-adjusted_Human_Development_Index

Used for: India's IHDI 0.475 for 2023, HDI 0.685 and loss 30.7 per cent

113-S13

Wikipedia, "Gender Inequality Index" (citing UNDP, HDR 2010, *The Real Wealth of Nations*). https://en.wikipedia.org/wiki/Gender_Inequality_Index

Used for: GII introduced in the 2010 HDR to reform the GDI and the Gender Empowerment Measure of 1995

113-S14

Wikipedia, "Gender Development Index" (citing Klasen, *Journal of Human Development*, 2006). https://en.wikipedia.org/wiki/Gender_Development_Index

Used for: Earlier gender-related development index introduced in 1995; not the current ratio-based GDI, introduced in 2014 (see S16)

113-S15

Ritimo, catalogue entry "India Human Development Report 2011: Towards Social Inclusion". https://www.ritimo.org/India-Human-Development-Report-2011-Towards-Social-Inclusion

Used for: Title, Planning Commission as author, Oxford University Press, 2011; HDI and profile for India and its States

113-S16

UNDP, issue paper on gender indices. https://hdr.undp.org/system/files/documents/hdroissuepaperongenderindices.pdf

Used for: Table 1: old GDI (1995–2009) and new ratio-based GDI (2014 onward)

113-S17

UNDP, Human Development Report 2025, Overview, “Human development indices”, India row (printed page 16). https://hdr.undp.org/system/files/documents/global-report-document/hdr2025overviewen.pdf

Used for: IHDI 0.475; loss 30.7%; GDI 0.874, group 5; GII 0.403, rank 102; 2023 data

DAY 12 · SOURCES AND REFERENCES

Balance of Payments: current account and capital account

114-S1

NCERT, Introductory Macroeconomics (Class XII), Chapter 6 "Open Economy Macroeconomics", section 6.1 "The Balance of Payments". https://ncert.nic.in/textbook/pdf/leec106.pdf
IMF, Balance of Payments and International Investment Position Manual, sixth edition (BPM6), paragraph 13.2: current plus capital-account balance.

Used for: BoP as the record of transactions in goods, services and assets between residents and the rest of the world over a period; current account as trade in goods and services and transfer payments; trade in services including factor income; transfers as receipts for "free" (gifts, remittances, grants); balance of trade as exports minus imports of goods; net invisibles; with a zero capital-account balance, current-account surplus as net lending and deficit as net borrowing; in general the combined current and capital-account balance determines net lending/borrowing; CAD financed by a capital account surplus, by selling assets or borrowing abroad; capital account as all international transactions in assets, purchases as debits and sales as credits, FDIs, FIIs, external borrowings and assistance; autonomous and accommodating transactions, above and below the line; official reserve sale; "The decrease (increase) in official reserves is called the overall balance of payments deficit (surplus)"; BoP equilibrium; errors and omissions; Table 6.1 heads (non-factor services, income, transfers; external assistance, ECBs, short-term debt, banking capital of which non-resident deposits, foreign investment, other flows, reserves change)

114-S2

Reserve Bank of India, press release 2026-2027/412, "Developments in India's Balance of Payments during the Fourth Quarter (January-March) of 2025-26" (8 June 2026), with Table 1. https://rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=62890

Used for: CAD of US$ 25.2 billion (0.6 per cent of GDP) in 2025-26 and US$ 22.9 billion (0.6 per cent) in 2024-25; net invisibles of US$ 312.0 billion and US$ 264.0 billion; net FDI US$ 6.9 billion and US$ 1.0 billion; FPI outflow US$ 16.4 billion and inflow US$ 3.6 billion; reserves depleted by US$ 23.6 billion and US$ 5.0 billion; annual rows for goods, POL, services, primary income, secondary income, capital and financial account, NRI deposits, ECBs, reserve assets [increase (-), decrease (+)], errors and omissions; current account surplus of US$ 7.1 billion (0.7 per cent of GDP) in Q4 2025-26; computer services and other business services; primary income outgo mainly reflecting investment income; personal transfers mainly remittances by Indians employed overseas; footnote "Net invisibles receipts comprise services, primary income and secondary income accounts"

114-S3

Reserve Bank of India, press release 2026-2027/1015, "Developments in India's Balance of Payments during the First Quarter (April-June) of 2026-27" (1 September 2026), with Table 1. https://rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=63493

Used for: CAD of US$ 4.2 billion (0.5 per cent of GDP) in Q1 2026-27; goods, services, primary income and secondary income balances; personal transfers of US$ 42.9 billion against US$ 33.2 billion; net FDI US$ 6.1 billion; FPI outflow US$ 9.6 billion; NRI deposits US$ 2.8 billion; ECBs US$ 3.3 billion; reserves depleted by US$ 8.1 billion; capital and financial account US$ 2.6 billion; errors and omissions US$ 1.6 billion; the layout A, B, C and the label "Errors & Omissions (-) (A+B)"; data first released as preliminary

114-S4

Reserve Bank of India, press release 2026-2027/457, "Developments in India's Balance of Payments for the Month of April 2026" (15 June 2026). https://rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=62935

Used for: The RBI's monthly BoP statement for April 2026 and its date of release

114-S5

Reserve Bank of India, National Summary Data Page, published 16 October 2026. https://rbi.org.in/Scripts/BS_NSDPDisplay.aspx

Used for: Reserves on 9 October 2026 (US$ million): total 726,027.44; FCA 597,605.42; gold 105,094.23; SDRs 18,547.92; IMF reserve position 4,779.87. Also cross-checks Q1 2026-27 BoP totals.

114-S6

Government of India, Economic Survey 2025-26, Chapter 4 "External Sector: Playing the Long Game". https://www.indiabudget.gov.in/economicsurvey/doc/eschapter/echap04.pdf

Used for: BoP as "a consolidated record of India's transactions with the rest of the world"; remittance inflows of US$ 55.6 billion in FY11 and US$ 135.4 billion (provisional) in FY25

114-S7

Wikipedia, "Balance of payments" (citing IMF, Balance of Payments Manual, Chapter 2 "Overview of the Framework", para. 2.15; J. Orlin Grabbe, International Financial Markets, 3rd edition, 1996, pp. 430-452; John Sloman, Economics, 2004). https://en.wikipedia.org/wiki/Balance_of_payments

Used for: Title of the sixth edition of the IMF manual; the IMF's current, capital and financial accounts; the IMF capital account recording mainly capital transfers; double entry accounting and the balancing item, positive or negative; surplus and deficit as accumulation or decumulation of reserves

114-S8

Reserve Bank of India, press release, "RBI releases Report of the Committee on Fuller CAC" (1 September 2006). https://www.rbi.org.in/scripts/BS_PressReleaseDisplay.aspx?prid=15329

Used for: Committee on Fuller Capital Account Convertibility chaired by S.S. Tarapore, set up by the RBI in consultation with the Government of India; report submitted on 31 July 2006

114-S9

Reserve Bank of India, Foreign Exchange Department, Citizens' Charter (preface dated 10 December 2012). https://www.rbi.org.in/scripts/PublicationsView.aspx?id=12251

Used for: India accepted the move towards full current account convertibility in August 1994, under its Article VIII obligations as a member of the IMF; the Committee on Fuller Capital Account Convertibility constituted in 2006

114-S10

The 1991 Project, public repository, "Report of the Committee on Capital Account Convertibility (1997), chaired by S. S. Tarapore". https://drupal.the1991project.com/public-repository/committee-reports/report-committee-capital-account-convertibility-1997-chaired-s

Used for: Committee on Capital Account Convertibility set up by the RBI in 1997 under S.S. Tarapore; the 1990-91 balance-of-payments crisis

114-S11

Government of India, Budget 1991-92, speech of Manmohan Singh, Minister of Finance (24 July 1991). https://www.indiabudget.gov.in/doc/bspeech/bs199192.pdf

Used for: Foreign exchange reserves "in the range of Rs.2500 crores", which "would suffice to finance imports for a mere fortnight"; "large borrowings from the International Monetary Fund in July 1990 and January 1991"

114-S12

Wikipedia, "Capital account convertibility" (citing Vijay Joshi and I.M.D. Little, India's Economic Reforms, 1991-2001, Oxford University Press). https://en.wikipedia.org/wiki/Capital_account_convertibility

Used for: Meaning of capital account convertibility: converting local financial assets into foreign financial assets freely, at market-determined exchange rates

114-S13

IMF, Balance of Payments and International Investment Position Manual, sixth edition (BPM6), Chapter 11 "Primary Income Account". https://www.imf.org/external/pubs/ft/bop/2007/pdf/chap11.pdf

Used for: Primary income account shows primary income flows between residents and nonresidents; investment income as "the return for providing financial assets", made up of dividends, reinvested earnings and interest; title of the manual

114-S14

IMF, BPM6, Chapter 12 "Secondary Income Account". https://www.imf.org/external/pubs/ft/bop/2007/pdf/chap12.pdf

Used for: "The secondary income account shows current transfers between residents and nonresidents"; personal transfers as current transfers between resident and nonresident households, part of secondary income

114-S15

IMF, BPM6, Chapter 13 "Capital Account". https://www.imf.org/external/pubs/ft/bop/2007/pdf/chap13.pdf

Used for: Capital account shows capital transfers and the acquisition and disposal of nonproduced, nonfinancial assets; current and capital accounts show nonfinancial transactions, the financial account shows how net lending or borrowing is financed

114-S16

Reserve Bank of India, Report of the Committee on Capital Account Convertibility (1997), Introduction. https://www.rbi.org.in/Scripts/PublicationReportDetails.aspx?ID=170

Used for: Committee on Capital Account Convertibility appointed by the RBI on 28 February 1997, chaired by S.S. Tarapore; CAC as the freedom to convert local financial assets into foreign financial assets; current account convertibility established with India's acceptance of Article VIII obligations of the IMF in August 1994

114-S17

IMF, BPM6 complete manual, especially Appendix 5 and Chapter 12. https://data.imf.org/-/media/iData/External-Storage/Documents/73FBCD5B6CDE4D289C60B9B0CAA40622/en/2-bpm6.pdf

Used for: BoP economic residence; personal transfers versus compensation of short-term workers; current/capital/financial account distinctions

DAY 12 · SOURCES AND REFERENCES

115. Air masses and fronts

115-S1

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

Used for: Air with distinctive characteristics of temperature and humidity called an air mass; "a large body of air having little horizontal variation in temperature and moisture"; vast ocean surface or vast plains; source regions as the homogenous surfaces over which air masses form; classification by source region; the five source regions and the five types (mT, cT, mP, cP, cA); tropical air masses warm and polar cold; front as the boundary zone between two air masses; frontogenesis; the four types of fronts and how each is named; "If an air mass is fully lifted above the land surface, it is called the occluded front."; fronts in the middle latitudes with a steep gradient in temperature and pressure, abrupt changes in temperature, clouds and precipitation; warm air gliding over cold air and a sequence of clouds ahead of the warm front; the cold front pushing the warm air up, cumulus clouds along the cold front; the front occluded and the cyclone dissipating; extra-tropical cyclones forming along the polar front and moving west to east; the clear frontal system not present in tropical cyclones

115-S2

Encyclopaedia Britannica, "air mass". https://www.britannica.com/science/air-mass

Used for: Definition: a large body of air having nearly uniform conditions of temperature and humidity at any given level of altitude

115-S3

Encyclopaedia Britannica, "front" (meteorology), revised by John P. Rafferty. https://www.britannica.com/science/front-meteorology

Used for: Front as the interface or transition zone between two air masses of different density and temperature; the name given by Norwegian meteorologists during World War I after a battle line; cold air undercutting warm air; cold-front slope of about 1/50 to 1/100; warm front riding over cold air, moving more slowly, much gentler slope, about 320 km ahead of the surface position at 1.5 km; showers and thunderstorms at a cold front ending abruptly; more uniform and widespread precipitation at a warm front; stationary front with little or no horizontal motion of the colder air; occluded front; polar front poleward of about 30° latitude, thermal contrast supplying energy for cyclones

115-S4

NOAA, JetStream, "Air Masses" (updated 5 June 2023). https://www.noaa.gov/jetstream/synoptic/air-masses

Used for: Continental (c) dry and maritime (m) moist; arctic (A), polar (P) and tropical (T) by temperature; cA very cold and dry, cP dry and cold but less so than cA, cT hot and dry; Canada as a source of cP air for North America; air masses acquiring the properties of the surface below and changing as they move

115-S5

NOAA, JetStream, "How to read Surface Weather Maps" (updated 23 September 2025). https://www.noaa.gov/jetstream/wxmaps

Used for: Symbols of the cold, warm, stationary and occluded fronts; weather after the passage of cold and warm fronts; a cold or warm front that stops moving becoming a stationary front; occluded front formed when a cold front catches up with a warm front, signalling a mature, weakening system

115-S6

NOAA, JetStream, "Norwegian Cyclone Model" (updated 8 September 2023). https://www.noaa.gov/jetstream/synoptic/norwegian-cyclone-model

Used for: The life cycle: a front, often stationary, between warm and cold air; a wave and kink; the stationary front becoming a cold front and a warm front; the faster cold front overtaking the warm front to form an occluded front; the occlusion cutting off warm, moist air and the low weakening

115-S7

Met Office, "Weather fronts". https://weather.metoffice.gov.uk/learn-about/weather/atmosphere/weather-fronts

Used for: Cold air pushing under warm air and warm air rising over cold air; occlusion when a cold front catches up with a warm front, warm air lifted off the surface, characteristics of both warm and cold fronts; map symbols and colours

115-S8

MetLink (Royal Meteorological Society), "Air masses and fronts", reproduced with the permission of the Met Office. https://www.metlink.org/resource/air/

Used for: Nearly stagnant air in source regions; subtropical high pressure belts and polar regions as the main sources; modification by sea and land tracks and by heating or cooling from below; the air masses that reach Britain, their sources and weather; Vilhelm Bjerknes and Bergen; Jacob Bjerknes and the fronts in 1919; the passage of a mature depression (cirrus, cirrostratus up to 600 miles ahead, altostratus, nimbostratus, warm sector, cumulonimbus, pressure and temperature changes)

115-S9

India Meteorological Department, *MAUSAM*, Vol. 77, No. 3 (July 2026), pp. 745-762: Shashi Kant, Krishna Mishra, Naveen Kumar, R. K. Jenamani and Vivek Kumar, "Assessment of wet spell over Northwest India during the first week of March 2024". https://metnet.imd.gov.in/docs/mausamdocs/17732.pdf

Used for: Western disturbances originating in the Mediterranean; winter precipitation over the Western Himalayan Region and the plains of north-west India, mainly as snowfall in the higher reaches and as rain on the plains

115-S10

American Meteorological Society, *Glossary of Meteorology*, "airmass classification". https://glossary.ametsoc.org/wiki/Airmass_classification

Used for: The Bergeron classification as the most widely accepted; T, P and A; c and m; k and w for air colder or warmer than the surface beneath it, showing low-level stability and the weather; some authors adding equatorial (E)

115-S11

American Meteorological Society, *Glossary of Meteorology*, "source region". https://glossary.ametsoc.org/wiki/Source_region

Used for: Source region as an extensive region with essentially uniform surface conditions, placed in the general circulation so that air stays in contact with the surface long enough to acquire the properties of an air mass

115-S12

American Meteorological Society, *Glossary of Meteorology*, "polar-front theory". https://glossary.ametsoc.org/wiki/Polar-front_theory

Used for: A theory of the Scandinavian school of meteorologists; a polar front separating polar and tropical air masses, on which cyclonic disturbances form and move through a life cycle; reference to J. Bjerknes and H. Solberg, 1922

115-S13

Wikipedia, "Air mass" (citing the AMS *Glossary of Meteorology*, entries "Airmass classification", "Arctic air", "Superior air", "Trade air" and "Tropical air"). https://en.wikipedia.org/wiki/Air_mass

Used for: cA over ice and snow-covered ground, northern Siberia in winter, shallow in summer and modifying quickly as it moves equatorward; cT with the Sahara as the main source, also the Arabian Peninsula and central arid Australia; mT from the Caribbean Sea and the southern Gulf of Mexico

115-S14

UCAR Center for Science Education (University Corporation for Atmospheric Research), "Weather Fronts". https://scied.ucar.edu/learning-zone/how-weather-works/weather-fronts

Used for: Cold fronts moving up to twice as fast as warm fronts; cumulus or cumulonimbus clouds at a cold front; warm fronts moving more slowly; stationary front: often cloudy, rain or snow often falling, staying put for days, breaking apart or becoming a cold or warm front; occluded front: precipitation from cumulonimbus or nimbostratus clouds, clearer and drier skies after it passes; map symbols

115-S15

Robert Marc Friedman and David M. Schultz, "Bergeron, Tor Harold Percival", *Complete Dictionary of Scientific Biography*, on Encyclopedia.com. https://www.encyclopedia.com/science/dictionaries-thesauruses-pictures-and-press-releases/bergeron-tor-harold-percival

Used for: Bergeron credited with discovering the occlusion process; by 1922 he had convinced Jacob Bjerknes of its importance to the evolution of extratropical cyclones

DAY 12 · SOURCES AND REFERENCES

116. Continents and oceans: major physical features of the world

116-S1

Wikipedia, "Continent" (its area table credits Encyclopaedia Britannica). https://en.wikipedia.org/wiki/Continent

Used for: Areas of the seven continents (Asia 44,614,000; Africa 30,365,000; North America 24,230,000; South America 17,814,000; Antarctica 14,200,000; Europe 10,000,000; Oceania/Australia 8,510,926 km^2) and their shares of world land; total land area of 149,733,926 km^2; Africa and Asia joined by the Isthmus of Suez, the Nile as the earlier boundary; North and South America joined by the Isthmus of Panama; the Bering Land Bridge in the ice ages, on the shelf in and around the Bering Sea

116-S2

Encyclopaedia Britannica, "continent". https://www.britannica.com/science/continent

Used for: Order of the continents by size (Asia, Africa, North America, South America, Antarctica, Europe, Australia); Europe and Asia sometimes considered a single continent, Eurasia

116-S3

NOAA, National Ocean Service, "How many oceans are there?" (page updated 23 September 2026). https://oceanservice.noaa.gov/facts/howmanyoceans.html

Used for: The ocean covering 71 percent of the earth; four historically named oceans; the Southern Ocean as the newest named ocean, recognised by most countries including the United States; the US Board on Geographic Names definition, from the coast of Antarctica to 60° S; boundaries proposed to the IHO in 2000 and not yet ratified

116-S4

Wikipedia, "Ocean" (its size table credits the Encyclopedia of Earth, the IHO, Tomczak 2005, Encyclopaedia Britannica and the ITU; Challenger Deep from Greenaway and others, "Revised depth of the Challenger Deep"). https://en.wikipedia.org/wiki/Ocean

Used for: Areas and shares of the five oceans and their order by size; about 71 per cent of the surface and about 361 million km^2; the US Board on Geographic Names recognising the Southern Ocean since 1999; every ocean basin having a mid-ocean ridge; Challenger Deep about 10,935 m

116-S5

Wikipedia, "Southern Ocean" (citing W. Wong, "National Geographic adds 5th ocean to world map", ABC News, 10 June 2021; IHO, *Limits of Oceans and Seas*, 3rd edition, 1953; IHO draft 4th edition, 2002). https://en.wikipedia.org/wiki/Southern_Ocean

Used for: National Geographic Society recognition in June 2021; the Southern Ocean omitted from the IHO's 1953 edition; the 2000 definition (south of 60° S) not formally adopted; deepest point 7,434 m (Factorian Deep, 2019) and the other figure of 7,236 m at the southern end of the South Sandwich Trench; the second smallest ocean

116-S6

Wikipedia, "Five Deeps Expedition" (citing the expedition's press releases; The Guardian, 22 December 2018; BBC News, 9 September 2019). https://en.wikipedia.org/wiki/Five_Deeps_Expedition

Used for: The deepest point of each ocean: Challenger Deep, Mariana Trench (10,928 m dive, 2019); Brownson Deep, Puerto Rico Trench (8,376 m); southern end of the South Sandwich Trench; Sunda (Java) Trench; Molloy Deep (5,550 m)

116-S7

Wikipedia, "Seven Summits" (citing 8000ers.com for Mont Blanc and the Australian Universities' Expedition, 1976, for Puncak Jaya). https://en.wikipedia.org/wiki/Seven_Summits

Used for: Highest peak of each continent with height and range: Everest 8,849 m (Himalayas), Aconcagua (Andes), Denali (Alaska Range), Kilimanjaro 5,895 m, Elbrus 5,642 m (Caucasus), Vinson 4,892 m (Sentinel Range), Puncak Jaya 4,884 m (Sudirman Range); Kosciuszko 2,228 m (Great Dividing Range) as the highest on the Australian mainland; Mont Blanc 4,810 m (Alps); Elbrus's European status depending on the Europe-Asia boundary

116-S8

Wikipedia, "Extreme points of Earth". https://en.wikipedia.org/wiki/Extreme_points_of_Earth

Used for: Everest 8,848.86 m, set in 2020 by Nepali and Chinese authorities; Challenger Deep 11,034 m as another figure; the Dead Sea shore as the lowest point on dry land; the Denman Glacier canyon as the lowest point on land not covered by liquid water

116-S9

Wikipedia, "List of places on land with elevations below sea level" (citing J. Amos, BBC, 12 December 2019, and Morlighem and others, *Nature Geoscience* 13, 2019, for the Denman Glacier; USGS, "Highest and Lowest Elevations"). https://en.wikipedia.org/wiki/List_of_places_on_land_with_elevations_below_sea_level

Used for: Lowest point of each continent: Dead Sea 430 m, Lake Assal 153 m, Badwater Basin 86 m, Laguna del Carbon 105 m, Caspian Sea shore 28 m, Lake Eyre 16 m below sea level; Denman Glacier canyon bedrock about 3,500 m below sea level

116-S10

Wikipedia, "List of river systems by length" (citing Encyclopaedia Britannica, "Nile River" and "Amazon River", 2020; Liu and others, "Pinpointing the sources and measuring the lengths of the principal rivers of the world", *International Journal of Digital Earth* 2(1), 2009; Murray Darling Basin Authority, 2015). https://en.wikipedia.org/wiki/List_of_river_systems_by_length

Used for: Lengths of the Nile (6,650 km), Amazon (6,400 km), Yangtze (6,300 km), Mississippi-Missouri system (6,275 km), Volga (3,645 km), Murray-Darling system (3,672 km); the Nile and Amazon dispute, the 2007 and 2008 claims, the 2009 study and Britannica's 2020 view, the channel south of Marajo Island; the Amazon's average discharge of 230,000 cubic metres per second, the largest in the list

116-S11

Wikipedia, "List of deserts by area" (citing the CIA World Factbook and Geoscience Australia, "Areas of Australian and territory deserts"). https://en.wikipedia.org/wiki/List_of_deserts_by_area

Used for: Areas and types of deserts: Antarctic 14.2, Arctic 13.9, Sahara 9.2, Arabian 2.33, Great Australian 1.371, Gobi 1.295, Patagonian 0.673, Great Basin 0.492 million km^2; Great Victoria Desert as a part of the Great Australian Desert (348,750 km^2); the Arctic Desert in northern North America and northern Europe

116-S12

Wikipedia, "Land and water hemispheres" (citing S. W. Boggs, "This Hemisphere", *Journal of Geography* 44(9), 1945; A. Berget, 1913; J.-G. Affholder, 2002). https://en.wikipedia.org/wiki/Land_and_water_hemispheres

Used for: Definition of the two hemispheres; land hemisphere centred in Nantes (1945), 53 per cent water and 47 per cent land, 80.1 per cent of the world's land; water hemisphere near the Bounty Islands, about 89 per cent water, 6 per cent dry land and 5 per cent polar ice; other centres of 1913 and 2002

116-S13

Wikipedia, "Lake". https://en.wikipedia.org/wiki/Lake

Used for: The Caspian Sea as the largest lake by surface area (371,000 km^2), regarded by geographers as a huge inland salt lake; Lake Baikal as the deepest lake (1,637 m) and the largest freshwater lake by volume (23,600 km^3)

116-S14

Wikipedia, "Plateau" (citing Huggett, *Fundamentals of Geomorphology*, 2011, and Leong, *Certificate Physics and Human Geography*, 1995, p. 17). https://en.wikipedia.org/wiki/Plateau

Used for: Intermontane, lava, continental and piedmont plateaus with their examples; the Tibetan Plateau as the largest and highest (about 2,500,000 km^2, about 5,000 m); the Altiplano in Bolivia and Peru; the Deccan and Columbia plateaus as lava plateaus; the Antarctic Plateau; the Western Plateau of Australia as an ancient craton, 305 to 460 m; the Ethiopian Highlands as the highest African plateau

116-S15

NCERT, *The Earth Our Habitat* (Class VI), Chapter 5, "Major Domains of the Earth", text as hosted by IIT Kanpur's SATHEE portal: "the greater part of the land mass lies in the Northern Hemisphere"; "Australia is the smallest continent that lies entirely in the Southern Hemisphere"; "Antarctica, completely in the Southern Hemisphere"; "Asia is separated from Europe by the Ural mountains on the west". https://sathee.iitk.ac.in/ncert-books/class-06/social-science/the-earth-our-habitat/chapter-05-major-domains-of-the-earth

Used for: The greater part of the earth's landmass in the Northern Hemisphere; Australia and Antarctica lying entirely in the Southern Hemisphere; the Urals separating Europe and Asia; Europe and Asia together known as Eurasia

116-S16

United States Geological Survey, news release "New elevation for nation's highest peak", 2 September 2015. https://www.usgs.gov/news/national-news-release/new-elevation-nations-highest-peak

Used for: Denali's elevation of 20,310 feet (6,190 m) from the mid-June 2015 summit survey

116-S17

Encyclopaedia Britannica, "Denali". https://www.britannica.com/place/Denali

Used for: Denali in the Alaska Range, south-central Alaska; the highest peak in North America

116-S18

Encyclopaedia Britannica, "Aconcagua". https://www.britannica.com/place/Mount-Aconcagua

Used for: Aconcagua 6,959 m (22,831 feet, the figure of Argentina's Military Geographical Institute), in the Andes of Argentina, on the Chilean border; the highest peak in the Western Hemisphere

116-S19

Encyclopaedia Britannica, "Vinson Massif". https://www.britannica.com/place/Vinson-Massif

Used for: Vinson 4,892 m, in the Sentinel Range of the Ellsworth Mountains; the highest mountain on the continent of Antarctica

116-S20

Encyclopaedia Britannica, "Mount Kosciuszko". https://www.britannica.com/place/Mount-Kosciuszko

Used for: Kosciuszko 2,228 m, in New South Wales; Australia's highest peak

116-S21

Encyclopaedia Britannica, "Arctic Ocean". https://www.britannica.com/place/Arctic-Ocean

Used for: The Arctic as the smallest of the world's oceans

116-S22

Encyclopaedia Britannica, "Southern Ocean". https://www.britannica.com/place/Southern-Ocean

Used for: The Southern (Antarctic) Ocean as the waters surrounding Antarctica south of 60° S

116-S23

Encyclopaedia Britannica, "Puerto Rico Trench". https://www.britannica.com/place/Puerto-Rico-Trench

Used for: The deepest point of the Atlantic Ocean in the Puerto Rico Trench, named the Milwaukee Depth, 8,380 m

116-S24

Encyclopaedia Britannica, "Antarctica". https://www.britannica.com/place/Antarctica

Used for: Antarctica's area of about 14.2 million km^2

116-S25

Encyclopaedia Britannica, "Europe". https://www.britannica.com/place/Europe

Used for: Europe as the second smallest continent

116-S26

Encyclopaedia Britannica, "Greenland". https://www.britannica.com/place/Greenland

Used for: Greenland as the world's largest island, in the North Atlantic Ocean

116-S27

Encyclopaedia Britannica, "Mid-Atlantic Ridge". https://www.britannica.com/place/Mid-Atlantic-Ridge

Used for: The ridge along the north-south axis of the Atlantic, from the Arctic Ocean to near the southern tip of Africa, about 16,000 km long

116-S28

Encyclopaedia Britannica, "Bering Strait". https://www.britannica.com/place/Bering-Strait

Used for: The strait separating Asia and North America at their closest point, about 85 km wide, linking the Arctic Ocean with the Bering Sea; a land bridge in the Ice Age

116-S29

Encyclopaedia Britannica, "India: The Deccan". https://www.britannica.com/place/India/The-Deccan

Used for: The Deccan lava plateau, occupying much of the north-western portion of the Indian peninsula

116-S30

Encyclopaedia Britannica, "Deccan Traps". https://www.britannica.com/science/Deccan-Traps

Used for: The Deccan Traps as a large igneous province of lava flows in west-central India

116-S31

Encyclopaedia Britannica, "Atlas Mountains". https://www.britannica.com/place/Atlas-Mountains

Used for: The Atlas Mountains as a series of mountain ranges in north-western Africa (Morocco, Algeria, Tunisia)

116-S32

British Antarctic Survey, Antarctica's Gamburtsev Province Project. https://www.bas.ac.uk/project/agap/

Used for: Known subglacial Gamburtsev Mountains beneath the East Antarctic ice sheet; corrects the "no known mountains" claim

116-S33

United States Government Publishing Office, "Denali National Park and Preserve, Alaska". https://www.govinfo.gov/features/denali-national-park

Used for: 2025 US federal restoration of Mount McKinley name; same 6,190 m peak

DAY 12 · SOURCES AND REFERENCES

117. Solar energy: National Solar Mission and the International Solar Alliance

117-S1

Ministry of New and Renewable Energy (MNRE), "Solar Overview". https://mnre.gov.in/en/solar-overview/

Used for: National Solar Mission launched on 11 January 2010; solar energy's central place in the NAPCC; objective of making India a global leader in solar energy; solar installed capacity around 70.10 GW as on 30 June 2023; NDC target of about 50 per cent and 45 per cent emission intensity cut; list of schemes (Solar Park Scheme, Grid Connected Solar Rooftop Scheme and others)

117-S2

Cabinet decision on the PM India website, "Revision of cumulative targets under National Solar Mission from 20,000 MW by 2021-22 to 1,00,000 MW", 17 June 2015. https://www.pmindia.gov.in/?p=65101

Used for: Original target of 20,000 MW by 2021-22; fivefold rise to 1,00,000 MW by 2022; 40 GW rooftop and 60 GW large and medium scale grid-connected projects; investment of about ₹6,00,000 crore; the release's statement that the Mission was launched in 2009

117-S3

Government of India, Prime Minister's Council on Climate Change, "National Action Plan on Climate Change" (2008; copy hosted by Climate Policy Radar). https://cdn.climatepolicyradar.org/navigator/IND/2008/national-action-plan-on-climate-change_e519421f95914b49614d76d4d62f2456.pdf

Used for: The eight National Missions and their names; the Solar Mission's aim to "significantly increase the share of solar energy in the total energy mix"; at least 1,000 MW of concentrating solar power and 1,000 MW a year of local PV production by 2017

117-S4

Wikipedia, "National Solar Mission" (citing PIB, "Use of Solar and Wind Energy", August 2013, for Phase 1 and the original Phase 3 target; PIB, "MNRE: Year End Review", December 2015, for the revision; Central Electricity Authority, "Installed Capacity Reports", for 100 GW in January 2025). https://en.wikipedia.org/wiki/National_Solar_Mission

Used for: Launch by MNRE on 11 January 2010 as the JNNSM; the three phases and their years; Phase 1 aim of 1,100 MW grid-connected by 2013; 20 GW as the original Phase 3 target; revision to 100 GW; 100 GW milestone independently supported by S27

117-S5

Press Information Bureau (PIB), "National Statement by Prime Minister Shri Narendra Modi at COP26 Summit in Glasgow", 1 November 2021. https://www.pib.gov.in/PressReleasePage.aspx?PRID=1768712

Used for: The five commitments: 500 GW non-fossil capacity by 2030; 50 per cent of energy requirements from renewable energy by 2030; one billion tonnes; net zero by 2070

117-S6

Government of India, "India's Updated First Nationally Determined Contribution Under Paris Agreement (2021-2030)", submitted to the UNFCCC in August 2022. https://unfccc.int/sites/default/files/NDC/2022-08/India%20Updated%20First%20Nationally%20Determined%20Contrib.pdf

Used for: "About 50 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030"; emissions intensity of GDP cut by 45 per cent from the 2005 level by 2030

117-S7

PIB (Cabinet), "Cabinet approves India's Nationally Determined Contribution (2031-2035) to be communicated to the United Nations Framework Convention on Climate Change", 25 March 2026. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2245209&reg=3&lang=1

Used for: 52.57 per cent non-fossil capacity in February 2026, target met five years ahead of the timeline; first NDC (2015) targets of 40 per cent and their achievement 9 and 11 years ahead

117-S8

MNRE, "Physical Progress" (page updated 8 October 2026; seen on 16 October 2026). https://mnre.gov.in/en/physical-progress/

Used for: Cumulative capacity as on 30 September 2026: solar 171,051.46 MW, of which ground-mounted 125.65 GW, grid-connected rooftop 33.41 GW, hybrid (solar component) 5.36 GW, off-grid 6.63 GW; renewable energy with large hydro 299,246.53 MW; nuclear 8,780.00 MW; total non-fossil 308,026.53 MW

117-S9

MNRE, "Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan (PM-KUSUM)" (page updated 7 November 2025). https://mnre.gov.in/en/pradhan-mantri-kisan-urja-suraksha-evam-utthaan-mahabhiyaan-pm-kusum/

Used for: Administrative approval of 8 March 2019; Components A (10,000 MW), B (14 lakh standalone pumps) and C (35 lakh grid-connected pumps, feeder-level solarisation); 34,800 MW by March 2026; central support of ₹34,422 crore; historical period stated on scheme page: till 31 March 2026; later orders extend eligible project completion (see S28)

117-S10

PIB (Cabinet), "Cabinet approves PM-Surya Ghar: Muft Bijli Yojana for installing rooftop solar in One Crore households", 29 February 2024. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2010130

Used for: Launch by the Prime Minister on 13 February 2024; outlay of ₹75,021 crore; one crore households; up to 300 units free a month; CFA of 60 per cent up to 2 kW and 40 per cent for 2 to 3 kW, capped at 3 kW; ₹30,000, ₹60,000 and ₹78,000; model solar village in each district

117-S11

MNRE, "Production Linked Incentive (PLI) Scheme: National Programme on High Efficiency Solar PV Modules" (page updated 8 August 2023). https://mnre.gov.in/en/production-linked-incentive-pli/

Used for: Outlay of ₹24,000 crore; Tranche I (₹4,500 crore, approved 7 April 2021, 8,737 MW to three bidders); Tranche II (₹19,500 crore, approved 21 September 2022, 39,600 MW to 11 bidders); incentive for five years after commissioning

117-S12

MNRE, "Green Energy Corridor: Overview" (page updated 21 August 2023) and the "Green Energy Corridors" programme page. https://mnre.gov.in/en/green-energy-corridor-0verview/ ; https://mnre.gov.in/en/green-energy-corridors/

Used for: The 2012 PGCIL study and its report of September 2012; dedicated transmission for large solar and wind plants; work begun in 2015; Intra-State GEC Phase I and Phase II

117-S13

MNRE backgrounder released by PIB, "India Shines Bright! A New Era in Solar Energy: Progress Driven by the International Solar Alliance", 6 November 2024. https://static.pib.gov.in/WriteReadData/specificdocs/documents/2024/nov/doc2024117431401.pdf

Used for: ISA launched in 2015 by India and France at COP21 in Paris; Founding Conference on 11 March 2018; 120 member and signatory countries, 102 ratified; seventh Assembly (3 to 6 November 2024), India President and France Co-President for 2024 to 2026; Ashish Khanna selected as third Director General (see S29 for timing); 'Towards 1000' targets; nine programmes in three areas; STAR-C; Global Solar Facility, viability gap funding, SolarX; third World Solar Report and its four parts; 500 GW and 50 per cent as Panchamrit targets; 90.76 GW of solar in September 2024

117-S14

President of India, address at the "Inaugural Session of the Eighth Session of International Solar Alliance Assembly", New Delhi, 28 October 2025 (PIB document). https://static.pib.gov.in/WriteReadData/specificdocs/documents/2025/oct/doc20251028678801.pdf

Used for: India as the current President of the ISA Assembly; the eighth session in New Delhi; launch in 2015 and Founding Conference in New Delhi in 2018; 500 GW of non-fossil capacity by 2030

117-S15

Wikipedia, "International Solar Alliance" (citing The Economic Times, 30 November 2015, for the launch; The Economic Times, 2016, for the opening for signature at Marrakesh; the ISA's membership list, retrieved 8 October 2025). https://en.wikipedia.org/wiki/International_Solar_Alliance

Used for: Formation on 30 November 2015 at Paris; foundation stone of the headquarters laid by Modi and Hollande in January 2016 at NISE, Gwal Pahari, Gurugram; Framework Agreement opened for signature at Marrakesh in November 2016 at COP22; opening date and place independently supported by S30

117-S16

Netherlands Treaty Database, "Amendment to the Framework Agreement of the International Solar Alliance (ISA)", entry showing the parent treaty. https://treatydatabase.overheid.nl/en/Treaty/Details/013695

Used for: Framework Agreement on the establishment of the ISA concluded at Marrakesh on 15 November 2016; the Amendment concluded at New Delhi on 3 October 2018, in force from 8 January 2021

117-S17

International Solar Alliance, membership country list (seen on 16 October 2026). https://old.isa.int/membership/membership_country_list?type=mcl

Used for: Definition of member countries as those that have signed and ratified the Framework Agreement

117-S18

Indian Infrastructure, "ISA becomes first treaty-based international organisation based in India", 4 December 2017. https://indianinfrastructure.com/2017/12/04/isa-becomes-first-treaty-based-international-organisation-based-in-india/

Used for: First treaty-based international organisation based in India; launch by India and France at COP21

117-S19

Wikipedia, "Solar power in India" (its notes 14 to 17 for the missed rooftop target and the date of 100 GW). https://en.wikipedia.org/wiki/Solar_power_in_India

Used for: Target of 2022 missed mainly because of rooftop solar; 100 GW milestone independently supported by S27; solar parks make land available to developers

117-S20

United Nations Treaty Collection, registration record I-54949, "Multilateral Framework Agreement on the establishment of the International Solar Alliance (ISA)". https://treaties.un.org/doc/Publication/UNTS/No%20Volume/54949/Part/I-54949-08000002804ed824.pdf

Used for: Concluded at Marrakesh on 15 November 2016; entry into force on 6 December 2017; registered with the UN Secretariat by India on 9 February 2018

117-S21

Tractatenblad van het Koninkrijk der Nederlanden 2020, no. 6 (Dutch official treaty series), text of the Amendment to the ISA Framework Agreement. https://zoek.officielebekendmakingen.nl/trb-2020-6.html

Used for: Amendment adopted on 3 October 2018 at the first ISA Assembly in New Delhi; amended Article VII: membership open to States which are members of the United Nations; the ISA a treaty-based international intergovernmental organisation from 6 December 2017

117-S22

PIB (MNRE), release of 14 July 2025 on India reaching 50 per cent non-fossil installed capacity. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2144627

Used for: Non-fossil sources 242.78 GW, 50.08 per cent of 484.82 GW, as on 30 June 2025; five years ahead of the NDC target

117-S23

Government of the United Kingdom, press release "UK and India launch new grids initiative to deliver clean power to the world", 2 November 2021. https://www.gov.uk/government/news/uk-and-india-launch-new-grids-initiative-to-deliver-clean-power-to-the-world

Used for: GGI-OSOWOG jointly launched by Boris Johnson and Narendra Modi at the COP26 World Leaders Summit, Glasgow, 2 November 2021

117-S24

Embassy of India, Manila (MEA), "English translation of Prime Minister's remarks at the session on Accelerating Clean Technology Innovation and Deployment at COP26 Summit in Glasgow". https://eoimanila.gov.in/speeches-details/english-translation-of-prime-ministers-remarks-at-the-session-on-accelerating-clean-technology-innovation-and-deployment-at-cop26-summit-in-glasgow

Used for: OSOWOG: clean energy from a worldwide grid available everywhere at all times; synergy with the UK's Green Grids Initiative; thanks to the ISA

117-S25

MNRE, "GEC Phase-II" (page updated 14 August 2023). https://mnre.gov.in/en/gec-phase-ii/

Used for: Integration of about 20 GW of renewable capacity; seven States; cost ₹12,031.33 crore; 33 per cent central financial assistance from MNRE

117-S26

MNRE, PM Surya Ghar guidelines (2024), printed pages 6–7. https://cdnbbsr.s3waas.gov.in/s3716e1b8c6cd17b771da77391355749f3/uploads/2024/04/2024041621270343 09.pdf

Used for: Benchmark-cost CFA; individual-household 3 kW limit; special-category rates; separate GHS/RWA provisions

117-S27

MNRE/PIB, 7 February 2025. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2100603

Used for: Solar installed capacity of 100.33 GW as on 31 January 2025; observation date, not exact crossing-day proof

117-S28

MNRE, PM-KUSUM Office Memoranda, F.No.32/645/2017-SPV Division: 28 September 2026 and 25 May 2026 clarification (with 28 March order). https://apipmk.mnre.gov.in/api/Master_Document_Landing/SliderImage?docid=207&docspid=41 ; https://apipmk.mnre.gov.in/api/Master_Document_Landing/SliderImage?docid=203&docspid=41

Used for: Conditional completion deadline 31 March 2027 for PPA/NTP on or before 31 December 2025; financial closure for Components A/C by 30 November 2026; clarification covers all components subject to project conditions

117-S29

MNRE/PIB, 4 November 2024 and 12 March 2026. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2070660 ; https://www.pib.gov.in/PressReleasePage.aspx?PRID=2238741

Used for: Khanna selected as DG-designate on 4 November 2024; identified as serving DG in March 2026; historical programme structure should not be treated as current

117-S30

MNRE/PIB, 25 September 2018. https://www.pib.gov.in/PressReleasePage.aspx?PRID=1547184

Used for: ISA Framework Agreement opened for signature on 15 November 2016 at Marrakesh; treaty-based status from 6 December 2017; founding conference on 11 March 2018

117-S31

MNRE, state-wise installed renewable power capacity as on 30 September 2026. https://cdnbbsr.s3waas.gov.in/s3716e1b8c6cd17b771da77391355749f3/uploads/2026/10/20261008207003538.pdf

Used for: Permanent dated table supporting solar total and four subcategories, renewable-energy total including large hydro and Rajasthan/AP solar rankings; S8 supports nuclear and total non-fossil figures

DAY 12 · SOURCES AND REFERENCES

118. Syllogisms: 'possibility' and 'either-or' cases

118-S1

Wikipedia, "Square of opposition" (citing Parry and Hacker, *Aristotelian Logic*, SUNY Press, 1990, p. 158; Cohen and Nagel, *Introduction to Logic*, 2nd ed., Hackett, 1993, p. 55; and Parsons, "The Traditional Square of Opposition", *Stanford Encyclopedia of Philosophy*). https://en.wikipedia.org/wiki/Square_of_opposition

Used for: "All" with "Some ... not" and "No" with "Some" are contradictories (one true, the other false); "All" and "No" can both be false; "Some" and "Some ... not" can both be true but not both false; these relations rest on the assumption that the groups named have members

118-S2

Open Exam Prep, SBI PO study guide, "5.1 Syllogisms (Only a few, Some not and Reverse Syllogism)". https://open-exam-prep.com/study-guides/sbi-po/analytical-reasoning/syllogisms-venn

Used for: A possibility conclusion is valid when the relation is not fixed; the guide's rule that a possibility of something already definite is marked false; the three conditions for an either-or answer and the two pairs; "All" with "No" is not a pair; "Only a few A are B" means some A are B and some A are not B, with its possibilities; "Only A is B" means all B are A, and the guide's extra rule on it; "at least" read as "some"

118-S3

SATHEE portal of IIT Kanpur, IBPS PO study material, "Syllogism: Common Mistakes to Avoid". https://ibps.iitk.ac.in/sathee-bank-exam/bank-exams/ibps-po/study-materials/memory-based-questions/syllogism/common-mistakes

Used for: Possible means "can be true in some arrangement", definite means "must be true in all arrangements"; "Some A are B" allows "all A are B"; a complementary pair: one true, the other false; the either-or example from "All A are B; Some B are C" with "Some A are C" and "No A are C"; "Some ... not" cannot be turned round

118-S4

Cracku, "7 Tips and Tricks on how to solve syllogism for SBI Bank PO and Clerk Exams". https://cracku.in/blog/?p=1801

Used for: A complementary pair is mutually exclusive and exhaustive; the either-or answer arises only from such a pair; the "All" with "Some ... not" example; a possibility is tested against all the Venn diagrams and holds if one of them supports it

118-S5

SATHEE portal of IIT Kanpur, railway exams quick revision, "Reasoning: Syllogism Rules". https://rrb.iitk.ac.in/sathee-railway-exams/student-corner/quick-revision/reasoning/reasoning-syllogism-rules

Used for: "Some" with "No" gives an either-or choice; the pair must have one positive and one negative statement with the same subject and predicate; a "can be" conclusion is wrong where a definite conclusion exists

118-S6

Physics Wallah, "Syllogism Reasoning Questions" (banking exams). https://www.pw.live/banking/exams/syllogism-reasoning-questions

Used for: Either-or pairs "All" with "Some not" and "Some" with "No"; a definite conclusion must be true in all scenarios, while a possible one could be true but is not guaranteed

118-S7

PracticeMock, "Syllogism for IBPS RRB PO/Clerk Exam". https://www.practicemock.com/blog/syllogism-ibps-rrb-po-clerk/

Used for: Exam wording of possibility conclusions ("... is a possibility", "can be"); worked answers in which "All X being Y is a possibility" is accepted when one figure shows it

118-S8

AffairsCloud, "To Solve Syllogism Questions with the help of Rules". https://affairscloud.com/to-solve-syllogism-questions-with-the-help-of-rules

Used for: A coaching rule that lists "Some" with "Some ... not" (I, O) among complementary pairs, alongside "All" with "Some ... not" and "Some" with "No"

DAY 12 · SOURCES AND REFERENCES

119. Data interpretation: reading tables and calculating quickly

119-S1

Wikipedia, "Relative change" (citing the International Electrotechnical Vocabulary, IEC 60050, entry 112-03-07, for the definition; Bennett and Briggs, *Using and Understanding Mathematics*, 2005, p. 141, for percentage points). https://en.wikipedia.org/wiki/Relative_change

Used for: A relative change is found by dividing by a reference or starting value; it is not defined when the reference value is zero; percentage change expresses the change between the old and the new value; a change in a variable that is itself a percentage is better stated in percentage points (3% to 4% is 1 percentage point); summing percentage changes is only an approximation; a change of +50% followed by -50% gives -25%

119-S2

Vedantu, "Textual and Tabular Presentation of Data" (study page for Class 11 Statistics). https://www.vedantu.com/commerce/textual-and-tabular-presentation-of-data

Used for: The parts of a table: table number, title, headnote (with the unit), stubs as row headings, captions as column headings, body, footnotes, and the source of secondary data; data laid out in rows and columns so that the reader can get what he wants at a single glance

119-S3

Wikipedia, "Indian numbering system" (citing "Knowing our Numbers", National Repository of Open Educational Resources, Department of School Education and Literacy, for lakh and crore; Unicode LDML Part 3: Numbers, 2018, for digit grouping). https://en.wikipedia.org/wiki/Indian_numbering_system

Used for: One lakh is one hundred thousand (10 to the power 5) and one crore is ten million (10 to the power 7), written 1,00,000 and 1,00,00,000; the first three digits to the left of the decimal point form one group, after which the Indian system groups by two digits

119-S4

Wikipedia, "Significant figures" (citing *Chemistry in the Community*, Kendall-Hunt, 1988, for leading zeros; Engelbrecht and others, "Rounding Decimal Numbers to a Designated Precision", U.S. Department of Education, 1990, for rounding). https://en.wikipedia.org/wiki/Significant_figures

Used for: Zeros to the left of the first non-zero digit are not significant; rounding to n significant figures keeps the first n significant digits (1254 to two significant figures is 1300); intermediate results in a calculation of several stages should not be rounded

DAY 12 · SOURCES AND REFERENCES

Current affairs: Ponduru Khadi of Srikakulam gets the GI tag (December 2025)

120-S1

Geographical Indications Registry, public search, application details for application No. 1049 (Ponduru Khadi). https://search.ipindia.gov.in/GIRPublicSearch/Application/Details/1049

Used for: Application number; class 23 and goods (textiles); applicant (Khadi and Village Industries Commission, Mumbai address); date of filing 31 January 2023; Journal No. 203; journal copy dated 4 July 2025; Certificate of Registration dated 5 November 2025; status registered

120-S2

Geographical Indications Registry (Office of the Controller General of Patents, Designs and Trade Marks), "Registration Details of Geographical Indications", list by financial year from April 2004 to March 2026. https://ipindia.gov.in/storage/uploads/docs-operator/aa9ef4c8-ae0e-4717-9181-52b6a9479b82.pdf

Used for: The 22 Andhra Pradesh entries with serial number, application number, goods and year; Ponduru Khadi at serial number 700 under 2025-26; the two shared GIs; Darjeeling tea as entries 1 and 2 in 2004-05; entries numbered up to 822

120-S3

Geographical Indications Registry, public search, application details for application No. 524 (Allagadda Stone Carving). https://search.ipindia.gov.in/GIRPublicSearch/Application/Details/524

Used for: Applicant (Andhra Pradesh Handicrafts Development Corporation Limited); filing 6 March 2015; certificate dated 28 March 2018

120-S4

Intellectual Property India, "The Registration Process" (Geographical Indications). https://ipindia.gov.in/GI/the_registration_process_gi

Used for: Who can apply; Part A and Part B of the register; validity of ten years and renewal on a fee; the Registry at Chennai (Intellectual Property Office Building, Guindy); the Act passed in December 1999

120-S5

United News of India, "AP: Ponduru Khadi from Srikakulam receives prestigious GI tag", 13 December 2025. https://www.uniindia.com/ap-ponduru-khadi-from-srikakulam-receives-prestigious-gi-tag/business-economy/news/3672760.html

Used for: The announcement by Union Civil Aviation Minister Kinjarapu Ram Mohan Naidu on Saturday, 13 December 2025; thanks to the KVIC; "was cherished by Mahatma Gandhi"

120-S6

Rajendra Mohan Gonela and Sudhir Ravindran, "Ponduru Khadi: A Case for Geographical Indication", Altacit Global. https://www.altacit.com/publication/ponduru-khadi-a-case-for-geographical-indication

Used for: Punasa cotton and hill cotton, white and red, short staple, grown without pesticides or fertilisers; cleaning with the jawbone of the valuga fish; single-spindle charkha with 24 spokes; up to 120 counts in white and 60 in red; Gandhi's visit and inspection of the handlooms; the fall in numbers of spinners and weavers

120-S7

MAP Academy, Encyclopedia of Art, "Patnulu Khadi" (https://mapacademy.io/?p=3250 , served at https://imp-art.org/articles/patnulu-khadi/), with its bibliography (Sahapedia 2020; Deccan Chronicle 2021; Open Magazine 2019; and others)
Khadi and Village Industries Commission, Institution Profile: AFKKS, field “Aided by: KVIC”: official institution profile.

Used for: Konda patti and yerra patti cotton; jawbone of the catfish; single-spindle Gandhi charkha, not the Ambar charkha; counts 44 to 100; the AFKKS established in 1949; KVIC institutional aid; numbers of spinners and weavers; Gandhi's visit in the 1920s and Devdas Gandhi

120-S8

Lok Sabha (Seventeenth), speech of Bellana Chandra Sekhar (Vizianagaram), "Regarding issuing a Geographical Indication tag for Ponduru Khadi", Digital Library of Parliament. https://eparlib.nic.in/bitstream/123456789/1047380/1/8853.pdf

Used for: The demand for a GI tag; Padmasali and Devanga weaver families; red and hill cotton; single spindle; the expected benefits

120-S9

Wikipedia, "Ponduru", https://en.wikipedia.org/wiki/Ponduru , citing K. Srinivasa Rao, "Ponduru khadi may become extinct", The Hindu, 7 May 2011, and Census of India 2011, "Srikakulam district mandals"

Used for: Census town and mandal headquarters in Srikakulam district; the dhoti gifted to Gandhi at Dusi railway station in 1942; Devdas Gandhi

120-S10

Wikipedia, "Geographical indications in India", https://en.wikipedia.org/wiki/Geographical_indications_in_India , citing WIPO, "Geographical Indications: Point of View of Governments", for TRIPS Article 22(1), and India Today (22 February 2016) for Darjeeling tea

Used for: Words of TRIPS Article 22(1); the Act in force from 15 September 2003; Darjeeling tea the first GI, 2004-05; the 822 entries of the Registry's list

120-S11

Wikipedia, "Geographical Indications of Goods (Registration and Protection) Act, 1999", https://en.wikipedia.org/wiki/Geographical_Indications_of_Goods_(Registration_and_Protection)_Act,_1999

Used for: Act No. 48 of 1999; assent 30 December 1999; commencement 15 September 2003; agricultural, natural and manufactured goods; registration for ten years, renewable (section 18); no transfer, mortgage, assignment or licence except inheritance (section 24)

120-S12

Wikipedia, "List of geographical indications in India". https://en.wikipedia.org/wiki/List_of_geographical_indications_in_India

Used for: Cross-check of the Andhra Pradesh entries and application numbers; the different years it gives for Srikalahasthi Kalamkari (2004-05) and Kondapalli Bommallu (2007-08)

120-S13

Wikipedia, "Etikoppaka". https://en.wikipedia.org/wiki/Etikoppaka

Used for: Anakapalli district; Varaha river; soft wood, lacquer and natural dyes

120-S14

Wikipedia, "Kondapalli". https://en.wikipedia.org/wiki/Kondapalli

Used for: Ibrahimpatnam mandal, NTR district; tella poniki softwood, vegetable dyes and enamel colours

120-S15

Wikipedia, "Durgi, Palnadu district", citing the District Census Handbook, Guntur (2011). https://en.wikipedia.org/wiki/Durgi,_Palnadu_district

Used for: Durgi mandal headquarters, Gurazala revenue division, Palnadu district; stone carving tradition from the 15th century in soft limestone

120-S16

Wikipedia, "Allagadda", citing the Commissioner and Director of Municipal Administration, Andhra Pradesh, and the Revenue Department (apland.ap.nic.in). https://en.wikipedia.org/wiki/Allagadda

Used for: Nandyal district since April 2022; headquarters of the mandal; stone carving

120-S17

The institute's current affairs file: ForumIAS "Factly Compilation", December 2025, "Ponduru Khadi"

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

120-S18

The Geographical Indications of Goods (Registration and Protection) Act, 1999 (No. 48 of 1999), text on India Code, Legislative Department. https://indiacode.nic.in/bitstream/123456789/1981/5/A1999-48.pdf ; official readable text: https://ipindia.gov.in/page-content/geographical-indications-act-1999

Used for: Act No. 48 of 1999 dated 30 December 1999; commencement 15 September 2003 (S.O. 1051(E)); section 2(1)(e) (agricultural, natural or manufactured goods); section 5 (the Registry); section 7 (Part A and Part B); section 11(1) (who may apply); section 16 (registered as of the date of the application); section 18 (ten years, renewable); section 24 (no assignment, transmission, licensing, pledge or mortgage; devolution on the death of an authorised user)

120-S19

Agreement on Trade-Related Aspects of Intellectual Property Rights, Article 22, text reproduced by the IP Portal (ippt.eu). https://www.ippt.eu/legal-texts/trips/article-22 (official text: https://www.wto.org/english/docs_e/legal_e/27-trips_04b_e.htm)

Used for: Full words of Article 22(1)

120-S20

ETV Bharat, "Andhra Pradesh Cabinet Approves Formation Of Two New Districts", 30 December 2025. https://www.etvbharat.com/en/state/andhra-pradesh-cabinet-approves-formation-of-two-new-districts-enn25123002492 ; and Wikipedia, "List of districts of Andhra Pradesh", citing Eenadu, 30 December 2025. https://en.wikipedia.org/wiki/List_of_districts_of_Andhra_Pradesh

Used for: Polavaram and Markapuram districts; final notification to be issued on 31 December 2025, in force from 1 January 2026; 28 districts; Annamayya district headquarters moved from Rayachoti to Madanapalle; Palnadu and NTR districts among those left unchanged

120-S21

Deccan Chronicle, "Andhra new State map 2026 with 28 districts", 4 April 2026. https://www.deccanchronicle.com/southern-states/andhra-pradesh/andhra-new-state-map-2026-with-28-districts-amaravati-capital-in-guntur-dt-marked-1948481

Used for: 28 districts after the creation of Polavaram and Markapuram districts

120-S22

Government of Anakapalli district, ODOP. https://anakapalli.ap.gov.in/odop-anakapalli/

Used for: Etikoppaka toys and Anakapalli district

120-S23

Government of NTR district, ODOP. https://ntr.ap.gov.in/one-district-one-product/

Used for: Kondapalli toys and NTR district

120-S24

Government of Palnadu district, ODOP. https://palnadu.ap.gov.in/odop/

Used for: Durgi stone carvings and Palnadu district

120-S25

Government of Nandyal district, mandal directory. https://nandyal.ap.gov.in/mandal/

Used for: Allagadda mandal in Nandyal district

120-S26

Government of Andhra Pradesh, Finance Department, Budget Outreach 2026–27 memorandum. https://apfinance.gov.in/images/Budget_Outreach_2026-27_Memo.pdf

Used for: Official corroboration of the 28-district administrative count in 2026