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Chapter	Questions	Share
1. ENVIRONMENT & SUSTAINABLE DEVELOPMENT	30	7.1%
2. ECOLOGY & ECOSYSTEM	51	12.0%
3. BIODIVERSITY	46	10.8%
4. ENVIRONMENTAL POLLUTION	73	17.2%
5. GREENHOUSE EFFECT & CLIMATE CHANGE	30	7.1%
6. OZONE LAYER DEPLETION	16	3.8%
7. WATER CONSERVATION	18	4.2%
8. FOREST & WILDLIFE CONSERVATION	39	9.2%
9. NATIONAL PARKS, SANCTUARIES, BIOSPHERE & TIGER RESERVES	84	19.8%
10. NON-CONVENTIONAL ENERGY SOURCES	25	5.9%
11. MISCELLANEOUS + UTTAR PRADESH SPECIAL	12	2.8%

Chapter 1 — ENVIRONMENT & SUSTAINABLE DEVELOPMENT

1.1 Key concepts

Environment = physical + biological + cultural elements interacting system surrounding human beings at any given time.

→ In UPPCS, its answer is almost always **"All of the above"**, because all options are parts of the correct definition.

Environmental degradation = overall loss of environmental attributes + adverse changes brought by human activities → again **"All of the above"**.

Sustainable Development (Brundtland, *Our Common Future*, 1987):

> Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Three pillars: **Economic + Social + Environmental**.

- It is mainly the *inter-generational* sensitivity of the use of **natural resources** (not material/industrial/social).
- **Sustainable agriculture** = such use of land that its *quality is maintained*.

SDGs — Adopted in 2015, 17 goals by 2030. UPPCS favorite question: *"Which is not an SDG?"* → Answer is always a **Space Research** type option, meaning something outside development/welfare.

1.2 Acts, Bodies, Days, Awards

Fact	Value	Asked count
Environment (Protection) Act	**1986**	3×
Wildlife (Protection) Act	**1972**	3×
Forest Conservation Act	**1980**	2×
Biological Diversity Act	**2002** (Dec)	3×
Water (Prevention & Control of Pollution) Act	**1974**	2×
National Green Tribunal — Establishment	**2010**	2×
NGT — came into force	**October 2010**	1×
National Afforestation & Eco-development Board	**1992**	1×
National Biodiversity Authority	**2003, Chennai**	3×

Day	Date
World Environment Day	**5 June**
World Wetlands Day	**2 February**
International Biodiversity Day	**22 May**

World Ozone Day	**16 September**
World Wildlife Day	**3 March**
International Tiger Day	**29 July**
World Water Day	**22 March**

Organisation	Headquarter
UNEP	**Nairobi** (Kenya)
WMO (World Meteorological Org.)	**Geneva**
IUCN	Gland, Switzerland
National Biodiversity Authority	**Chennai**

Award / Mark	For what
Eco-Mark	Environment-friendly consumer product
Rajiv Gandhi Environment Award	Clean technology & development
Indira Gandhi Environment Award	Sensitive contribution in the environment field
Global 500 Award (UNEP)	Environment protection / immunity
Centre for Science & Environment — Founder	**Anil Agarwal**

1.3 Atmosphere mini-block (3 Q are formed from here)

- Balanced/optimum concentration of **CO_2 in the atmosphere = 0.03%**
- **Radon** — That noble gas which is (normally) absent in the atmosphere. (He, Ar, Ne are present)
- CO_2 is **added** to the carbon cycle by: respiration, decay of organic matter, volcanic action.

Photosynthesis does not add CO_2 — it removes it. ← This is what gets asked.

1.4 Asked again and again

#	Frequently asked	Answer	Count
1	Meaning / basis / importance of Sustainable development	Brundtland definition; natural resources; "All of the above"	5×
2	Eco-Mark is for	Environment-friendly product	3×
3	Definition of Environment / degradation	All of the above	2×
4	Year of Environment Protection Act	**1986**	3×
5	Year of NGT	**2010**	2×
6	Environment Awards are for	Table above	3×

1.5 Traps

- **Eco-Mark ≠ Ag-Mark ≠ ISI Mark.** Ag = agricultural product, ISI = quality, Eco = environment.
- **NGT establishment 2010** — Options with 2008/2009 are traps.
- **Biological Diversity Act is 2002**, **not 2000** — In "NOT correctly matched" questions, this is given as the wrong pair.
- As soon as the word **inter-generational** appears in sustainable development, the answer is **natural resources**.
- State that started **Greenhouse Farming** recently → **Punjab**.

Chapter 2 — ECOLOGY & ECOSYSTEM

2.1 Key concepts

Ecology = Study of the relationship between organism and its environment. (Organism ↔ Environment — that is it, nothing else.)

Ecosystem — Term given by **A.G. Tansley (1935)**.

It is a **functional unit**, an **open system** (not closed — this is the trap), which has its own productivity.

Components of ecosystem:

- **Abiotic** — Light, temperature, water, soil, gases
- **Biotic** —
- **Producers (Autotrophs)** = Green plants. They act as an **intermediary** between biotic and abiotic components. *Primary source of energy = Solar energy.*
- **Consumers** — Primary (herbivores), Secondary, Tertiary
- **Decomposers** — Return the matter back to the abiotic pool

> **Rule of numbers:** Producers > Primary consumers > Higher levels. Producer is always the highest.

Productivity:

- **Primary productivity** = Production at the autotroph level
- **Secondary productivity** = Production at the heterotroph level

Energy flow:

- **Unidirectional** — *Not* cyclic. ← Most asked statement
- Energy **decreases** while moving from one trophic level to the next (10% law)
- **Nutrients are cyclic** → This is the **Biogeochemical cycle**

Trophic levels & Pyramids:

- Highest trophic level → **Omnivores**
- Pyramid of ecosystem is always **straight/upright** (Pyramid of energy is always upright)
- In a food chain, **Man = both primary and secondary** consumer

2.2 Terminology

Term	Meaning
Ecotone	**Transitional zone** between two different communities
Ecological Niche	Tolerance limit of a species + utilized resources + its **functional role** in the system. *Niche of every species is unique.*
Sere	Whole sequence of communities
Succession	Gradual change in an area
Climax	Final, stable stage of succession
Synecology	Study of complex interrelationships of biotic communities
Autecology	Study of a single species

Ecological Footprint	Minimum land required for a person's sustenance — unit is **Global Hectare**
Anthropogenic environment	Environment modified by human activity
Anthropogenic biome / artificial ecosystem	**Cropland / Paddy field / Agricultural land**

Sequence of Succession (memorize):

> **Nudation → Migration → Ecesis → Reaction → Stabilization**

2.3 Persons and their contributions

Person	Concept
A.G. Tansley	Term **Ecosystem**
Grinnell	**Ecological Niche**
Bennett	**Ecological Transition**
Arne Naess	**Deep Ecology**
Walter G. Rosen	Term **Biodiversity** (also in Chapter 4)
Rachel Carson	*Silent Spring* — DDT/pesticides

2.4 "Largest / Most stable"

Question	Answer
World's **largest ecosystem** (if options have ocean/forest/grassland)	**Ocean**
Ecosystem with **maximum area** on Earth's surface	**Marine ecosystem**
Most stable ecosystem	**Marine / Ocean**
Earth's largest ecosystem (if **Biosphere** is in the options)	**Biosphere**

> ⚠ This is the real trap: If **Biosphere** is present in the option, then Biosphere is the answer, otherwise Ocean.

Order of decreasing productivity: Mangroves > Grasslands > Lakes > Oceans

2.5 Miscellaneous lock-facts

- **Insectivorous plant → Nepenthes** (Nelumbo=Lotus, Nyctanthes=Night-flowering jasmine, Nicotiana=Tobacco — all three are traps)
- **Main primary producers of marine environment → Phytoplankton**
- **Examples of Primary consumers** → Ant, Deer (Fox/Tiger are not)
- **Not a sub-category of terrestrial ecosystem → Marine**
- **Lotic** = Flowing water (**River**) · **Lentic** = Stagnant water (Pond, Lake)
- **Limnetic zone** = Open water zone → Therefore **phytoplankton is abundant** here
- Activity that disturbs ecological balance → **Lumbering** (Cutting down trees)

2.6 Movements

Movement	Association
Chipko	**Tree/Vegetation conservation** — Slogan: *"Ecology is permanent economy"* (Sunderlal Bahuguna)
Appiko	Karnataka, southern version of Chipko
Narmada Bachao	Large dams, displacement
Silent Valley	Keralam — Opposition to hydroelectric project

2.7 Asked again and again

#	Repeatedly asked	Answer	Coun
1	Definition/components/characteristics of Ecosystem	See Key concepts above	13×
2	Trophic level / energy flow / pyramid	Unidirectional, decreasing energy, straight pyramid	8×
3	**Eucalyptus is harmful for the environment**	**Eucalyptus**	4×
4	Largest / most stable ecosystem	Ocean *or* Biosphere	4×
5	Ecotone / Sere / Succession / Climax	See table above	5×
6	Ecological Niche	Functional role; different for every species	3×
7	Biogeochemical cycle	Cycling of elements	2×
8	Chipko movement	Vegetation conservation	2×
9	Ecological Footprint	Global Hectare	2×
10	Who proposed Ecosystem	**Tansley**	2×

2.8 Traps

- **Ecosystem is not a closed system** — Answer to "NOT true about ecosystem".
- **"Various components are not interdependent" (Assertion)** → This Assertion is **false**, Reason is true → Answer is **(d)**. This question has been repeated verbatim twice.
- **Producer** is stated as the link between biotic and abiotic (in some places decomposer option is there — UPPCS key gives **Producer**).
- **Eucalyptus** is the only "non eco-friendly" tree — Babul/Neem/Peepal/Amaltas are never the answer.
- **Sere vs Succession** — "Complete sequence" = Sere, "Change" = Succession.

Chapter 3 — BIODIVERSITY

3.1 Key concepts

Biodiversity = Varied kinds of plants and animals in an area / Range of different species in an environment.

Term coined by → **Walter G. Rosen (1985)**.

Most important aspect → **Maintenance of ecosystem** — not food/medicine/industry.

Three levels: Genetic → Species → Ecosystem diversity

Biodiversity Gradient: Species diversity **decreases** from the equator towards the poles.

→ Therefore, the statement *"Diversity increases from the equator to the poles"* is always **false**. This is what is asked.

- Maximum diversity → **Tropical Rain Forest** (maximum plant biomass too)
- Minimum biomass production → **Deep Ocean**
- World's largest biodiversity → **Amazon Rainforest**

Factors increasing diversity: Productivity, intermediate disturbance, age of ecosystem.

Fewer trophic levels → do not increase diversity.

3.2 Most-asked point — "Causes of biodiversity loss"

> **This question has been asked 6 times. The answer always comes from the same logic.**

Rule:

- If **"All of the above"** is in the options → That is the answer.
- Otherwise → **Destruction of natural habitat**.

The answer is never pest control, predator control, or genetic assimilation.

The biggest threat too → **Destruction of natural habitat and vegetation**.

3.3 Conservation — In-situ vs Ex-situ

In-situ	Ex-situ
National Park	**Botanical Garden**
Wildlife Sanctuary	Zoo
Biosphere Reserve	Seed Bank / **Cryo-Bank**
Sacred Groves	Gene Bank, Tissue Culture
Conservation Reserve	Aquarium

- **"Not an example of in-situ"** → Answer **Botanical Garden**
- **Most important strategy for biodiversity conservation → Biosphere Reserve**
- What do Biosphere Reserves conserve → **Genetic variation**
- **Gas used in Cryo-Bank → Nitrogen** (liquid nitrogen)

3.4 HOTSPOTS — Asked 9 times

Rule that works almost every time:

> If **Western Ghats** appears in the options → That is the answer.

India's 4 Biodiversity Hotspots:

1. **Western Ghats & Sri Lanka**
2. **Himalaya (Eastern Himalayas)**
3. **Indo-Burma / Indo-Myanmar** (Northeast India)
4. **Sundaland** (Nicobar Islands)

Asked	Answer
India's most biodiversity-rich region	**Western Ghats**
Hotspots in India (in pairs)	**Eastern Himalayas + Western Ghats**
Which is **not** a hotspot	**Vindhya** (Aravalli, Eastern Ghats, Gangetic plain, Thar are also not)
Indo-Myanmar landscape	**Yes, hotspot**
Andaman and Nicobar	**Yes (Sundaland)**

⚠ **Eastern Ghats is never a hotspot** — this is the most common trap.

Term given by **Norman Myers**. **36** hotspots in the world (34/35 in older questions).

3.5 WETLANDS & RAMSAR — 10 Q

- **Ramsar Convention, 1971** (Ramsar city in Iran) → **Conservation of Wetlands**. India signed in 1982.
- **World Wetlands Day — February 2**
- **Uses of Wetlands** → Nutrient cycling, absorption of heavy metals, trapping sediment to reduce river siltation → Answer **All of the above**

Ramsar Site	State
Chilika	Odisha (India's first, 1981)
Keoladeo (Bharatpur)	Rajasthan (One of the first two)
Loktak	Manipur
Wular	Jammu & Kashmir
Bhoj Wetland	Madhya Pradesh
Bhitarkanika	**Odisha**
Sasthamkotta Lake	**Keralam**
Kanjli	**Punjab**
Deepor Beel	**Assam**
Parvati Arga	**Uttar Pradesh — Gonda District, Bird Sanctuary** ☆
Kanwar Taal (Kabartal)	**Bihar's first — Begusarai**

> ☆ **Parvati Arga (Gonda) and Kabartal (Begusarai) — UPPCS has asked both. UP-specific Ramsar sites in Chapter 11 in detail.**

3.6 Coral Bleaching (2 Q)

- **Most important factor → Global Warming** (i.e., **Rise in normal temperature of sea water**)
- Both questions ask the same thing in two different words — choose based on options: If "Global warming" is there, choose that, otherwise "Rise in normal temperature of sea water".

3.7 Acts & Authority

Fact	Value
Biological Diversity Act	**2002** (December)
National Biodiversity Authority	**2003, Chennai**
Three-tier structure	NBA (National) → SBB (State) → BMC (Local)
UN Decade on Biodiversity	**2011–2020**
International Biodiversity Day	**May 22**

3.8 Asked again and again

#	Frequently Asked	Answer	Count
1	**India's biodiversity hotspot**	**Western Ghats** (or Eastern Himalayas + Western Ghats)	9×
2	**Wetland / Ramsar**	Wetland conservation, 1971	10×
3	**Cause of biodiversity loss**	Habitat destruction / All of the above	6×
4	Where is maximum biodiversity found	**Tropical Rainforest**	5×
5	in-situ / ex-situ	Botanical Garden = ex-situ	4×
6	Biodiversity Act / NBA	2002 / 2003 Chennai	4×
7	Definition of Biodiversity	Variety of species	3×
8	Coral bleaching	Global warming	2×

3.9 Traps

- **Eastern Ghats ≠ hotspot.** Western Ghats = hotspot. Both come together in options.
- **Biological Diversity Act 2002** — Given as **2000** in "NOT correctly matched".
- **NBA is in Chennai**, not Bengaluru/Hyderabad.
- **Botanical Garden** is not in-situ, it is ex-situ.
- "Species diversity **increases** from the equator to the poles" — This statement is **always false**.
- **Sundarban is not a hotspot on its own** — When Western Ghats/Indo-Myanmar are together, choose those.

Chapter 4 — ENVIRONMENTAL POLLUTION

4.1 Key concepts — BIODEGRADABLE vs NON-BIODEGRADABLE

✅ BIODEGRADABLE	❌ NON-BIODEGRADABLE
Sewage / urine, faecal matter	**Plastic, Polythene, PVC**
Domestic waste / flushing	**DDT and other pesticides**
Wool, paper, wood	**Mercury, Lead, Steel**
Rubber	**Glass bottle, Aluminium foil**
Cellulose, Starch, Protein	**Asbestos**

Rule to remember:

- **Coming from living organism/plant → biodegradable** (wool, rubber, excreta, sewage, cellulose, starch, protein)
- **Coming from factory/mine → non-biodegradable** (plastic, PVC, glass, metal, DDT, asbestos)

⚠ **Three biggest traps:**

- **Rubber = biodegradable** ✅ (it is natural) — students mistake it for plastic
- **PVC = non-biodegradable** ❌, whereas **Cellulose / Starch / Protein = biodegradable** ✅
- **DDT is always a non-biodegradable pollutant** — this question has been repeated word-for-word 2 times

4.2 Primary vs Secondary pollutants

Primary (Emitted directly)	**Secondary** (Formed by reaction in atmosphere)
CO, CO_2, **SO_2**, NO, Fly ash, hydrocarbons	**Smog**, **Ozone (O_3)**, **PAN**, Acid rain

- *"Who is a secondary pollutant?"* → **Smog**
- *"Who is not a secondary pollutant?"* → **SO_2** (because it is primary)

4.3 Air pollution — Health and sources

Pollutant	Effect / Fact
Carbon Monoxide (CO)	**Most dangerous air pollutant.** Dissolves in hemoglobin **faster** than oxygen → blood-flow affected → death. Main pollutant under normal conditions.
Lead	**Most toxic metal pollutant** of vehicle exhaust → **Brain**
Asbestos dust	**Lungs** (Asbestosis)
Mercury	**Stomach** *(According to UPPCS official key)*
Fluoride	**"Knock-Knee Syndrome"** ☆
Arsenic	**Non-biotic pollutant** of groundwater
Cigarette smoke	**Carbon Monoxide + Nicotine**
Methyl Isocyanate (MIC)	**Bhopal gas tragedy — Union Carbide**
Methane	Gas most abundantly emitted from urban **landfills**
Ozone (during flight)	Cause of **COPD** in flight crew and passengers

Sources and policy:

- **Largest source** of air pollution in India's big cities → **Transport sector**
- **Combustion of coal/petrol/diesel → air pollution**; pollutant gas emitted from fossil fuels → **SO_2**
- **Fly ash** → burning of **coal** in **thermal power plant** *(2 times)*
- **Most polluting industrial effluent → Leather industry**
- **Man-made pollutants → Anthropogenic**
- Polluted atmosphere is cleaned by **Rain**
- **Euro Norms → Regulation of harmful gas emissions** from vehicles
- **Industrial colour-classification (March 2016)** → Red, Orange, Green, **White**. ☆ **Blue category is not there**
- **Least polluting fuel → Hydrogen**; energy source → **Solar energy**
- **Best tree to prevent dust pollution → Sita Ashok**
- **Pollution indicator plant → Lichen** — especially for **air pollution** ☆ *(2 times)*

4.4 ☆ SMOG and ACID RAIN

Photochemical Smog *(3 times)*

- It **always contains ozone (O_3)**
- Formed by: action of **sunlight + unsaturated hydrocarbons + nitrogen oxides**
- Occurs in: **hot, dry, and sunny** climate
- (Los Angeles smog = photochemical · London smog = sulphurous)

Acid Rain *(5 times)*

- Cause → **SO_2 + Nitrous oxide (NO_x)**
- Mechanism → **Reaction of cloud sulphur dioxide with pollutants**
- If a single gas is asked → **SO_2**

- Most affected countries → **Canada and Norway**
- **International Acid Rain Information Centre → Oslo (Norway)** ⭐

4.5 Water pollution

Fact	Answer
BOD	**Standard for measuring pollution** in aquatic ecosystem
High BOD means	Water is **contaminated with sewage**
River water-pollution is measured by	**Dissolved Oxygen**
'Biological Desert' river	**Damodar** ⭐
Arsenic water-pollution — Country	**Bangladesh**
Arsenic — Highest in India	**West Bengal**
Not a water pollutant	**SO_2** (It is an air pollutant)
Biological Nitrogen Fixation	**Blue-Green Algae**
Not related to air pollution	**Eutrophication** ⭐
DDT bio-magnification sequence	Aquatic plants → Snail → Fish → Bird ⭐

4.6 Noise pollution (7 Q)

Area	Permissible level (Day)
Silent Zone	**50 dB**
Residential	**55 dB**
Commercial	**65 dB**
Industrial	**70 dB**

- Measurement unit → **Decibel**
- **Above 80 dB → Harmful noise pollution**
- **Cause of maximum noise pollution → Jet aircraft flying**
- **'Green Muffler' → Protection** from noise pollution (tree-row along roadside) ⭐ *(2 times, almost word-for-word)*
- **Frontier Report-2022 (UNEP)** → World's second most noise-polluted city → **Moradabad (U.P.)** ⭐⭐ *UP-specific + recent*

4.7 Asked again and again

#	Asked repeatedly	Answer	Count
1	**Biodegradable / Non-biodegradable**	Section 4.1 table	10× 🔥
2	**Noise pollution** (unit, level, Green Muffler)	Decibel / 80 dB / Noise	7×
3	**Acid Rain**	SO_2 + NO_x	5×
4	**CO toxicity**	Most dangerous, hemoglobin	4×
5	**BOD**	Aquatic pollution measurement	4×
6	**DDT**	non-biodegradable	3×
7	**Photochemical smog**	Ozone	3×
8	**Arsenic**	Bangladesh / W. Bengal	3×
9	**Fly ash**	Thermal plant, coal	2×
10	**Lichen**	Air pollution indicator	2×
11	**Secondary pollutant**	Smog yes, SO_2 no	2×
12	Indiscriminate use of fertilizers	**All of the above**	2×

4.8 Traps

- **Pollution maximum in Delhi in winters — Assertion is true, but Reason "increase in vehicular combustion" is false** (Actual cause = thermal inversion) → Answer **(c)**
- **Soil pollution more dangerous than industrial** — Both Assertion and Reason are true, Reason is correct explanation → **(a)**
- **Aerosols can change climate** — Reason (interaction with both shortwave and longwave radiation) is correct explanation → **(a)**
- **SO_2 is not a water pollutant** — It is the only option that belongs to air
- **Blue colour is not present in industrial classification**

Chapter 5 — GREENHOUSE EFFECT & CLIMATE CHANGE

5.1 Key concepts

Greenhouse Effect — Concept given by **Joseph Fourier**.

Earth's atmosphere is primarily heated by **long-wave terrestrial radiation** — not by direct solar rays. ← This is asked again and again.

If there was no greenhouse effect, Earth's average temperature = –18°C.

Average temperature increase in the past century ≈ **0.8°C**.

5.2 ⭐ Greenhouse Gas — Asked 5 times

✅ Greenhouse Gases	❌ Not Greenhouse Gases
CO_2 (most prominent)	**Argon** ⭐
Methane (CH_4)	**Oxygen (O_2)** ⭐
Nitrous Oxide (N_2O)	Nitrogen (N_2)
Water Vapour	
CFC	

> **Rule:** Question *"Which is not a greenhouse gas"* → If **Argon** is in the options, choose that; if not, choose **O_2**.
> **Most important set → CO_2 + Methane + Nitrous Oxide + Water Vapour**

⚠ **CFC is both a greenhouse gas and ozone-depleting.** Therefore, the statement *"CFC is not responsible for the greenhouse effect"* is **false**.

- Greenhouse gas released from **paddy fields** → **Methane** ⭐
- **Main component of CNG and natural gas → Methane**

5.3 Consequences of Global Warming

All are correct → Melting of glaciers · Rise in sea level · Change in weather · Global temperature rise · Increase in frequency and intensity of cyclones/storms/hurricanes · **Premature flowering in mangoes** · Adverse effects on health.

⚠ **Traps:** *"Universe has become good"* / *"Better global communication"* — these are never correct. Therefore, the answer is usually **2, 3 and 4**.

- **Cryogenic indicator of climate change** → **Ice Core** ☆
- **Primary causes of climate change** → Excessive burning of fossil fuels + Increasing number of oil-driven vehicles + Heavy deforestation. ☆ **"Increasing solar flares" is not a cause**
- **Geo-engineering** — Sprayed over the Pacific to create bright clouds → **Sea water**

5.4 NAPCC — India's Climate Action Plan *(3 times)*

Launched: 2008 — Eight National Missions:

1. **National Solar Mission**
2. National Mission for **Enhanced Energy Efficiency**
3. National Mission on **Sustainable Habitat**
4. **National Water Mission**
5. National Mission for **Sustaining the Himalayan Ecosystem**
6. National Mission for a **Green India** (afforestation)
7. National Mission for **Sustainable Agriculture**
8. National Mission on **Strategic Knowledge for Climate Change**

> ☆☆ **Nuclear / Atomic Power is NOT included in these eight.** This exact question was asked 2 times — the answer is always **Nuclear/Atomic**.

5.5 Global Facts

Fact	Answer
Agenda-21 (Rio Summit 1992)	**Sustainable Development** ☆
Top CO_2 emitter in 2015	**China**
India's share in global GHG	**≈ 5%**
World's **'Carbon Negative' country**	**Bhutan** ☆
UNFCCC	1992, Rio
Kyoto Protocol	1997 (Enforced 2005)
Paris Agreement	2015

5.6 Asked again and again

#	Repeated Question	Answer	Count
1	**Which is not a greenhouse gas**	**Argon / O_2**	5×
2	**Consequences of global warming**	2,3,4 / All	4×
3	**What is not among the 8 NAPCC missions**	**Nuclear energy**	3×
4	**CO_2 main greenhouse gas**	CO_2	3×

Chapter 6 — OZONE LAYER DEPLETION

6.1 Key concepts

1. **Ozone layer** → **Stratosphere**, **~15–35 km** above the Earth.
2. Formed by → Reaction of the Sun's **Ultraviolet (UV)** rays with oxygen → **O_3**.
3. Absorbs → **Ultraviolet (UV) radiation** → Protects life.
4. UV causes → **Dermal cancer**, cataracts.
5. Destroyed by → **CFCs** (main), **Halons**, **Carbon Tetrachloride** — all are ozone-depleting substances.
6. **Ozone hole maximum at the Poles** — especially Antarctica.

6.2 Facts

Fact	Answer
World Ozone Day	**16 September** (2×)
Location of the ozone layer	**Stratosphere**
Absorbed radiation	**Ultraviolet (UV)**
Main depleting substance	**CFC**
Where is the ozone hole larger	**At the poles**
Who discovered the ozone hole over **Antarctica**	**British team** (Joseph Farman, 1985) ☆
Ozone hole over **Tibetan Plateau** (2005)	**G.W. Kent Moore** ☆
False statement about CFCs	*"It is not responsible for the greenhouse effect"*
Vienna Convention	**1985** — Ozone layer protection
Montreal Protocol	**1987** — Phase-out of ODS
Kigali Amendment	2016 — HFCs

⚠ **Traps:**
"The ozone layer is 55–75 km above the Earth" — **False** (that is the Mesosphere).
"The ozone layer has no significance for life" — **False**.
→ Therefore, the correct statements are always **1 and 3**.

Chapter 7 — WATER CONSERVATION

7.1 EUTROPHICATION *(3 times — both statements always correct)*

> **Eutrophication = Nutrient enrichment of water bodies**, which causes algal blooms and **reduces dissolved oxygen**.

Both statements — *"Phenomenon of nutrient enrichment"* and *"Reduces dissolved oxygen"* — **always correct** → Answer **Both 1 and 2**.

Name of the nutrient enrichment process in lake ecology also → **Eutrophication** (not BOD / Allelopathy / Bio-magnification).

7.2 GANGA–YAMUNA CHRONOLOGY ☆ (Very important for UP)

Year	Event
1985	**Ganga Action Plan** — Objective: **Only to make water pollution-free**
1985	Formation of **Central Ganga Authority**
1993	**Yamuna Action Plan** formally launched
2009	**National Ganga River Basin Authority (NGRBA)** ☆
2014	Namami Gange

7.3 Data table

Fact	Answer
Water (Prevention & Control of Pollution) Act	**1974**
World Wetlands Day	**2 February**
World Water (Conservation) Day	**22 March** *(2 times)*

CPCB water-quality categories	**5**
Gas for drinking water purification	**Chlorine** *(2 times)*
Water disinfectants	Ozone + Chlorine dioxide + Chloramine = **All of the above** *(2 times)*
Most cost-effective water management strategy in India	**Rainwater Harvesting** *(2 times)*
Watershed Development Project (Rural water conservation)	**Hariyali**
Country's first **digital water data bank 'Aquarium'** (April 2022)	**Karnataka**
Measurement of river pollution	**Dissolved Oxygen**

⚠ The question on **Eucalyptus** is repeated again in this section (*"Dangerous tree for the environment"* → **Eucalyptus**, because it absorbs excessive groundwater). **This question has appeared 4 times across the entire question bank.**

Chapter 8 — FOREST & WILDLIFE CONSERVATION

8.1 Forest Cover Data (ISFR)

Fact	Answer
ISFR 2017 — Country's Forest Cover	**21.54%** of geographical area
Minimum recommended forest for ecological balance	**33%** (Plains 33%, Hills 66%) ☆
ISFR 2021 — Maximum increase in forest cover	**Andhra Pradesh** *(2 times)*
Highest percentage of forest cover	**Mizoram**
Largest area of very dense forest	**Arunachal Pradesh**
Highest tree cover	**West Coast**
New Forest Inventory Design (2016) — revisit time	**5 years**
National Forest Policy 1952 categories	National, **Protected**, **Village** Forests. ☆ **National Park category is not included**
Forest Conservation Act	**1980**

Global:

- **Resolution to maintain forests on 70% landmass** → **Bhutan** (This country is also **carbon negative**, and has **30%+ area** under **National Park**) ☆☆ *Bhutan = One answer for three questions*
- **World's first country to ban tree felling** → **Norway**

8.2 Forest Types & Mangroves

Fact	Answer
Evergreen forests	**Western Ghats** (Not Malwa/Eastern Ghats/Chota Nagpur)
Most extensive tropical deciduous forests	**Asia**
Highest diversity of plants and animals	**Tropical moist forests**
Highest species-diversity	**Tropical rainforest**
India's largest mangrove	Sundarbans (West Bengal)
Second largest mangrove area	**Gujarat** ☆
Protected mangrove area	**Goa**
Bhitarkanika	**Odisha** — Brahmani-Baitarani delta

⚠ **Bhitarkanika trap:** The question states *"In the delta of Vansadhara-Subarnarekha"* and *"In West Bengal"* — **Both statements are incorrect** → Answer **Neither 1 nor 2**.

- **Sea Buckthorn** (Leh berry) → **Ladakh** ☆

8.3 Wildlife Conservation

Fact	Answer
Wildlife (Protection) Act	**1972** *(2 times)*
Red Data Book	List of **threatened/endangered species** (IUCN) *(2 times)*
Extremely endangered Indian bird	**Great Indian Bustard (Godawan)**
Cause of vulture mortality	**Diclofenac sodium** — Painkiller given to livestock ☆ *(2 times)*
Pugmark technique	Wildlife **population estimation**
Forest Research Institute (FRI)	**Dehradun**
National Bureau of Plant Genetic Resources	**New Delhi**
World Wildlife Day	**3 March**
Dolphin Day (MoEFCC)	**5 October**
Genetic diversity in National Park	Through **In-situ conservation**
Cheetah	In February **2023** from **South Africa** — **12 cheetahs** — Both statements are correct, Reason is the correct explanation → **(c)**

Project Elephant:

- Started **1992 (1991-92)** — **Centrally sponsored scheme**
- Addresses human-wildlife conflict issues
- ⚠ **"Caring for wild elephants only"** statement is **incorrect** (Captive elephants are also included) ← This is what was asked
- **Kameng Elephant Reserve** → **Arunachal Pradesh**

Asked again and again

#	Repeatedly Asked	Answer	Count
1	ISFR — State with maximum increase	**Andhra Pradesh**	2×
2	Wildlife Protection Act	**1972**	2×
3	Red Data Book	Threatened species	2×

4	Vulture mortality cause	**Diclofenac**	2×
5	Bhutan (Forest/NP/carbon)	**Bhutan**	3×

Chapter 9 — NATIONAL PARKS, SANCTUARIES, BIOSPHERE & TIGER RESERVES

> This entire chapter is based on "Match the following". Therefore, read it like a **map + table**. The three tables given below form the basis of all 84 questions.

9.1 ☆☆ TABLE A — National Park / Sanctuary ↔ State

State	Parks / Sanctuaries
Uttarakhand	**Jim Corbett** (India's **first NP, 1936**), Rajaji, **Valley of Flowers**, Nanda Devi
Madhya Pradesh	Kanha, Bandhavgarh, **Satpura (Dhupgarh Peak)**, Sanjay, Sanjay-Dubri, Madhav, **Van Vihar (Bhopal)**, Panna
Assam	**Kaziranga**, Manas, Nameri, **Garampani**
Karnataka	Bandipur, Anshi, **Rajiv Gandhi (Nagarhole)**, Dandeli, Bhadra
Keralam	**Periyar**, **Silent Valley**, **Eravikulam**, **Chinnar**
Rajasthan	**Sariska**, Ranthambore, **Keoladeo Ghana (Bharatpur)**
Odisha	**Similipal**, Bhitarkanika, Gahirmatha
Jammu and Kashmir	**Dachigam**
Chhattisgarh	**Indravati (Bastar region)**
Jharkhand	**Betla**
Haryana	**Kalesar**
Goa	**Mollem**
Maharashtra	**Chandoli**, Melghat, Gugamal
Tripura	**Bison NP**
Andhra Pradesh	**Papikonda**, **Pakhal**
Arunachal Pradesh	**Namdapha**, Pakhui/Pakke, Dihang-Dibang, **Kameng**
Mizoram	**Dampa**
West Bengal	**Buxa**, Sunderbans
Himachal Pradesh	**Pin Valley**, **Great Himalayan NP (Kullu)**
Sikkim	**Khangchendzonga**
Manipur	**Keibul Lamjao — in Loktak Lake (Floating NP)** ☆
Uttar Pradesh	**Dudhwa (Lakhimpur Kheri)**, Katarniaghat, Chandraprabha, Bakhira
Gujarat	**Gir**, **Wild Ass Sanctuary (Rann of Kutch)**, **Marine NP — Gulf of Kutch**
Tamil Nadu	**Gulf of Mannar (Marine NP)**
Andaman	**Rani Jhansi Marine NP (1996)**

Foreign: Yellowstone → **USA** · Shukla Phanta → **Nepal** · **World's largest botanical garden → Kew (England)**

9.2 ☆☆ TABLE B — Park ↔ Species (Most "not correctly matched" questions come from here)

Park / Sanctuary	Famous Species
Kaziranga	**One-horned rhinoceros** *(2×)*
Dachigam	**Hangul / Kashmir stag** *(3×)*
Gir	**Asiatic lion**
Periyar	**Wild elephant**
Rajaji	**Elephant**
Manas	**Elephant**
Dudhwa	**Tiger + Rhinoceros rehabilitation** ☆
Silent Valley	**Lion-tailed macaque**
Eravikulam	**Nilgiri tahr — "Cloud Goats"** ☆
Keibul Lamjao	Sangai deer
Valley of Flowers	**Brahma Kamal** *(Saussurea obvallata)* ☆
Keoladeo (Rajasthan)	**Siberian crane**
Ladakh	**Sea buckthorn**

> ⚠ **Most repeatedly mismatched pair: "Periyar — Hangul"**. Hangul is found only in **Dachigam (J&K)**, not in Periyar (Keralam). *This question appeared verbatim 2 times.*
>
> Second trap: **"Ghana — Lion"** is incorrect (Ghana = **bird** sanctuary). Lions are found only in **Gir**.

9.3 ☆ TABLE C — Biosphere Reserves (16 Q)

Biosphere Reserve	State	Year
Nilgiri	**Tamil Nadu + Keralam + Karnataka — across three states** ☆	**1986 (First)**
Nanda Devi	**Uttarakhand**	**1988**
Sunderbans	West Bengal	**1989**
Manas	**Assam**	1989
Similipal	**Odisha**	1994
Pachmarhi	**Madhya Pradesh**	1999
Khangchendzonga	**Sikkim**	2000
Nokrek	**Meghalaya — Garo Hills** ☆	1988
Dihang-Dibang	**Arunachal Pradesh**	1998
Agasthyamalai	**Keralam**	2001
Cold Desert	**Himachal Pradesh — 16th BR** ☆	2009
Gulf of Mannar	Tamil Nadu — **Largest UNESCO-recognized by area** ☆	1989

Chronology of Establishment (memorise): Nilgiri 1986 → Nanda Devi 1988 → Sunderbans 1989 → Khangchendzonga 2000

- **What do Biosphere Reserves protect → Genetic diversity** *(2× — also in Chapter 3)*
- ⚠ **Rann of Kutch is not in the UNESCO network** (Sunderbans, Gulf of Mannar, and Nilgiri are)
- ⚠ Frequently appearing incorrect pairs: **"Manas — Meghalaya"** ✗ (Manas = Assam) · **"Similipal — Assam"** ✗ (= Odisha) · **"Dihang-Dibang — Sikkim"** ✗ (= Arunachal)

9.4 ☆ TABLE D — Tiger Reserves (12 Q)

Tiger Reserve	State
Sariska, Ranthambore	**Rajasthan**
Dampa	**Mizoram** ☆
Buxa	**West Bengal** ⚠ (**Not Bihar** — this incorrect pair was asked)
Nameri, Manas	Assam
Namdapha, Pakhui	Arunachal
Melghat	Maharashtra
Bandipur	Karnataka
Similipal	Odisha
Kanha, Bandhavgarh, Sanjay-Dubri	Madhya Pradesh
Pench	**Madhya Pradesh + Maharashtra — across two states** ☆
Amangarh	**Uttar Pradesh** ⚠ *(Question: "Which is not in MP" → Amangarh)* ☆☆
Rajaji	**Uttarakhand — recently declared a Tiger Reserve** ☆
Nagarjunsagar–Srisailam	**Largest Critical Tiger Habitat** ☆

Fact	Answer
Project Tiger	**1973**
International Tiger Day	**29 July**
Tiger Census 2018 (July 2020 report)	India has **70%** of the world's tigers **and ~30%** of tigers are **outside** tiger reserves — **Both statements are correct** ☆

9.5 Other lock-facts

Question	Answer
State with the highest number of National Parks	**Madhya Pradesh** *(2×)*
Highest number of Wildlife Sanctuaries	**Andaman and Nicobar**
Basis for determining the area of NP/Sanctuary/BR	**Species richness, diversity, and species-area relationship**
UNESCO World Heritage Site (July 2016)	**Khangchendzonga NP** ☆
World Heritage Site (among options)	**Nanda Devi Biosphere Reserve**
Valley with the richest biodiversity	**Silent Valley**
Silent Valley Project belongs to which state	**Keralam**
Marine National Park	**Gulf of Kutch / Gulf of Mannar**
Garden of Five Senses	Near **Mehrauli (Delhi)**
30%+ area under National Parks	**Bhutan**

9.6 Asked again and again

#	Frequently Asked	Answer	Count
1	**NP/Sanctuary ↔ State matching**	TABLE A	**~ 20×** 🔥
2	**Biosphere Reserve ↔ State/Year**	TABLE C	**16×**
3	**Tiger Reserve ↔ State**	TABLE D	**12×**
4	**Dachigam — Hangul**	Dachigam	**3×**
5	**"Periyar — Hangul" incorrect pair**	Incorrect	**2×**
6	**Kaziranga — Rhinoceros**	Kaziranga	**2×**
7	**Wild Ass Sanctuary**	**Gujarat**	**2×**
8	**Dudhwa — Lakhimpur Kheri**	Lakhimpur Kheri	**2×**
9	**State with highest number of NPs**	**MP**	**2×**

Chapter 10 — NON-CONVENTIONAL ENERGY SOURCES

10.1 Key concepts

Non-conventional energy = Renewable — This is the definition.

Renewable / Non-conventional	Non-renewable / Conventional
Solar, wind, tidal, geothermal, hydro-electric, biogas	**Petroleum**, coal, natural gas, **biomass***

⚠ **Traps:** *"Which of the following is conventional energy?"* When options are tidal/geothermal/**biomass**/wind → Answer is **biomass** (wood, dung used for centuries).

Second trap: **Nuclear energy is not derived from the sun** — biomass, wind, geothermal are ultimately from the sun.

10.2 Non-Conventional Energy Sources

Question	Answer
Solar energy → electrical energy by whom	**Photovoltaic Cells**
Pollution-free / Most environment-friendly energy	**Solar energy / Solar cell** *(3 times)*
Least polluting fuel	**Hydrogen** *(3 times, including Chapter 4)*
Best source of electricity in India from sustainable development perspective	**Hydro-electricity**
Renewable source with highest potential in India	**Solar energy**
Not an example of biomass energy	**Nuclear energy**
Incorrect statement about biofuel	⚠ *"Biofuel is cost-effective"* — **This is incorrect**
Provides both electricity + manure	**Biogas plant**
Gases reduced by HCNG	**SO_2 and CO**
Main role of solar energy	**Water cycle**

10.3 ☆ Bio-diesel Plants (4 times)

Jatropha = Ratanjot — Both names belong to the same plant. Questions sometimes ask "Jatropha", sometimes "Ratanjot".

Plant	Identification
Jatropha / Ratanjot	**Main bio-diesel plant** ☆

Pongamia (Karanj)	**Leguminous petro-plant** ☆

⚠ **Java Grass, Rosha Grass, Guggul — Never the answer** (All three are permanent distractors).

10.4 "First/Primary" Facts

First	Answer
First union territory running 100% on solar energy	**Diu** ☆
India's first airport operated by solar energy	**Cochin** ☆
World's first 100% organic state	**Sikkim** ☆
India's first green-energy convergence project	**Goa**

Chapter 11 — MISCELLANEOUS + UTTAR PRADESH SPECIAL

11.1 ☆☆ UTTAR PRADESH — All UP-tag facts of the question bank in one place

Fact	Answer
UP Forest Cover	**~12.8%** of total geographical area ☆
Districts with no forest land	**Jaunpur, Ghazipur, Ballia** ☆☆ *(Both statements correct → Answer (d))*
Dudhwa National Park	**Lakhimpur Kheri** district *(2 times)*
Dudhwa	**Rhinoceros rehabilitation** is taking place here ☆
Chandraprabha Wildlife Sanctuary	**Chandauli** district
Katarniyaghat Wildlife Sanctuary	Established in **1975**
Bakhira Bird Sanctuary	**Basti** district
Parvati Arga Ramsar Site	**Gonda** district — **Bird Sanctuary** *(Both statements correct)*
Amangarh Tiger Reserve	**Uttar Pradesh** (Not in MP)
Moradabad	**Frontier Report-2022** — World's **second most noise-polluted city** ☆

> Write these ten lines separately on a page — UP-specific environment questions appear almost every year in UPPCS.

11.2 SDG Matching *(2 times, almost identical)*

SDG	Subject
SDG 10	**Reduced Inequalities**
SDG 13	**Climate Action**
SDG 14	**Life Below Water**
SDG 15	**Life on Land**

⚠ **Not included in SDGs → Space Research** *(2 times — also in Chapter 1)*

11.3 Day Matching *(1 Q, but all days here)*

Date	Day
18 April	**World Heritage Day**
22 May	**International Day of Biodiversity**
29 July	**International Tiger Day**
5 December	**World Soil Day**

11.4 Act-Year Matching *(Final question — entire paper rests on this table)*

Act	Year
Water (Prevention & Control of Pollution) Act	**1974**
Air (Prevention & Control of Pollution) Act	**1981**
Forest Conservation Act	**1980**
Environment (Protection) Act	**1986**
Wildlife (Protection) Act	**1972**
Biological Diversity Act	**2002**

11.5 Miscellaneous

Fact	Answer
First National Centre for Marine Biodiversity (NCMB)	**Jamnagar (Gujarat)** ☆
NITI Aayog State Energy & Climate Index (10 April 2022) — Top 3	**Gujarat, Keralam, Punjab** ☆
Balance between resource use and conservation	**Sustainable Development**
Eco-Mark	Environment-friendly products *(Repeated here too)*
India's rank in world GHG emissions (2022)	**10th** — *Commission's official key* ⚠

> ⚠ **A warning:** India is generally considered the **third largest GHG emitter**. The "10th" above is the **UPPCS official answer key** (likely on a per-capita basis). Teach this as "the commission's key is this," and also mention that in absolute emissions India is in third place — so that students are prepared for both formats.

Quick revision sheet

Last 30 days — Only this page

(This list alone covers about 200+ questions, i.e., ~50% question bank)

Top 15 asked again and again — In descending order

#	Point	Answer	Count
1	NP/Sanctuary ↔ State	TABLE A (9.1)	~20
2	Biosphere Reserve ↔ State	TABLE C (9.3)	16
3	Tiger Reserve ↔ State	TABLE D (9.4)	12
4	**Biodegradable / Non-biodegradable**	Rule of 4.1	**10**
5	**Wetland / Ramsar**	Wetland, 1971	10
6	**India's hotspot**	**Western Ghats**	9
7	Ecosystem definition/components	Tansley, open system	13
8	Trophic level / energy flow	Unidirectional, decreasing	8
9	Noise pollution (Decibel, 80dB, Green Muffler)	4.6	7

10	**Cause of biodiversity loss**	**Habitat destruction / All**	6
11	Acid Rain	**SO_2 + NO_x**	5
12	**Which is not a greenhouse gas**	**Argon / O_2**	5
13	Maximum biodiversity	Trop. rainforest	5
14	Sustainable Development	Brundtland	5
15	Ecotone/Sere/Succession/Climax	2.2	5

12 sentences to remember at all costs

1. **Western Ghats = hotspot; Eastern Ghats = never.**
2. **Biodiversity loss = habitat destruction** (or "All of the above").
3. **Argon and O_2 are not greenhouse gases.**
4. **Rubber is biodegradable; PVC and DDT are not.**
5. **Eucalyptus is the only "anti-environment" tree.** *(4 times)*
6. **Nuclear energy is not among the 8 missions of NAPCC.**
7. **Hangul only in Dachigam — not in Periyar.**
8. **Buxa is in West Bengal, not in Bihar.**
9. **Ozone = stratosphere, UV absorbed, destroyed by CFC, depletion at poles.**
10. **CO is the most dangerous air pollutant; Green Muffler = noise pollution.**
11. **Dudhwa = Lakhimpur Kheri; Parvati Arga = Gonda; Bakhira = Basti; Chandraprabha = Chandauli.**
12. **Acts: Water 1974 · Air 1981 · Forest 1980 · Environment 1986 · Wildlife 1972 · Biodiversity 2002.**

Last-day numbers

33% minimum forest · **21.54%** forest cover (ISFR 2017) · **12.8%** UP forest · **0.03%** CO_2 · **–18°C** without greenhouse · **0.8°C** increase in century · **5%** India in global GHG · **70%** world's tigers in India · **50/55/65/70 dB** noise limit · **80 dB** harmful · **5** CPCB water categories · **16th** BR = Cold Desert · **1936** first NP · **1973** Project Tiger · **1992** Project Elephant

Chapter coverage

Chapter	Q	Status
1 Environment & Sustainable Dev	30	✓
2 Ecology & Ecosystem	51	✓
3 Biodiversity	46	✓
4 Pollution	73	✓
5 GHG & Climate Change	30	✓
6 Ozone	16	✓
7 Water Conservation	18	✓
8 Forest & Wildlife	39	✓
9 Protected Areas	84	✓
10 Non-Conventional Energy	25	✓
11 Misc + UP Special	12	✓
Total	**424**	**100% Mapped**

Ghatnachakra's 1063 question list is also included within these 11 chapters — about 484 questions tagged with UPPCS/RO-ARO/UPUDA from there are solved by these tables. Questions tagged with IAS and other states are intentionally left out because the target is UPPCS.

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