
Prelims Exam Topics

ESCHERICHIA COLI (E. COLI)

Context

A recent **Comptroller & Auditor General (CAG)** report found **E. coli bacteria in drinking-water samples** from railway stations.

About Escherichia coli

- **Nature:** Rod-shaped bacterium belonging to the **Enterobacteriaceae** family, commonly found in the intestines of humans and animals.
- **Health Impact:** Most strains are harmless, while some cause **diarrhoea, urinary tract infections and other illnesses**.
- **Transmission:** Infection can occur through **contaminated food, water or faecal contamination**.
- **Treatment:** Most infections are **self-limiting**; maintaining adequate **hydration** is important.

POSITIVE INDIGENISATION LIST (PIL)

Context

The **Department of Defence Production (DDP)** has notified the **6th Positive Indigenisation List (PIL)** covering** strategically important defence items**.

About Positive Indigenisation List

- **Nature:** Official list of defence items subject to **phased import restrictions**, requiring their procurement from domestic sources after the specified deadline.
- **Nodal Ministry:** **Ministry of Defence**, with lists notified through the **Department of Defence Production (DDP)** and **Department of Military Affairs (DMA)**.
- **Objective:** Reduce **import dependence**, promote domestic defence manufacturing and strengthen India's defence industrial base.
- **Phased Indigenisation:** Each item has a specified **indigenisation timeline**, allowing domestic industry to develop and qualify alternatives before imports are restricted..
- **SRIJAN Portal:** Enables **DPSUs** and **Armed Forces** to display imported items for **Indian manufacturers, MSMEs and startups** to develop domestically.

GRASSLANDS AND OTHER OPEN NATURAL ECOSYSTEMS (ONES)

Context

India launched its **first-ever Guide to Grasslands and Other Open Natural Ecosystems (ONES)** at **UNCCD COP17** in Ulaanbaatar, Mongolia.

About Grasslands and ONES

- **Nature:** The Guide documents India's diverse **non-forest open ecosystems**, their ecological functions, biodiversity and socio-economic importance.
- **Grasslands:** Ecosystems dominated by **grasses, sedges and forbs** with little or no tree cover, shaped by climate, grazing and fire.
- **Open Natural Ecosystems (ONES):** A broad category of **non-forest landscapes with open canopies and low tree density**, including **cold and hot deserts** such as Thar, Spiti and Ladakh; **tropical and sub-tropical savannas and scrublands**; **saline wetlands and desert flats** such as Banni and the Rann of Kutch; **ravines and badlands** such as Chambal; and **rocky/lateritic plateaus and high-altitude alpine meadows** such as Bugyals and Margas.
- **Community Conservation:** Highlights traditional systems such as **Orans (sacred community-protected landscapes)** and **Gauchars (village grazing commons)**.
- **Conservation Approach:** Promotes **science-based restoration** and cautions against afforestation of naturally treeless ecosystems, which can alter their ecology.
- **Land Degradation Neutrality:** Supports India's **Land Degradation Neutrality (LDN)** commitments through improved assessment and restoration of open ecosystems.

DIMNA LAKE

Context

Dimna Lake was among **25 lakes** honoured through spectator gallery names at the **80th Independence Day celebrations** at the Red Fort.

About Dimna Lake

- **Type & Location:** Artificial reservoir located near **Jamshedpur, Jharkhand**, at the foothills of the **Dalma mountain range**.
- **Construction:** Built by **Tata Steel** under the **Dimna Nala Water Supply Scheme**; construction began in **1940** and was completed in **1944**.

- **River:** Created by damming the **Subarnarekha River**.
- **Ecological Setting:** Located near **Dalma Wildlife Sanctuary**, which supports species such as deer, sloth bear and Indian wolf.

GLYPHOSATE

Context

Environmentalists have raised concerns over the alleged use of **glyphosate** on forest department land for pea cultivation in parts of **Himachal Pradesh**.

About Glyphosate

- **Nature:** Glyphosate is a widely used **broad-spectrum herbicide**, meaning it can kill many types of unwanted plants, including grasses, broadleaf weeds and some woody plants.

Impact of Glyphosate

- **Herbicidal Action:** Glyphosate blocks **EPSP synthase**, an enzyme that plants need to produce certain amino acids. Without these amino acids, plants cannot make essential proteins and gradually die.
- **Broad-Spectrum Action:** Since it affects a process common to many plants, glyphosate can control **different types of vegetation rather than only one specific weed**. It mainly works on plants growing above water and is less effective on plants that are largely submerged.
- **Soil & Water Behaviour:** Microorganisms can break down glyphosate in **soil and water**. It also binds strongly to soil particles, which generally reduces its movement into groundwater.
- **Food Residues:** Glyphosate does not break down as quickly inside plants. Therefore, **residues may remain in harvested crops and food products**.

Concerns

- **Non-Target Vegetation:** As a broad-spectrum herbicide, it can also kill **useful or native plants** along with unwanted weeds.
- **Biodiversity:** Its indiscriminate use, particularly in natural habitats, may alter **plant composition and habitat conditions** for other organisms.
- **Food Safety:** Residues in agricultural produce raise concerns about **human exposure through food**, requiring appropriate monitoring and regulation.
- **Forest Ecosystems:** Use on forest land can affect **native vegetation and ecological processes**, particularly where the objective is conservation rather than weed control.

FRIENDS OF MY BHARAT INITIATIVE

Context

The **Ministry of Youth Affairs and Sports** has launched the ‘**Friends of MY Bharat**’ digital initiative to engage **Indian-origin youth living abroad**.

About Friends of MY Bharat Initiative

- **Nodal Ministry:** Initiative of the **Ministry of Youth Affairs and Sports**, developed through the **Mera Yuva Bharat (MY Bharat)** platform.
- **Objective:** Connect Indian-origin youth overseas with **nation-building, volunteering and youth-led programmes in India**.
- **Global Youth Engagement:** Provides **Indian-origin students, young professionals and other youth abroad** access to information on **volunteering and youth programmes** available on MY Bharat.
- **Volunteering:** Covers opportunities in **education, environmental protection, health awareness, disaster relief and cultural preservation**.
- **Know Your India:** Dedicated section providing information on **Indian culture, heritage, history, tourism, travel and prominent leaders**.

Mains Exam Topics

DEATH PENALTY IN INDIA

Context:

The Supreme Court recently upheld hanging as a constitutional method of execution, holding that the challenge against its scientific reliability and compatibility with the Article 21 right to a dignified death was not sustainable in light of *Deena v. Union of India (1983)* and Parliament's decision to retain hanging under the BNSS, 2023.

What makes the death penalty an uncertain tool of deterrence?

- **Weak Empirical Evidence:** There is no conclusive evidence that the death penalty reduces crime more effectively than life imprisonment.
 - **Eg:** The Law Commission's 262nd Report (2015) found no conclusive empirical evidence to prove that capital punishment has a greater deterrent effect than life imprisonment.
- **Low Certainty of Punishment:** Deterrence becomes weaker when offenders cannot be sure that a serious crime will actually lead to execution.
 - **Eg:** In *Bachan Singh v. State of Punjab (1980)*, the Supreme Court restricted the death penalty to the "rarest of rare" cases, making execution an exceptional punishment.
- **Delayed Punishment:** Long trials, appeals and mercy petitions weaken the connection between the crime and its final punishment.
 - **Eg:** In *Shatrughan Chauhan v. Union of India (2014)*, the Supreme Court held that **unexplained and excessive delay in mercy petitions** can justify commutation of the death sentence.
- **Limited Additional Effect:** Life imprisonment already provides severe punishment and incapacitates the offender, making the **extra deterrent effect of execution difficult to prove**.
- **Limited Rationality:** Deterrence assumes that offenders carefully consider punishment before committing a crime, but many violent acts result from **anger, impulse, intoxication or extremist motives**.
 - **Eg:** A crime committed during a **sudden emotional outburst** may occur without the offender calculating the possibility of receiving the death penalty.

What makes life imprisonment a different conception of justice from capital punishment?

Dimensions	Life Imprisonment	
Purpose of Justice	Seeks to punish and incapacitate the offender while preserving life.	Seeks retribution and proportional punishment through deprivation of life in exceptional cases.
Possibility of Reform	Retains the possibility of rehabilitation and behavioural change.	Ends any possibility of reform or rehabilitation after execution.
Proportionality	Expresses society's condemnation through long-term deprivation of liberty.	Consider certain exceptional crimes sufficiently grave to justify the ultimate deprivation of life.
Reversibility	A wrongful conviction can potentially be corrected through appeal, review or release.	Irreversible: an erroneous execution cannot be undone.
Constitutional Philosophy	Allows punishment to be balanced with the values of life, dignity and reform under Article 21.	Permitted under Article 21, but only within the strict "rarest of rare" framework.
Individualised Justice	Allows continued assessment of the offender's conduct, reform and circumstances during imprisonment.	Once executed, no further scope remains for reassessing the offender or circumstances.
Eg	Swamy Shraddhananda v. State of Karnataka (2008) recognised imprisonment for the remainder of natural life as an alternative to death in appropriate cases.	Bachan Singh v. State of Punjab (1980) held that death should be imposed only in the "rarest of rare" cases when life imprisonment is unquestionably inadequate.

Way Forward

- **Mandatory Mitigation Assessment:** Ensure strict compliance with *Manoj v. State of M.P. (2022)* by requiring comprehensive mitigation analysis before imposing the death penalty.
 - **Eg:** High Courts can scrutinise whether trial courts collected adequate **psychological, social-background and prison-conduct evidence**.
- **Uniform Sentencing Guidelines:** Develop clear sentencing standards to reduce **judicial inconsistency** in applying the “rarest of rare” doctrine.
 - **Eg:** A specialised **Sentencing Council**, on the lines of the UK model, could frame and periodically revise capital-sentencing guidelines.
- **Scientific Investigation & Legal Aid:** Strengthen **forensic-based investigation** and ensure competent legal representation from the trial stage.
 - **Eg:** **Article 39A** requires the State to provide effective legal aid to accused persons unable to afford representation.
- **Structured Life Imprisonment:** Provide **long-term or non-remissible life imprisonment** as a clear alternative to death where permanent incapacitation is necessary.
 - **Eg:** *Swamy Shraddhananda (2) v. State of Karnataka (2008)* recognised imprisonment for the remainder of natural life as an alternative to capital punishment.
- **Progressive Legislative Review:** Reassess the continued use of capital punishment in light of **evidence, constitutional values and international trends**.
 - **Eg:** The **Law Commission’s 262nd Report (2015)** recommended abolition of the death penalty for ordinary crimes, retaining it for terrorism-related offences and waging war against the State.