



# PLUTUS IAS

## Weekly Current Affairs

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# POLITY AND GOVERNANCE

## PUBLIC EXAMINATIONS (PREVENTION OF UNFAIR MEANS) BILL 2024

### WHY IN THE NEWS?

The Public Examinations (Prevention of Unfair Means) Bill, 2024, was tabled in the Lok Sabha by Union Minister Jitendra Singh. The bill stipulates

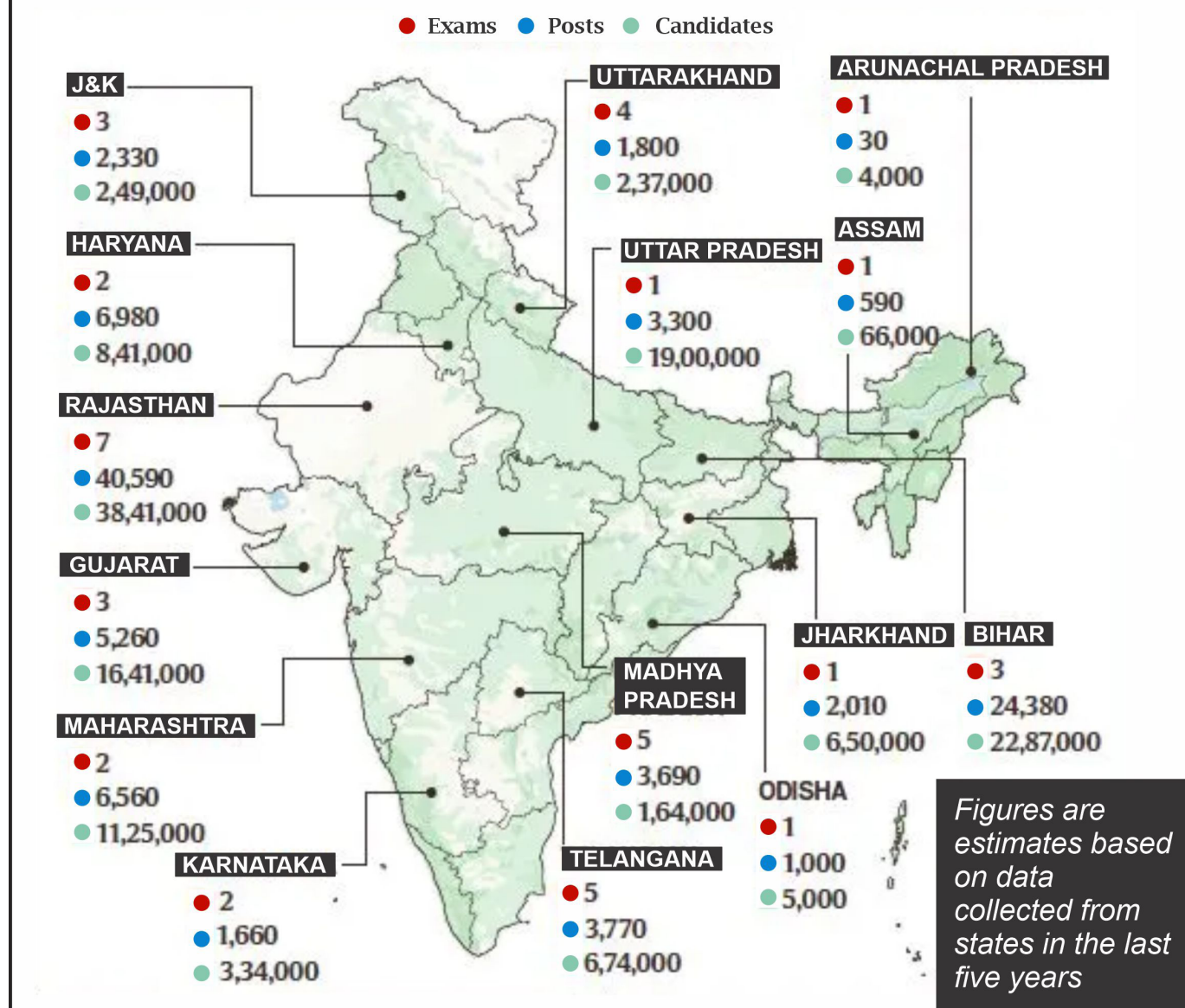
that cheating and irregularities in competitive examinations will result in a maximum sentence of 10 years in prison and a fine of up to Rs 1 million.

### BACKGROUND

- Over five years, there have been at least 48 examples of exam leaks in 16 states. More than 1.5 crore people applied for 1.2 lakh openings.

## 15 states, leaks in 41 job-recruitment exams

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- Long wait times between cancellation and re-exams (up to two years). It causes uncertainty and distress to aspirants and families.
- Few arrests have been made, and investigations continue without resolution. Identifies flaws in the secure administration of infallible tests.

### KEY PROVISIONS OF THE PUBLIC EXAMINATIONS BILL

- The Bill **aims to improve openness, fairness, and reliability in public examinations**, as well as reassure youth that their hard work will be rewarded and their future is secure.
- The bill applies to central recruitment and entrance exams held by the Union Public Service Commission (UPSC), Staff Selection Commission (SSC), Railway Recruitment Boards (RRBs), Institute of Banking Personnel Selection (IBPS), and National Testing Agency (NTA).
- In addition to the approved public examination authority, the new rule will apply to all central ministries and departments, as well as their recruitment offices.

### PUNISHMENTS:

- The bill imposes a **three- to five-year prison** sentence for involvement in paper leak instances. However, **if a link to organised crime is confirmed**, a prison sentence of **up to ten years** is imposed.
- It charges a **Rs 1 crore fine** and recovers inspection costs from firms.
- It further states that if convicted, a corporation may be restricted from giving public exams for years.

**Section 9** of the Bill addresses the nature of offences under the new legislation. Offences under the new bill are **cognizable, non-bailable, and non-compoundable**.

- **Cognizable**: arrest without a warrant is possible.
- **Non-bailable**: bail is not guaranteed. A magistrate will decide if the accused is eligible for bail.

- **Non-compoundable offences**: It cannot be withdrawn by the complainant, even if both parties reach an agreement. A trial will undoubtedly follow for the accused.

### INVESTIGATION

- The law proposes that officials not under the level of deputy superintendent of police or assistant commissioner of police oversee such cases.
- According to the measure, the government can also refer the investigation to a central agency.
- In essence, this allows the police to act on their own and arrest people without a warrant.

### WHAT ARE THE ADVANTAGES OF THE PUBLIC EXAMINATIONS (PREVENTION OF UNFAIR MEANS) BILL 2024?

- The measure will reassure young people that their honest and genuine efforts in public examinations will be fairly rewarded.
- The hefty punishments and fines will **dissuade the country's organised paper leak crime mafia**. They will be deterred from attempting to exploit the examination system's flaws.
- The bill proposes the formation of a high-level **National Technical Committee** on public examinations, which will offer suggestions to improve the security of the computerised examination process.
- It will prevent question paper leaks in recruiting examinations.

### CONCERNS WITH THE BILL

- **Loopholes**—The bill **exempts students from facing criminal sanctions**. They have been placed under the administrative rules of the relevant public examination authority. However, paper-leak gang members may use this loophole by appearing as students and avoiding hefty criminal penalties.
- **Discretion of state governments**—The measure allows **state governments to design their own acts using the model bill as a guideline**. However,



er, state governments have already shown partisan interests in writing model legislation, such as the Model APLM Act.

- **Scope of subordinate legislation**– The law allows for the creation of subordinate legislation, such as rules under the act. The executive authorities will have significant discretion in implementing the statute.
- The bill does **not specify the composition or qualifications of the National-Technical Committee** on Public Exams members. The central government's selection of members may be partisan.

## CHILD PORNOGRAPHY : A SERIOUS CRIME

### WHY IN THE NEWS ?



- Recently Madras High Court in the judicial proceedings in the case S. Harish vs Inspector of Police were quashed and held that downloading child pornography was not an offense under Section 67B of the Information Technology (IT) Act, 2000.
- The Madras High Court clearly stated that viewing child pornography in itself was not an offense as the accused had merely downloaded it on his electronic gadget and viewed it in private.
- The Madras High Court also referred to a judgment given by the Kerala High Court where it had held that viewing pornography in a private place does not constitute an offense under Section 292 of the Indian Penal Code (IPC).

- The case pertains to the quashing of a criminal case registered by the Aluva police in 2016 against a youth because he was found watching pornographic material on his mobile phone on the roadside at night.
- The Madras High Court has held that children watching pornographic material in private is not an offense under the **Information Technology Act, 2000 and the Protection of Children from Sexual Offences Act, 2012.**

### PORNOGRAPHY :

- Pornography is called porn in short. In this, such videos, magazines, books or other materials which contain sexual content and which increase the feeling of sex in a person's mind, are called pornography. Porn videos are also called '**blue films**' in common parlance. People who hesitate to call porn or blue films, call them '**such and such**' films.
- Pornography is an art in which nude pictures or obscene videos of people are shown. These pictures or videos are often made showing sex or sexual activities. This type of art is mostly widely present on the Internet.

### CHILD PORNOGRAPHY :



- Child pornography is a crime that involves sexual solicitation of a child under the age of 18 or the production of pornographic material involving a minor, luring children into online sexual relations, and then having sex with them or with children. Recording sexual activities, creating MMS, sending it to others etc. are also included

in this.

### **BACKGROUND OF THE DECISION OF MADRAS HIGH COURT :**

- Ernakulam Additional Deputy Commissioner of Police received a letter that the petitioner (Harish) had downloaded child pornographic material on his mobile phone. The case does not mention the date when the petitioner downloaded the obscene material.
- On receipt of the letter, a First Information Report for the offense under Section 67B of the IT Act, 2000 and Section 14(1) of the POCSO Act was registered by the Aluva Police on January 29, 2020.
- During the investigation, the petitioner's phone was sent to the Forensic Science Department. In this, two files containing obscene material related to children were identified. In those two videos, it was found that two minor boys were involved in sexual activity with a girl or an adult woman.
- The POCSO Act defines a child as a person who is under the age of eighteen years.
- Following the conclusion of the investigation and based on the final police report, a district court took suo motu cognizance of these offenses under Section 67B of the IT Act and Section 14(1) of the POCSO Act.
- Against this, the petitioner filed a petition for quashing of the proceedings under Section 482 of the Code of Criminal Procedure.
- On January 4, 2024, the petitioner appeared before the court. When the matter was raised again, the petitioner admitted before the court that he had the habit of watching pornography. But he had never tried to publish or disseminate any obscene material to others. The petitioner had only downloaded the obscene material and watched it in private and in privacy.

### **IMPLICATIONS OF THE DECISION OF MADRAS HIGH COURT :**

- On 11 January 2024, the Madras High Court ex-

amined the pornographic material available on the petitioner's phone and found that only two videos could be identified as child pornography. The Madras High Court acknowledged that the videos were neither published nor circulated to others.

- On this basis, the Court held that the petitioner would be liable for the offense under Section 14(1) of the POCSO Act only if he had used a child for indecent purposes.
- Additionally, the Court said that watching child pornography videos does not 'strictly' fall within the ambit of Section 14(1) of POCSO. Since the petitioner has not used any child or children for obscene purposes, it can only be construed as moral turpitude on the part of the accused person. ,
- Further, the court held that to constitute an offense under Section 67B of the IT Act, 2000, the video material must be "published, transmitted, created material in which children are depicted in sexual act or conduct". Viewing child pornography does not constitute an offense under Section 67B of the IT Act, 2000."
- Additionally, the court held that – "Section 67B does not cover a case where a person has merely downloaded child pornography in his electronic gadget and has viewed the same without doing anything else. ,
- The Madras High Court gave its judgment in the light of the Kerala High Court's judgment of September 5, 2023 that – "Viewing pornography in private without showing it to others is an offense under Section 292 of the Indian Penal Code (sale of obscene books, etc.) Not there." ,
- Based on all these considerations, the Madras High Court held that the petitioner has not committed any offense under Section 67B of the IT Act, 2000 and Section 14(1) of the POCSO Act.
- The High Court has advised the petitioner to attend counseling if he still finds himself addicted to watching pornography. The High Court held that continuation of criminal proceedings against the petitioner would amount to an

abuse of the process of court and hence all proceedings against the petitioner were quashed.

### STATUS OF CHILD PORNOGRAPHY IN INDIA :



- According to the National Crime Records Bureau (NCRB) 2021 report, there were 738 cases of child pornography in India in the year 2020, which increased to 969 in the year 2021. The increase in the number of child pornography cases every year indicates the alarming situation of online child sexual exploitation in India, which is extremely worrying and there is a strong need to control it.

### ACTUAL SITUATION REGARDING PORNOGRAPHY IN INDIA :

- There is a strict ban on making, selling, sharing, displaying etc. of porn in India. Despite this, India is the third most porn watching country in the world.
- According to the news in the year 2018, the rate of watching porn in India had increased by 75 percent between 2017 and 2018. A large number of people are watching it in small towns of India.
- In 2018, the Indian government had banned about 850 porn websites. This has been done before also. But it never had any significant impact because these websites create new domains and come to the Indian market.
- At present, users see them through various apps, through WhatsApp, through Telegram and through other social media.

### LEGAL PROVISIONS RELATED TO PORNOGRAPHY IN INDIA :



Child pornography is considered a crime in India and there are many laws on it.

- **India has several provisions related to pornography in the Information Technology (IT) Act 2000, the Indian Penal Code (IPC) and the Protection of Children from Sexual Offences (POCSO) Act 2012.**
- **Indian Penal Code 1860 :** In India's oldest penal code, child sexual abuse and child pornography are considered crimes.
- **Sections 354, 354A, 354B, 354C and 376AB provide punishment for child sexual abuse and other crimes.**
- **Child Rights (Amendment) Act, 2019 :** This Act is designed to protect the rights of all children in India. In this Act, there are laws for crimes like child sexual abuse, child pornography and child endangerment.
- **Infant Labor (Prohibition) Act, 2016 :** This Act is designed to free children from labour. This Act is against those who use children in crimes like child labour, child sexual abuse and child pornography.

### CHILD PORNOGRAPHY LAWS IN INDIA :

- The law on child pornography is regulated by the IT Act as well as the POCSO Act.
- **Section 14 of the POCSO Act** is invoked in cases where a child is enticed for obscene purposes.
- **Section 15 of the POCSO Act** is invoked in cas-



es where child pornographic material is stored or placed in electronic devices for sharing or transmitting the material. The interpretation of section 15 shows that downloading child pornographic material is illegal as the law requires that the material be removed, destroyed or reported to the relevant authorities.

- If the content of the porn involves rape or physical abuse, then action will be taken under **IT Act, Section 67A**. Action will be taken against those broadcasting child porn under **Section 67B of the IT Act**. If someone makes a video of someone having sex or sexual activity, then it is a crime. In this, action is taken under Section 66E of the IT Act.
- **Under Section 67A of the IT Act, depending on the seriousness of the offense, the punishment for the first offense is imprisonment up to 5 years and/or a fine up to Rs 10 lakh. On committing the same crime for the second time, the jail sentence increases to 7 years, but the fine remains only Rs 10 lakh.**
- **Sections 67A and 67B of the IT Act are non-bailable.** In cases related to child pornography, action is also taken under POCSO law.



#### CONCLUSION / SOLUTION :

- Downloading child pornography is a crime in India.
- The recent decision of the Madras High Court in the case of downloading child pornography should be appealed to the Supreme Court of

India.

- In present times teenagers are facing new challenges from gadgets which are bombarding them with all kinds of information without any censorship including addiction to watching pornographic material. Therefore, there is a need for necessary and strict legal provisions to deal with this.
- Porn addiction, like other substances or 'things' that people can become addicted to, can be understood and addressed through the principles of 'operant conditioning'.
- The increasing addiction to porn among teenagers is becoming a matter of concern due to the accessibility of sexually explicit material on the Internet. According to a study, today 09 out of 10 minor boys are exposed to obscene material in some form or the other. At the same time, six out of 10 girls come in contact with pornography.
- Currently in India, adolescent boys aged 12-17 years are at the highest risk of developing porn addiction. On average, a male is first exposed to pornography at age 12.
- Instead of punishing children for watching pornographic material in India, the society should be mature enough to give them proper advice, education and counseling to get rid of this addiction.

**THE 96.88 CRORE PEOPLE REGISTERED TO VOTE FOR THE FORTHCOMING GENERAL ELECTION IN INDIA.**

#### WHY IN THE NEWS?

On Friday, the Election Commission said nearly **97 crore Indians** will be eligible to vote in this year's Lok Sabha elections. It also said over **two crore young electors** aged 18 to 29 years have been added to the voters' list.

#### KEY HIGHLIGHTS OF THE REPORT:

- **Inclusive Participation:** With meticulous planning and coordination, the electoral rolls now



boast inclusivity on an unparalleled scale, reflecting the vibrant diversity of India's electorate. As per the finally published electoral roll, over 96.88 crore voters are registered nationwide.

- **Gender Parity:** Noteworthy in this publication is the remarkable increase in female voter registrations, exemplifying a concerted effort towards gender parity and inclusivity within the electoral framework. The Electoral Roll gender ratio has surged positively, indicating the growing role of women in shaping the democratic fabric of the nation. Over 2.63 crore new electors have been included in the electoral roll, of which around 1.41 crore are female electors, surpassing the newly enrolled male voters (~ 1.22 crore) by over 15%. Gender Ratio increases from 940 in 2023 to 948 in 2024.
- **Youth Engagement:** More than two crore young electors, spanning the 18-19 and 20-29 age groups, have been added to the electoral roll. Special Assistant Electoral Registration Officers (AEROs) were appointed at the constituency level to facilitate youth enrolment directly from educational institutions, fostering greater civic engagement among the younger populace.
- **Rigorous scrutiny:** After thorough house-to-house verification, names of 1,65,76,654 deceased, permanently shifted, and duplicate electors have been deleted from the electoral rolls. This comprehensive cleanup ensures the integrity and purity of the electoral process. It includes 67,82,642 dead voters, 75,11,128 permanently shifted/absent voters and 22,05,685 duplicate voters.
- **Focus on Particularly Vulnerable Tribal Groups:** Special endeavours have been undertaken to achieve 100% registration of PVTG, making the electoral rolls the most inclusive to date.
- Efforts have also been undertaken to assist voters with disabilities (**PwD**) by designating around 8.835 million PwD voters in the electoral roll database, guaranteeing accessibility and inclusiveness on election day.

The Lok Sabha elections are the largest and most crucial democratic event in the country. These elections are held to elect the new members in the Lok Sabha, the lower house of the Indian Parliament, and the next central government. The election result will significantly impact the political landscape and the lives of 1.4 billion people for the next five years.

#### THE ELIGIBILITY CRITERIA FOR INDIVIDUALS TO VOTE IN GENERAL ELECTIONS ARE AS FOLLOWS:

- **Citizenship:** The individual should be a citizen of India.
- **Age:** The minimum age for voting is 18 years. Individuals must be at least 18 years old on the qualifying date specified by the Election Commission of India.
- **Electoral Rolls:** The individual must be registered as a voter in the electoral roll of their respective constituency. This involves completing the registration process, typically including submitting an application and necessary documents such as proof of identity and residence.
- **Mental Soundness:** The individual must be of sound mind, not disqualified by law, and not declared as mentally unsound by a competent court.

Once a person meets these criteria and is registered as a voter, they are eligible to vote in general elections in India. It's important to note that the Election Commission of India periodically updates the electoral rolls, and citizens are encouraged to verify and update their details as necessary to ensure they can exercise their voting rights.

#### ABOUT THE ELECTION COMMISSION OF INDIA (ECI):

The ECI is an autonomous constitutional body responsible for administering elections to the Parliament of India, State Legislative Assemblies elections and the offices of the President and Vice President in India. Established in 1950, it operates under the authority of the Constitution of India. The ECI was established under Article 324 of the Indian Constitution. The Election Commission operates and ensures its independence and authority in conducting

free, fair, and transparent elections in India. The constitutional provisions of the Election Commission are discussed in below:

- **Article 324:** This article deals with the power of superintendence, direction, and control of elections, which shall be vested in the Election Commission of India.
- **Article 325:** This article deals with the eligibility to vote in elections in India. It guarantees that elections to the Lok Sabha and to the State Legislative Assembly of every State shall be based on adult suffrage.
- **Article 326:** This article provides the concept of “universal adult suffrage” in India. It also empowers Parliament to enact laws to extend further or limit the right to vote.
- **Article 327:** This article grants Parliament the power to make provisions concerning the election procedures for both Parliament and State Legislatures and, including the powers to delimit constituencies, allocate seats, and determine the manner of filling seats.
- **Article 328:** This article empowers the State Legislature to make laws regarding elections to the State Legislature and the subjects to the provisions of the Constitution and any laws made by Parliament.

#### KEY RESPONSIBILITIES OF THE ELECTION COMMISSION OF INDIA INCLUDE:

- **Conducting free and fair elections:** The ECI ensures that elections are conducted in a free, honest, and transparent manner, without any bias or undue influence.
- **Voter registration:** The commission oversees the registration of voters, updating electoral rolls, and ensuring that eligible citizens can participate in the electoral process.
- **Candidate nomination:** The ECI manages the candidate nomination process, scrutiny, and withdrawal for various elections.
- **Election planning and logistics:** It is responsible for planning and organising elections, including

deploying polling personnel, security arrangements, and logistical support.

- **Election monitoring and enforcement:** The commission monitors the conduct of elections to prevent malpractices such as electoral fraud, bribery, or intimidation. It also enforces the Model Code of Conduct, which sets guidelines for the behaviour of political parties and candidates during elections.
- **Voter education and awareness:** The ECI conducts voter education programs to inform citizens about their voting rights and responsibilities and to promote voter turnout.
- **Implementing the Model Code of Conduct:** The commission enforces the Model Code of Conduct, which sets guidelines for political parties and candidates regarding campaigning activities to ensure a level playing field during elections.

#### HERE ARE SOME SUGGESTIONS TO ENHANCE PEOPLE'S PARTICIPATION AND INTEGRITY IN THE ELECTION PROCESS IN INDIA:

- **Conduct Voter Registration Drives:** Conduct voter registration drives to ensure eligible citizens are registered to vote. Utilize community outreach programs, social media campaigns, and collaboration with local organizations to reach underserved populations and encourage registration.
- **Engagement of Civil Society Organizations:** Partner with civil society organisations, NGOs and community groups to mobilize citizens, conduct voter education activities, and promote voter turnout. Leverage their grassroots networks and expertise to enhance outreach efforts.
- **Public Awareness:** Launch campaigns to raise awareness about the electoral process, key election dates, and voting procedures. To reach a wide audience, utilize diverse communication channels such as radio, television, social media, and community events.
- **Accessibility and Inclusivity:** Ensure the electoral process is accessible and inclusive for all citizens, including persons with disabilities, el-

derly voters, and marginalized communities. Provide accommodations such as accessible polling stations, voter assistance services, and information in multiple languages.

- **Transparent Electoral Roll Management:** Ensure accurate and up-to-date voter lists to prevent disenfranchisement and reduce the risk of electoral fraud. Utilize technology such as biometric authentication and regular audits to maintain the integrity of voter rolls.
- **Strict Enforcement of Electoral Laws:** Strengthen enforcement mechanisms to deter electoral malpractices such as vote-buying, booth capturing, and intimidation. Implement stringent penalties for electoral law violations to uphold the electoral process's sanctity.
- **Independent Election Commission:** Uphold the independence of the Election Commission of India (ECI) by providing it with adequate resources, autonomy, and authority to conduct elections impartially and efficiently.
- **Monitoring and Observation:** Deploy independent observers, both domestic and international, to monitor the electoral process and report any irregularities or violations. Facilitate transparency and accountability through comprehensive monitoring mechanisms.
- **Use of Technology:** Leverage technology for voter registration, electronic voting, and result tabulation to enhance efficiency, accuracy, and transparency in the electoral process. Implement robust cybersecurity measures to safeguard against digital threats.

## PRELIMS QUESTIONS

### Q1. Consider the following statements:

1. Justice Verma Committee recommended the implementation of the Common Eligibility Test
2. The primary objective of introducing the Common Eligibility Test is to enhance the competitiveness in the private sector
3. NTA was established in 2018.

### How many of the above statements are correct?

- (a) One
- (b) Two
- (c) Three
- (d) None

### Q2. Consider the following statements regarding child pornography in India.

1. Downloading child pornography is not a crime in India.
2. Sections 67A and 67B of the IT Act are bailable. In India, no action is taken under the POCSO law in cases related to child pornography.
3. The POCSO Act in India defines a child as a person who is sixteen years of age or under sixteen years of age.
4. There is a strict ban on making, selling, sharing, displaying etc. of porn in India. Despite this, India is the third most porn watching country in the world.

### Which of the above statement / statements is/are correct?

- (a) Only 1 and 3
- (b) Only 2 and 4
- (c) Only 3
- (d) Only 4

### Q3. Choose the INCORRECT statements about the Election Commission of India:

- (a) It is a statutory body.
- (b) The commission consists of one Chief Election Commissioner and two Election Commissioners.
- (c) Article 324 states that superintendence, direction and control of elections are to be vested in an Election Commission.
- (d) The President appoints Chief Election Commissioner and Election Commissioners.

**ANSWERS**

S. No.	Answers
1.	C
2.	D
3.	A

**MAINS QUESTIONS**

**Q1. Analyze the role of media and social platforms in the spread of leaked exam content. Discuss the ethical responsibilities of media outlets and social media platforms in preventing the dissemination of such materials.**

**Q2. What do you understand about child pornography? Discuss how relevant are the laws made for prevention of child pornography in India in the current era of increasing spread of social media? Also present rational solutions to prevent child pornography.**

**Q3. Discuss challenges faced by the Election Commission of India in conducting elections and how to overcome them. Critically examines.**



# ECONOMY

## INTERIM BUDGET 2024

### WHY IN THE NEWS?

The Interim Budget for 2024-25 was just tabled in parliament. It aims to reach 'Viksit Bharat' by 2047, with all-round, widespread, and inclusive growth.

### ABOUT INTERIM BUDGET?

An interim budget is submitted by a government in transition or its final year of power prior to general elections. The interim budget's objective is to ensure that government expenditure and critical services continue until the next government can present a full budget after taking office.

### MAJOR HIGHLIGHTS OF THE INTERIM BUDGET 2024-25

#### CAPITAL EXPENDITURE:

An **11.1%** increase in the capital expenditure budget for 2024-2025 was announced. The capital expenditure is scheduled at Rs 11,11,111 crore, which represents **3.4% of GDP**.

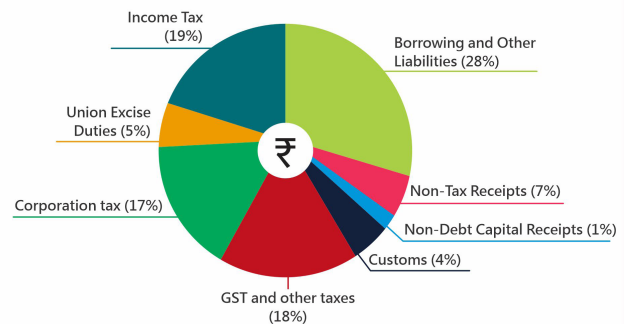
#### ECONOMIC GROWTH PROJECTIONS:

For fiscal year 2023-24, real GDP growth is expected to be **7.3%**, in line with the RBI's revised growth prediction. The International Monetary Fund raised India's growth forecast to 6.3% for fiscal year 2023-24. It also expects India to become the third-largest economy by **2027**.

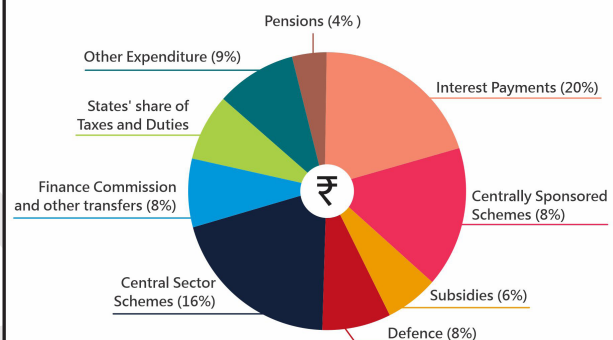
#### REVENUE AND EXPENDITURE ESTIMATES FOR 2024-25:

Total receipts are estimated at Rs 30.80 lakh crore, excluding borrowings. Total expenditure is estimated at Rs 47.66 lakh crore. Tax receipts are estimated at Rs 26.02 lakh crore.

#### Rupee Comes From



#### Rupee Goes To



### GST COLLECTIONS:

It reached **₹1.65 lakh crore** in December 2023, surpassing the ₹1.6 lakh crore threshold for the sixth time.

### FISCAL DEFICIT AND MARKET BORROWING:

The fiscal deficit is expected to be **5.1% of GDP in 2024-25**, with a target of lowering it to less than 4.5% by 2025-26 (as indicated in the budget 2021-22). The gross and net market borrowings through dated securities in 2024-25 are anticipated to be Rs 14.13 and 11.75 lakh crore, respectively.

### TAXATION:

The Interim Budget keeps the current rates of direct and indirect taxes, including import charges. Corporate taxes are **22%** for existing domestic enterprises and **15%** for selected new manufacturing companies. Under the new tax regime, taxpayers earning up to ₹7 lakh are not required to pay any taxes. Cer-

tain tax incentives for startups and investments are prolonged by one year up to **March 31, 2025**

### INFRASTRUCTURE:

- **Railways:** Three important economic railway corridor projects will be implemented: energy, mineral and cement corridors, port connectivity corridors, and high traffic density corridors. Forty thousand regular rail bogies will be upgraded to **Vande Bharat standards** to improve safety, convenience, and passenger comfort.
- **Aviation:** The **UDAN** programme includes the expansion of current airports as well as the comprehensive development of new airports.
- **Urban Transport:** Promoting urban development through Metro Rail and NaMo Bharat.

### HOUSING SECTOR:

The government intends to subsidize the development of **30 million affordable homes** in rural areas. The Housing for Middle-Class initiative will be created to encourage the middle class to buy or build their own homes.

### HEALTHCARE SECTOR:

**Promoting Cervical Cancer Vaccination for Girls (9-14 Years).** Mission Indradhanush's immunization activities will be carried out through the U-WIN platform. They are expanding the Ayushman Bharat programme to cover all ASHA, Anganwadi, and assistants.

### AGRICULTURAL SECTOR:

Promoting the use of 'Nano DAP' for a variety of crops across all agro-climatic regions. Developing strategies to help dairy farmers and combat Foot and Mouth Disease and strategizing for AtmaNirbharta (self-reliance) in oilseeds, including research, procurement, value addition, and crop insurance.

### FISHERY SECTOR:

Creating a new department, 'Matsya Sampada,' to meet the demands of fishermen.

### FOR STATES CAPEX:

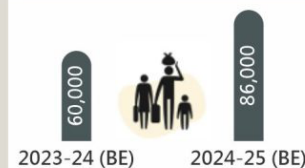
The continuance of the fifty-year interest-free fi-

ancing arrangement for capital spending by states was announced. A total outlay of Rs 1.3 lakh crore, with Rs 75,000 crore set aside for fifty-year interest-free loans to assist state-led reforms. The eastern area will receive special attention in order to become a strong driver of India's economy.

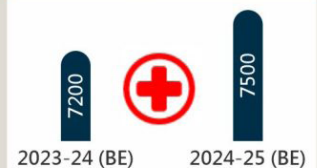
### Allocation to Major Schemes (in crore)

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#### Mahatma Gandhi National Rural Employment Guarantee Scheme



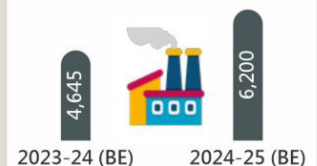
#### Ayushman Bharat-PMJAY



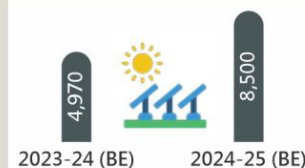
#### Modified Programme for Development of Semi-conductors and display manufacturing ecosystem



#### Production Linked Incentive Scheme



#### Solar Power (Grid)



#### National Green Hydrogen Mission



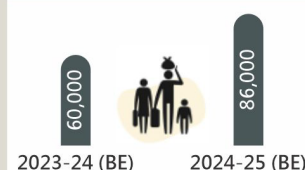
## FISCAL CONSOLIDATION

### WHY IN THE NEWS ?

### Allocation to Major Schemes (in crore)

PLUTUS IAS

#### Mahatma Gandhi National Rural Employment Guarantee Scheme



#### Ayushman Bharat-PMJAY



- In February 2024, India's Finance Minister Nirmala Sitharaman, while presenting her interim budget in the Parliament, had said that a target has been set to limit India's fiscal deficit in this financial year.
- It is worth noting that India is facing fiscal challenges in dealing with its national debts, hence in its interim Budget 2024-25, the Finance Ministry has reduced India's fiscal deficit to 100 per cent of the **Gross Domestic Product (GDP)** in the financial year 2024-25. It has been decided to reduce the GDP growth to 5.1%.
- In her budget speech, the Finance Minister spoke about the government's aim to reduce the fiscal deficit to 5.1% of GDP in 2024-25 and to 4.5% by 2025-26, which surprised many economic analysts, who expected little. Had expected a higher deficit target.
- The government aims to limit the fiscal deficit to 5.8 per cent of gross domestic product (GDP), as against 5.9 per cent estimated in the first budget for the fiscal year, and aims to reduce the fiscal deficit by 2025-26 on the back of a strong surge in tax revenues. Emphasis has been laid on keeping the target below 4.5 percent.
- Direct tax revenues have seen a sharp increase, with income tax 13.5 per cent higher than the budget estimate and securities transaction tax (STT) revenue 15.8 percent higher than the budget estimate for this financial year.
- For the next financial year, direct tax collections, which include income tax and corporate tax, are estimated to grow by 13.1 per cent to Rs 21.99 lakh crore. In the current financial year 2023-24, direct tax revenue is estimated to increase by 17.2 percent on an annual basis to Rs 19.45 lakh crore.
- Income tax collections have seen a sharp growth in 2023-24 and are expected to be Rs 1.2 lakh crore higher than the Budget Estimate, while corporate tax collections have been maintained at the Budget Estimate level of Rs 9.23 lakh crore. With this, income tax revenues are seen exceeding corporate tax collections, even though they were kept at a lower level than corporate tax revenues in the Budget Estimates for 2023-24.
- Securities transaction tax, which is levied on securities traded on stock exchanges, is estimated to rise to Rs 32,000 crore in the revised estimates for 2023-24, an increase of 27.6 per cent over the actual revenue in 2022-23. STT revenue is estimated to increase to Rs 36,000 crore for 2024-25.
- The government's gross tax revenue is expected to increase by 11.5 percent to Rs 38.31 lakh crore in the next financial year.
- The Centre's net tax revenue is estimated to grow by about 12 per cent to Rs 26.02 lakh crore in 2024-25. This compares with a 10.8 per cent increase over actual revenues in 2022-23 in the revised estimate for the current financial year 2023-24. The growth rate of around 12 percent of tax revenues projected for 2024-25 is much higher than the 10.5 percent nominal GDP growth projected for the budget arithmetic of 2024-25.
- The strong growth in tax revenue reflects higher tax buoyancy, which stands at 1.2 in the revised estimate for FY 2023-24, compared to 1.0 in FY23. For 2024-25, the tax jump is seen at 1.1.
- Indirect tax collections, which include customs duty, excise duty and GST (including compensation cess), are expected to fetch the government Rs 16.22 lakh crore in 2024-25.
- In the current financial year, the revised estimates of customs duty and excise duty collections have been revised to Rs 2.19 lakh crore and Rs 3.08 lakh crore, respectively, while GST collections (including compensation cess) are estimated at the budgeted level of Rs 9.57 lakh crore.
- Finance Minister Nirmala Sitharaman said in the Parliament of India that – **"The government is not only keeping pace with fiscal consolidation but also improving it. Not only aligning with the fiscal consolidation roadmap that we gave earlier, but also improving it is a priority for the government."**

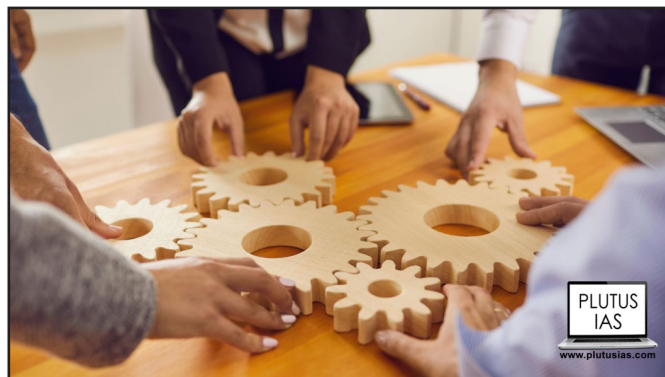


**FISCAL DEFICIT :**

- **Definition:** The difference between the total revenue of any government and its total expenditure is called fiscal deficit. Whenever the government's expenditure exceeds the revenue it receives, the government has to either borrow money or sell its government assets to meet the deficit.
- **Primary source of revenue:** The primary source of revenue for any government is tax. Tax receipts in 2024-25 are expected to be ₹26.02 lakh crore, while total revenue is estimated at ₹30.8 lakh crore. Total government expenditure for the same period is estimated at ₹47.66 lakh crore.

**NATIONAL DEBT :**

- The national debt of any country is the total amount that the government of a country has to pay to its creditors at a given time.
- Government debt includes various liabilities including domestic and external debt along with obligations of schemes such as small savings, provident funds and special securities.
- These liabilities include both interest payments and repayment of the principal amount, placing a considerable financial burden on the government's finances.
- This is usually the amount of debt that the government has accumulated over several years by borrowing to finance fiscal deficits and deficits.
- The higher the government's fiscal deficit as a share of GDP, the less likely it is to make payments to its creditors without any hassle.

**FINANCING OF FISCAL DEFICIT BY THE GOVERNMENT :**

- **Borrowing from the market:** The government borrows money from the market through its bonds to meet its fiscal deficit, the lender from the market buys the bonds issued by the government. From which the government receives income. In 2024-25, the Center aims to borrow ₹14.13 lakh crore from the market, lower than the target for 2023-24.
- **Indirectly providing funds to the government by the Reserve Bank of India:** Central banks like the Reserve Bank of India (RBI) play an important role in the credit market by indirectly providing funds to the government, by purchasing government bonds in the secondary market.
- **Monetary Policy of the Government:** Monetary policies of the government also play an important role in reducing the cost of borrowing money from the market for the governments.
- **Central Bank Lending Rates:** Central Bank lending rates for the government also affect the fiscal deficit of the government. For example – Central bank lending rates in many countries were close to zero before the Covid pandemic, but they have increased rapidly after the pandemic. This makes it more expensive for governments to borrow money. It is because of the lending rates of the Central Bank that the Central Government is determined to reduce its fiscal deficit.

**ROLE OF FISCAL DEFICIT :**

**Inflation :** High fiscal deficit can lead to inflation, as the government may resort to printing money



to meet the deficit. Fiscal deficit reached a high of 9.17% of GDP in 2020 during the pandemic. It has declined significantly since then and is expected to reach 5.8% in the year 2023-24.

**Building confidence among creditors :** Any fiscal discipline, reflected in a lower deficit, can enhance confidence in the government among market creditors. This could potentially improve the rating of the bond and also reduce the cost of borrowing. Lower fiscal deficit indicates better government fiscal discipline. This may lead to higher ratings of Government of India bonds. When the government relies more on tax revenues and borrows less, it increases lender confidence and reduces the cost of borrowing.



**Public debt management :** A high fiscal deficit under any circumstances can put pressure on the government's ability to manage public debt. Due to this, India's public debt can increase at a rapid pace, which also affects the financial management of the country.

**Getting cheap loans from the international market :** It makes the process extremely simple for any government to issue its bonds in foreign markets and get cheap loans to compensate for the low fiscal deficit. Through this process also the fiscal deficit is reimbursed by the government.

#### MAIN METHODS OF MEASURING FISCAL DEFICIT :

**FISCAL DEFICIT = TOTAL EXPENDITURE – TOTAL RECEIPTS (EXCEPT BORROWING).**

**Revenue Deficit :** Revenue deficit in any business or for any government is determined by subtracting the total revenue expenditure from the total revenue receipts. Therefore

**REVENUE DEFICIT = TOTAL REVENUE RECEIPTS – TOTAL REVENUE EXPENDITURE.**

**Negative GDP ratio:** Negative GDP ratio is a method of measuring how much a country owes on its GDP. Therefore

**DEBT TO GDP = TOTAL DEBT OF THE COUNTRY / TOTAL GDP OF THE COUNTRY.**

#### LAWS RELATED TO FISCAL MANAGEMENT :

#### FISCAL RESPONSIBILITY AND BUDGET MANAGEMENT (FRBM) FRAMEWORK :

- The FRBM Act, enacted in 2003, set ambitious targets for debt reduction, aiming to limit general government debt to 60% of GDP by 2024-25. The Fiscal Responsibility and Budget Management (FRBM) framework failed to achieve its stated goals. As a result, the outstanding debt of the Central Government of India exceeded the prescribed limit.
- The FRBM Review Committee report has recommended a debt-to-GDP ratio of 60% for the general (combined) government by 2023, which includes 40% for the central government and 20% for the state governments.

#### MEASURES TO MANAGE NATIONAL DEBT AND FISCAL DEFICIT IN INDIA :



#### TO INCREASE REVENUE COLLECTION :

- There is an urgent need to strengthen tax administration and its strict compliance to improve revenue collection and widen the tax base by the government.
- There is also a need to impose environmental

taxes or taxes on luxury goods, new taxes or duties on property to diversify revenue sources.

### FISCAL DISCIPLINE AND CONSOLIDATION :

- Compliance with the FRBM Act is of utmost importance to comply with the fiscal consolidation targets. The government should aim to gradually reduce the fiscal deficit and GDP ratio to ensure sustainable public finances.
- The government's implementation of prudent fiscal policies along with rationalization of its expenditure, revenue enhancing measures and reforms in subsidies can reduce its dependence on borrowing and help manage fiscal imbalances.

### CREATING DEBT MANAGEMENT STRATEGIES :

- The government needs to develop a prudent debt management strategy to optimize the cost of borrowing and minimize refinancing risks.
- There is a need to diversify the investor base and sources of financing in domestic and international markets to reduce the risk of market volatility.

### REFORMS AT STRUCTURAL LEVEL :

- There is a need to undertake structural reforms aimed at improving the efficiency and competitiveness of the economy, including labor market reforms, ease of doing business initiatives and improving governance.
- To enhance growth potential and maintain fiscal stability, it is necessary to address structural constraints and challenges in sectors such as agriculture, manufacturing and services.

### TO CONDUCT A COMPREHENSIVE REVIEW OF GOVERNMENT EXPENDITURE :

- The government should conduct a comprehensive review of government expenditure to prioritize spending on key sectors such as public health care, education and infrastructure.
- Policies should be made to reduce existing non-essential provisions and subsidies to ensure targeted support to the country's deprived

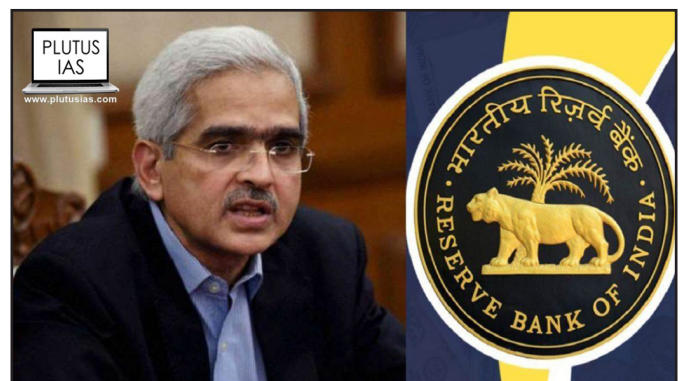
communities and vulnerable populations living below the poverty line.

### CONCLUSION/ SOLUTION :

- By implementing a combination of fiscal consolidation measures, India can effectively manage its national debt and fiscal deficit while ensuring fiscal stability, economic growth and long-term prosperity.
- Achieving fiscal sustainability requires a balance between short-term stabilization efforts and long-term structural reforms.
- Fiscal deficit, the difference between government revenue and expenditure, has a significant impact on inflation, market confidence, debt management and international borrowing.
- The government's plan to reduce the fiscal deficit in the coming years involves a delicate balance of revenue generation and expenditure control.
- Announcing consolidation plans and measures is a prerequisite for restoring public finances in India and maintaining market confidence. In India its objective is to reduce government deficit and debt accumulation.

## MONETARY POLICY COMMITTEE (MPC) OF RBI

### WHY IN THE NEWS?

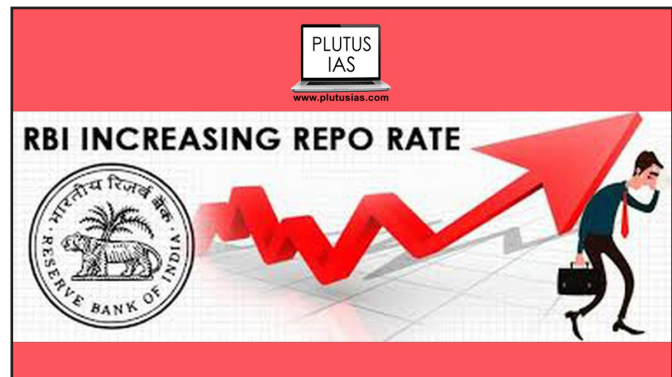


- In February 2024, the RBI's Monetary Policy Committee (MPC) has ensured that inflation is increasingly in line with the target by keeping

interest rates unchanged and by sticking to its stance of 'withdrawal of accommodation', as well as RBI's It has been chosen as a prudent option to continue the objective of the Monetary Policy Committee.

- With a 5-1 majority in the voting among the members of the Monetary Policy Committee (MPC) of the RBI, it has committed to keeping the monetary policy clearly deflationary so as to control inflation. Especially at a time when 'large and repetitive price shocks are disrupting the pace of deflation'.
- Behind the repo rate being kept unchanged at 6.5% in the sixth meeting of the Monetary Policy Committee (MPC), Governor Shaktikanta Das said domestic economic momentum remains strong. Uncertainties in food prices are impacting the headline inflation trajectory. Are.
- The majority of the MPC was united in giving priority to the fight against inflation. This should be seen in the backdrop of recent trends in retail inflation. Headline retail inflation, which declined from a 15-month high of 7.4% in July 2023, to 4.87% in October 2023. However, it reached a four-month high of 5.69% in December 2023.
- The increase in food prices was estimated by the Consumer Food Price Index by 9.53%. Which is 292 basis points more than 6.61% in October 2023.
- The MPC cut its estimate of average retail inflation in the January-March quarter to 5.0%, 20 basis points lower than the December forecast, indicating that policymakers have taken into account seasonal improvement along with improvement in Rabi sowing. Have taken some relief from.
- The Department of Consumer Affairs' daily price monitoring dashboard shows average retail prices of more than two-thirds of major food items remained higher on a year-on-year basis through February 8, 2024.
- Policymakers need to remain firm in their resolve to permanently slow price growth towards

the 4% target or risk reducing consumption and thus weakening growth momentum.



### MONETARY POLICY COMMITTEE :

- Monetary Policy Committee is a committee constituted by the Government of India which was formed on June 27, 2016 to make interest rate determination more useful and transparent. Policy making in India has been handed over to a newly constituted Monetary Policy Committee by amending the Reserve Bank of India Act.
- In May 2016, the Reserve Bank of India (RBI) Act, 1934 was amended to provide for a flexible inflation targeting framework. The amended RBI Act also provides that the Government of India will set an inflation target once every 5 years in consultation with the Reserve Bank. The first meeting of the MPC was held on 3 October 2016 in Mumbai.
- Under Section 45ZB of the RBI Act, 1934, which has been amended in the year 2016, the Central Government has the right to constitute a six-member Monetary Policy Committee (MPC).
- Section 45ZB states that the Monetary Policy Committee will determine the policy rate necessary to achieve the inflation target.
- The decision of the Monetary Policy Committee in India will be binding on banks.

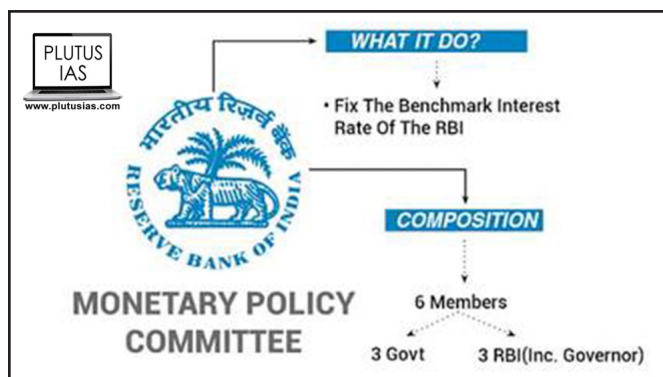
### COMPOSITION OF MONETARY POLICY COMMITTEE :

- The Chairman of the Monetary Policy Committee is the Governor of the Reserve Bank of India and at present the Chairman of the Monetary Policy Committee is the Governor of the Re-



serve Bank of India, Shaktikanta Das.

- As per Section 45 ZB, the Monetary Policy Committee of RBI will consist of 6 members.
- The Governor of RBI is its ex-officio Chairman.
- The deputy governor is in charge of monetary policy.
- It has an officer of the Bank nominated by the Central Board as its member.
- Three persons are appointed by the Central Government in the Monetary Policy Committee.
- Under this process, competent and impartial persons having knowledge and experience in the field of economics or banking or finance or monetary policy will be appointed.



#### TENURE OF MEMBERS OF THE MONETARY POLICY COMMITTEE :

- The tenure of the members of the Monetary Policy Committee will be only for four years and they will not be eligible for reappointment.
- Members of the Monetary Policy Committee are appointed for a term of four years only.

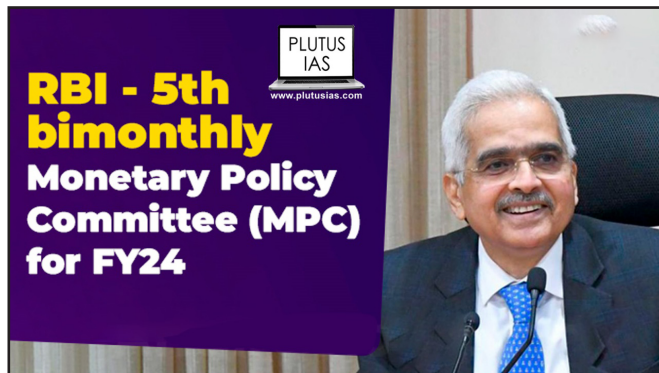
#### PRESENT MEMBERS OF THE MONETARY POLICY COMMITTEE OF INDIA:

**At present the following are the 6 members of the Monetary Policy Committee of India –**

- Shaktikanta Das (Governor of RBI)
- Michael Debabrata Patra (Deputy Governor)
- Ashima Goyal

- Shashank Bhide
- Rajeev Ranjan
- Jayant R. Varma.

#### MONETARY POLICY :



- Monetary policy refers to the policy of the central bank regarding the use of monetary instruments under its control to achieve the objectives specified in the Act.
- The primary objective of RBI's monetary policy is to maintain price stability while keeping growth in mind. Price stability is an essential pre-condition for sustainable development.
- The amended RBI Act, 1934 also provides for setting of an inflation target (4% + -2%) by the Government of India in consultation with the Reserve Bank once every five years.

#### OBJECTIVE OF MONETARY POLICY COMMITTEE :

**The objectives of the Monetary Policy Committee are as follows –**

- The primary objective of RBI's monetary policy is to maintain price stability while keeping in mind the objective of growth.
- Price stability is a necessary condition for sustainable development.
- The work of the Monetary Policy Committee is also to prepare the citizens of the country to face the challenges of an increasingly complex economy.
- The function of the Monetary Policy Committee is also to maintain inflation at a certain level.



el (4%+/-2%). The Reserve Bank of India (RBI) is responsible for keeping the inflation target at 4% (with a deviation of 2%).

- Improving the repo rate and reverse repo rate is also the work of the Monetary Policy Committee.
- Determining the policy interest rate is also the work of the Monetary Policy Committee.
- The function of the Monetary Policy Committee is also to provide reasonable price stability.
- Keeping the business cycle stable is also the work of the Monetary Policy Committee.
- The work of the Monetary Policy Committee is also to pay attention to exchange rate stability.
- It is also the job of the Monetary Policy Committee to accelerate the growth of the economy.
- The work of the Monetary Policy Committee also includes focusing on employment creation in the country.



## INDIAN ECONOMY AND BANKING TERMINOLOGY :

### REPO RATE :



- The interest rate at which the Reserve Bank provides overnight liquidity to banks on the collateral of government and other approved securities under the Liquidity Adjustment Facility (LAF).

### REVERSE REPO RATE :

- The interest rate at which the Reserve Bank receives liquidity from banks on a daily basis under the Liquidity Adjustment Facility (LAF).

### LIQUIDITY ADJUSTMENT FACILITY :

- The Liquidity Adjustment Facility (LAF) includes daily as well as term repo auctions.
- The purpose of term repos is to facilitate the development of an interbank term money market, which in turn can set market-based benchmarks for pricing loans and deposits and thus improve the transmission of monetary policy.
- RBI also conducts variable interest rate reverse repo auctions, as required under market conditions.

### MARGINAL STANDING FACILITY (MSF) :

- It is a facility under which scheduled commercial banks can charge a penal rate of interest by borrowing an additional amount of overnight currency from the Reserve Bank of India up to a limit in their Statutory Liquidity Ratio (SLR) portfolio.
- It acts as a safety valve to the banking system against unexpected liquidity shocks.

### CORRIDOR :

- The MSF rate and the reverse repo rate determine the corridor for daily movement in the weighted average call money rate.

### BANK RATE :

- It is the rate at which the Reserve Bank is ready to buy or exchange bills of exchange or other commercial papers. The Bank Rate is published under Section 49 of the Reserve Bank of India Act, 1934.
- This rate is linked to the MSF rate and hence

changes automatically when the MSF rate changes with the policy repo rate.

### CASH RESERVE RATIO (CRR) :

- The share of net demand and time liabilities that banks are required to maintain as cash balances with the Reserve Bank is notified by the Reserve Bank in the Gazette of India from time to time.

### STATUTORY LIQUIDITY RATIO (SLR) :

- The share of net demand and time liabilities that banks hold in secured and liquid assets such as unencumbered government securities, cash and gold.
- Changes in SLR often affect the availability of resources in the banking system for lending to the private sector.

### OPEN MARKET OPERATIONS (OMO) :

- These include both outright purchase/sale of government securities and infusion/absorption of sustainable liquidity respectively.

### MARKET STABILIZATION SCHEME (MSS) :

- It was started in the year 2004 for monetary management in India.
- In this, surplus liquidity of a more permanent nature arising from large capital inflows is absorbed through the sale of short-term government securities and revenue bills.
- The cash raised is kept in a separate government account with the Reserve Bank.

### CONCLUSION / SOLUTION :

- External members are government nominees who are appointed on the basis of the recommendations of a search cum selection committee consisting of the Cabinet Secretary (Chairman), the RBI Governor and the Secretary of the Department of Economic Affairs (Union Finance Ministry). Nominated members must have knowledge in the field of economics, banking or monetary policy.
- MPC nominees will hold office for a term of four

years and will not be eligible for reappointment. The RBI prohibits the appointment of MPs, legislators, public servants or staff/committee members of the RBI or anyone with a conflict of interest with the RBI or anyone above 70 years of age.

- The Central Government also retains the powers to remove its nominees from the MPC, subject to certain conditions and if the situation so requires.

## PRELIMS QUESTIONS

### Q1. What is the difference between “vote-on-account” and “Interim Budget”? (UPSC Prelims-2011)

1. The provision of a “vote-on-account” is used by a regular Government, while an “interim budget” is a provision used by a caretaker Government.
2. A “vote-on-account” only deals with the expenditure in the Government’s budget, while an “interim budget” includes both expenditures and receipts.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

### Q2. Consider the following statements:

1. The Prime Minister is responsible for presenting the annual budget in India
2. The “Pink Book” of the Indian budget is associated with the Defence aspect
3. The annual financial statement of the government is commonly known as the Finance Bill

How many of the above statements are correct?

- (a) One

- (b) Two
- (c) Three
- (d) None

**Q3. CONSIDER THE FOLLOWING STATEMENTS REGARDING FISCAL CONSOLIDATION.**

1. The government borrows money from the market through its bonds to meet its fiscal deficit.
2. High fiscal deficit can lead to inflation.
3. The difference between the total revenue of the government and its total expenditure is called fiscal deficit.
4. Government debt includes various liabilities including domestic and external debt along with obligations of schemes such as small savings, provident funds and special securities.

**Which of the above statement /statements is/ are correct ?**

- (a) Only 1, 2 and 3
- (b) Only 2, 3 and 4
- (c) None of these.
- (d) All of these.

**Q4. Consider the following statements regarding the Monetary Policy Committee of RBI.**

1. The members of the Monetary Policy Committee are appointed for a term of six years only.
2. The Chairman of the Monetary Policy Committee is the Governor of the Reserve Bank of India.
3. In India, the decision of the Monetary Policy Committee is binding on the banks.
4. Members of the Monetary Policy Committee are eligible for reappointment.

**Which of the above statement/statements is correct?**

- (a) Only 1, 2 and 3
- (b) Only 2, 3 and 4

- (c) Only 1 and 4.
- (d) Only 2 and 3

**ANSWERS**

S. No.	Answers
1.	B
2.	B
3.	D
4.	D

**MAINS QUESTION**

**Q1. Assess the potential impact of an expansionary fiscal policy introduced in a government budget on the overall economy. Discuss how it may influence inflation, employment, and economic growth.**

**Q2. Define fiscal deficit and national debt and discuss how fiscal consolidation is necessary to strengthen India's GDP and Indian economy. Present a logical explanation.**

**Q3. What do you understand about repo rate and reverse repo rate? Discuss how the Monetary Policy Committee of RBI affects the Liquidity Adjustment Facility and Statutory Liquidity Ratio in the development of the Indian economy? Present rational opinion.**

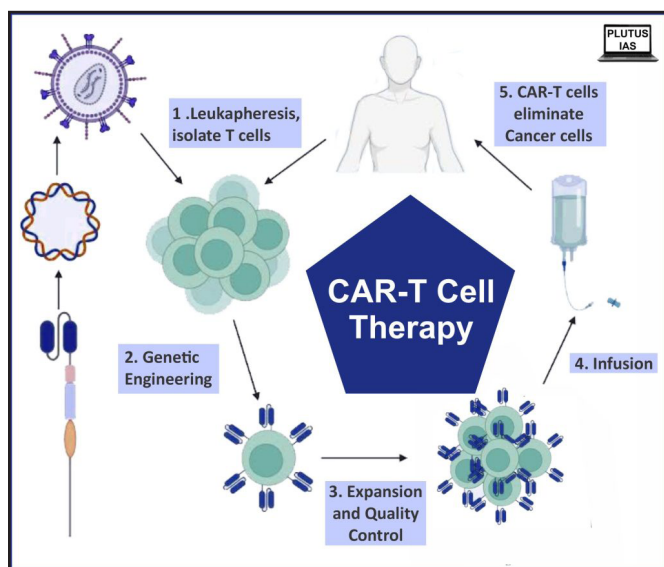
# SCIENCE AND TECHNOLOGY

## NEXCAR19: REVOLUTIONIZING CANCER TREATMENT

### WHY IN THE NEWS?

Months after India's medicinal authority approved CAR-T cell therapy, Dr. (Col) V K Gupta became one of the first patients to get it. **NexCAR19** is India's first indigenously created CAR-T cell treatment. ImmunoACT (an IIT Bombay-incubated firm) received commercial authorization for NexCAR19 from the Central Drugs Standard Control Organisation (CDSCO) in November 2023.

### ABOUT CAR-T CELL THERAPY



- The therapy marks a significant advancement in cancer treatment. Unlike chemotherapy and immunotherapy, which require mass-produced injectable or oral drugs, **CAR T-cell therapies use the patient's cells.**
- They are engineered in the laboratory to **stimulate T-cells**, a kind of immune cell, to attack tumours.
- These modified cells are then put back into the patient's bloodstream after being programmed to proliferate more efficiently.

- CAR T-cell treatment is now **licensed for leukaemias** (cancers of the cells that make white blood cells) **and lymphomas.**

### HOW DOES CAR-T CELL THERAPY WORK?

- This therapy involves drawing the patient's blood to **harvest T-cells**, which are immune cells that play an important role in eliminating cancer cells.
- In the laboratory, researchers modify these cells to express certain proteins on their surface, known as **chimeric antigen receptors (CAR)**, which have an affinity for proteins found on the surface of cancer cells.
- This change in cellular structure enables CAR T-cells to successfully bind to and eliminate tumours. The tumour's demise concludes with its elimination by the patient's immune system.
- The immune system is activated in CAR T-cell treatment when the transformed T-cells are re-introduced into the body, allowing for progressive and persistent tumour death as these cells multiply.

### WHY IS IT BETTER THAN OTHER CANCER TREATMENTS LIKE CHEMOTHERAPY?

- While chemotherapy and immunotherapy may extend a cancer patient's life by a few months or years, cell-and-gene therapy is **intended to cure and provide long-term benefits.**
- It simplifies treatment by providing a single treatment [as opposed to multiple chemotherapy sessions].
- It provides a lifeline for cancer patients who have not responded to treatment.

### ABOUT NEXCAR19

- **NexCar19 is a form of CAR-T and gene therapy** created in India **by ImmunoACT, an IIT Bombay-incubated firm.** This therapy is intended to target cancer cells expressing the **CD19 protein.**



- This protein works as a flag on cancer cells, allowing CAR-T cells to detect and bind to them, thus initiating the process of elimination.
- India is currently among the first developing countries to have its own CAR-T and gene therapy platforms.

### ELIGIBILITY AND TREATMENT PROCESS

- **Intended Patients:** People with **B-cell lymphomas** who have not responded to traditional treatments (such as chemotherapy).
- **Procedure:** The patient contributes blood; **T-cells** are changed in the lab and reinfused 7-10 days later. Recovery normally takes two weeks.

### EFFECTIVENESS AND UNIQUE FEATURES

- Approximately **70%** of patients react to Nex-CAR19 treatment, and some achieve complete remission.
- **Lower drug-related toxicities**, such as decreased neurotoxicity and Cytokine Release Syndrome (CRS), have been shown in laboratory and animal investigations.
- Research for paediatric patients are currently being conducted at Tata Memorial Hospital, assuring wider applicability.

### AVAILABILITY AND AFFORDABILITY.

- **ImmunoACT** is in the process of acquiring licenses and forming partnerships with hospitals in numerous locations, including Tata Memorial, Nanavati, Fortis, and Jaslok.
- ImmunoACT, which is **initially priced at Rs 30-40 lakh**, seeks to reduce the cost to Rs 10-20 lakh over time, making the therapy more accessible.
- Approval by regulatory organisations such as CDSCO should result in insurance coverage, though the extent may differ, and conversations with insurers and the government are ongoing.

## PERSONALLY IDENTIFIABLE INFORMATION

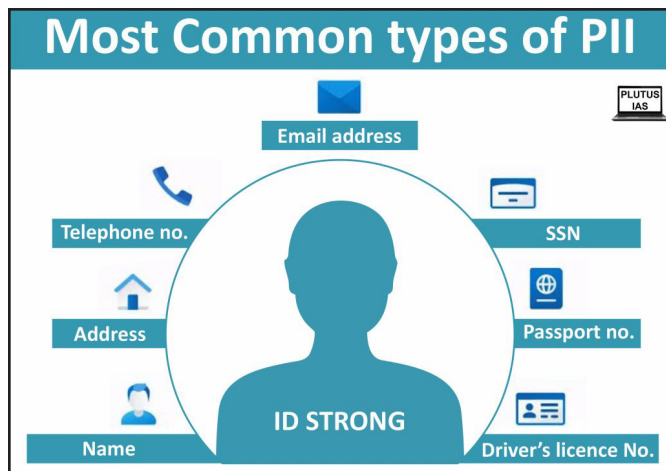
### WHY IN THE NEWS?

The Ministry of Corporate Affairs has repaired a serious flaw in its online portal after a cybersecurity researcher reported it to India's Computer Emergency Response Team (CERT-In). The vulnerability allegedly exposed **Personally Identifiable Information (PII)** such as Aadhaar, Permanent Account Number (PAN), voter identification, date of birth, contact number, and communication address for over 98 lakh Indian company directors.

### ABOUT PERSONALLY IDENTIFIABLE INFORMATION (PII)

- **Personally Identifiable Information (PII)** refers to any data or details maintained by an organization or agency that has the potential to identify a specific individual. This may encompass various details such as Aadhaar, PAN, voter identity, passport, date of birth, contact number, communication address, and biometric information. The constituents of PII vary based on an individual's home country.
- **Types of PII:** PII is categorized into **two types: direct identifiers and indirect identifiers**. Direct identifiers, like passport numbers or driver's license numbers, are unique to a person and can individually establish someone's identity. Indirect identifiers, such as race and place of birth, are not unique, but a combination of them can be used to identify an individual.
- **Sensitive vs. Non-sensitive PII:** Within PII, certain pieces of information are more sensitive than others. Sensitive PII directly identifies an individual and could lead to significant harm if leaked or stolen. Non-sensitive PII, on the other hand, would not cause substantial harm on its own if exposed. Examples of non-sensitive PII include a social media handle, zip code, race, gender, and religion.
- **Non-PII:** Non-personally identifiable information (non-PII) is data that, on its own, cannot be used to trace or identify a person. However, when combined with additional information,

non-PII can contribute to identifying an individual. Examples of non-PII include photographic images, place of birth, religion, geographic indicators, employment information, educational qualifications, and medical records.



## CONCERNS OF PERSONALLY IDENTIFIABLE INFORMATION (PII) EXPOSURE.

### IDENTITY THEFT:

PII exposure increases the risk of identity theft, where criminals use stolen personal information for fraudulent activities. Cyberattacks and vulnerabilities in digital infrastructure can result in the exposure of citizens' PII.

### FINANCIAL FRAUD:

Exposed PII, such as bank account numbers or credit card information, can lead to financial fraud. Criminals may access bank accounts, make unauthorized transactions, and siphon funds from government welfare programs.

### DATA BREACH FALLOUT:

PII exposure through data breaches can lead to significant financial losses, remediation costs, and damage to an organization's reputation. Organizations may experience decreased customer trust, revenue loss, and increased scrutiny from regulators.

### REPUTATION DAMAGE:

Exposure of sensitive PII, such as compromising photos or personal messages, can damage indi-

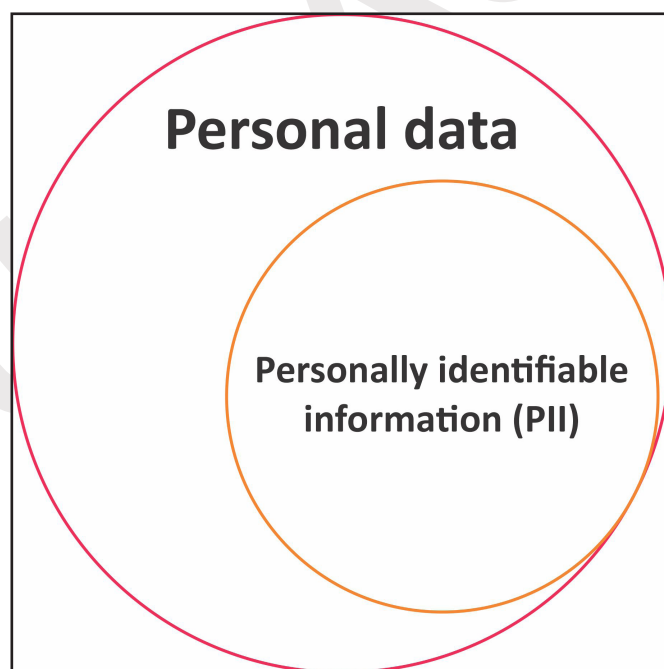
viduals' reputations and relationships. Information leaked online may be used for blackmail, extortion, or public humiliation, resulting in social and professional consequences.

### PRIVACY VIOLATIONS:

PII exposure can compromise individuals' confidentiality and autonomy, leading to privacy violations.

### PHISHING AND SOCIAL ENGINEERING ATTACKS:

Cybercriminals may use exposed PII for phishing attacks, tricking individuals into disclosing more sensitive information or clicking on malicious links. Social engineering attacks exploit exposed PII for impersonation scams or pretexting.



## CHALLENGES IN SAFEGUARDING PERSONALLY IDENTIFIABLE INFORMATION (PII)

- **Varied Origins:** PII might be housed and managed across numerous sites, a consequence of the expanding use of cloud computing and Software as a Service (SaaS) solutions.
- **Escalating Data Quantities:** The anticipated doubling of sensitive data stored in public clouds by 2024 presents difficulties in ensuring its security.
- **Dynamic Threat Landscape:** A range of tactics, such as social engineering attacks and the

acquisition of data from the dark web, is employed by cybercriminals to pilfer PII.

- **Intricate Regulatory Framework:** Organizations encounter the complexity of diverse data privacy regulations, necessitating customization of protective measures in accordance with specific regulatory requirements.

### PRELIMS QUESTIONS

**Q1. In India, it is legally mandatory for which of the following to report on cyber security incidents? (UPSC Prelims-2017)**

1. Service providers
2. Data centres
3. Body corporate

**Select the correct answer using the code given below:**

- (a) 1 only
- (b) 1 and 2 only
- (c) 3 only
- (d) 1, 2 and 3

**Q2. Which one of the following statements best describes the role of B cells and T cells in the human body?(UPSC Prelims-2022)**

- (a) They protect the environmental allergens. body
- (b) They alleviate the body's pain and inflammation.
- (c) They act as immunosuppressants in the body.
- (d) They protect the body from diseases caused by pathogens.

**Q3. Consider the following statements:**

1. T cells are genetically modified in CAR-T cell therapy
2. CD19 is commonly targeted in CAR-T cell therapy for B-cell malignancies
3. The primary purpose of the chimeric antigen re-

ceptor (CAR) in CAR-T cell therapy is to suppress the immune response

**Which of the above statements are correct?**

- (a) 1 and 3
- (b) 1 and 2
- (c) 2 and 3
- (d) 1, 2 and 3

### ANSWERS

S. No.	Answers
1.	D
2.	D
3.	B

### MAINS QUESTION

**Q1. What are the different elements of cyber security? Keeping in view the challenges in cyber security, examine the extent to which India has successfully developed a comprehensive National Cyber Security Strategy. (UPSC Mains 2022)**

**Q2. Discuss different types of cybercrimes and measures required to be taken to fight the menace. (UPSC Mains 2020)**

**Q3. Describe the underlying principles of CAR-T cell therapy and how it differs from traditional cancer treatments.**

# ENVIRONMENT AND ECOLOGY

## NATIONAL CONFERENCE ON PROMOTION OF SEAWEED CULTIVATION

### WHY IN THE NEWS?

The National Conference on Promotion of Seaweed Cultivation was recently held in Gujarat's Kutch region at Koteswar (Kori Creek). Its goal was to establish seaweed farming throughout India, focusing on encouraging the practice to increase fish farmers' income and diversify their marine output.

### ABOUT SEAWEEDS

- Seaweeds, often called **macroalgae**, are a broad category of photosynthetic organisms that are found in abundance in marine habitats.
- Seaweeds have many uses for humans and are essential to marine ecosystems while being frequently overlooked by larger marine animals.

- Red, green, and brown algae are examples of seaweeds. Seaweeds can develop in lakes, rivers, the ocean, and other bodies of water

### SEAWEED DISTRIBUTION:

Seaweeds are found in many habitats throughout the world's oceans, ranging from deep-sea ecosystems to intertidal zones. Several variables, including temperature, light availability, nutrient levels, and substrate type, affect the spread of seaweeds.

- Intertidal Zones:** Many seaweed species have adapted to the shifting conditions in these areas, where they are periodically submerged at high tide and exposed to the air during low tide. There are difficulties in this ecosystem, like desiccation and uneven light levels. Seaweeds like *Ulva* (sea lettuce) and *Fucus* (rockweed) are common intertidal species.
- Subtidal Zones:** A range of seaweed species can find a stable habitat in subtidal zones, areas

## Prospects for seaweed cultivation in India



Out of the total **global seaweed production** China produces 57%, Indonesia 28% followed by South Korea, whereas **India** is having a mere share of **0.001-0.02%**.

According to **ICAR-CMFRI survey**, a total of **23,972 hectares** area were identified as potential seaweed farming **along the Indian coast**.

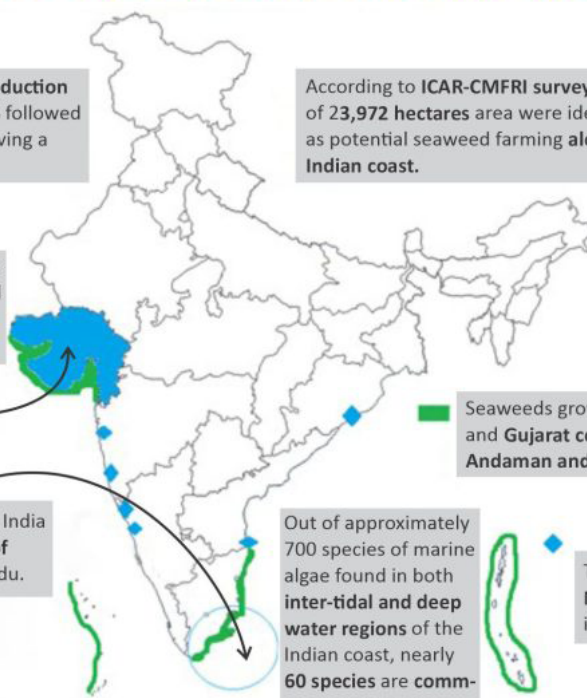
On the West Coast, especially in the State of **Gujarat**, abundant seaweed resources are present on the **intertidal and sub tidal regions**

Currently, Seaweed production in India is primarily confined to the **Gulf of Manner and Palk Bay** in Tamil Nadu.

Seaweeds grow abundantly along the **Tamil Nadu and Gujarat coasts** and around **Lakshadweep and Andaman and Nicobar islands**.

Out of approximately 700 species of marine algae found in both **inter-tidal and deep water regions** of the Indian coast, nearly **60 species** are **commercially important**.

There are also rich seaweed beds around **Mumbai, Ratnagiri, Goa, Karwar and Pulicat** in Tamil Nadu and **Chillika** in Odisha.





outside low tide. Large brown algae of the species *Laminaria*, known as kelps, are characteristic subtidal zone residents that create dense underwater forests in cooler seas. There is a wide variety of marine life in these kelp forests.

- **Deep-Sea Environments:** Some red algae can survive in the marine environment because they are acclimated to low light levels. Certain red algae may survive in deeper seas without sunshine, adding to the seafloor's richness. Coralline algae and their calcified structures influence coral ecosystems in the deep ocean.

### CENTRAL SEAWEED BEDS IN INDIA:

The beaches of Gujarat and Tamil Nadu, as well as the area surrounding Lakshadweep and the Andaman & Nicobar Islands, are rich in seaweed resources. There are notable seaweed beds around Mumbai, Goa, Varkala, Karwar, Vizhinjam, and Pulicat in Tamil Nadu, Ratnagiri, Andhra Pradesh, and Chilka in Orissa.

### ECOLOGICAL SIGNIFICANCE OF SEAWEEDS:

Seaweeds hold immense ecological significance, contributing to the health and functioning of marine ecosystems in several ways.

#### OXYGEN PRODUCTION:

Seaweeds are primary producers capable of photosynthesis, converting sunlight into energy. During this process, seaweeds absorb carbon dioxide and release oxygen, contributing significantly to the oxygen levels in marine environments. This oxygen production is crucial for supporting aquatic life, especially in areas with high seaweed biomass.

#### HABITAT AND SHELTER:

Seaweeds provide habitat and shelter for a diverse array of marine organisms. The three-dimensional structures created by seaweeds, such as kelp forests, offer hiding places, breeding grounds, and feeding areas for fish, invertebrates, and other marine life. These habitats enhance overall biodiversity in coastal and subtidal zones.

#### NUTRIENT CYCLING:

Seaweeds play a vital role in nutrient cycling within

marine ecosystems. Seaweed's uptake of nutrients from the water helps regulate nutrient levels and prevent excessive nutrient runoff, which can lead to issues such as algal blooms. This nutrient cycling contributes to the overall health and balance of marine ecosystems.

### COASTAL PROTECTION:

Certain species of seaweeds help stabilize coastlines by reducing the impact of waves and storms. Seaweed beds can act as a natural buffer, absorbing wave energy and preventing erosion of coastal areas. This coastal protection is precious in regions vulnerable to storm surges and rising sea levels.

### APPLICATIONS OF SEAWEEDS

- In culinary realms, they are cherished in **Asian cuisines**, with red algae-derived Nori featuring prominently in sushi rolls. Moreover, red algae contribute to the food industry through agar-agar and carrageenan as gelling agents and stabilisers in various products.
- Seaweeds exhibit **pharmaceutical potential**, with extracts displaying anti-inflammatory, antioxidant, and antiviral properties, sparking ongoing research for medicinal use.
- In **agriculture**, seaweeds act as natural fertilisers and soil conditioners, enhancing plant growth and resilience.
- Their carbohydrate-rich composition positions certain seaweeds as a promising **biofuel feedstock**, contributing to sustainable energy alternatives.

### CHALLENGES IN THE CONSERVATION OF SEAWEED

#### CLIMATE CHANGE IMPACT:

Rising temperatures and ocean acidification threaten seaweed populations, disrupting physiological processes. Conservation strategies must tackle the broader context of climate change for effective mitigation.

#### HABITAT DEGRADATION:

Coastal development, pollution, and destructive

fishing practices compromise seaweed ecosystems. Conservation measures should prioritise habitat protection, restoration, and sustainable coastal development practices.

### OVERHARVESTING AND EXPLOITATION:

Unregulated harvesting for food, pharmaceuticals, and biofuel production raises concerns. Conservation efforts must implement sustainable practices, regulations, and monitoring to prevent overexploitation.

### INVASIVE SPECIES:

The introduction of invasive species poses a threat to native seaweeds, disrupting ecological balance. Conservation strategies should focus on the prevention and mitigation of the impact of invasive species.

### POLLUTION AND CONTAMINATION:

Agricultural runoff, industrial discharges, and marine debris negatively impact seaweed health. Conservation efforts must address pollution sources and promote sustainable waste management practices.

### DISEASE OUTBREAKS:

Like any organism, seaweeds are susceptible to diseases, leading to rapid population declines. Conservation strategies involve monitoring, understanding causes, and implementing prevention and management measures.

### LACK OF PUBLIC AWARENESS:

Limited awareness hinders conservation efforts. Educational initiatives are crucial to raising awareness about Seaweed's roles in marine ecosystems and the need for conservation.

### GLOBAL CONNECTIVITY:

Seaweeds, part of interconnected marine ecosystems, require global conservation efforts. Collaborative initiatives and international partnerships are crucial for effective conservation on a worldwide scale.

### GOVERNMENT INITIATIVES

- The **mission of Seaweed Mission** is to commer-

cialise seaweed production and processing to add value. It also seeks to extend farming over 7,500 km of shoreline in India.

- Establishment of Multi-Purpose Seaweed Park in Tamil Nadu.

## PRELIMS QUESTIONS

**Q1. Consider the following statements:**

1. Seaweeds are a staple in Asian cuisine
2. Agar-agar is derived from fungi and is used as a gelatin substitute in the food industry
3. Seaweed species thrive maximum in the Intertidal zone

**How many of the above statements are *Not* correct**

- (a) One
- (b) Two
- (c) Three
- (d) None

## ANSWERS

S. No.	Answers
1.	A

## MAINS QUESTION

**Q1. Explain the significance of reducing plastic pollution in the context of sustainable ocean conservation. Provide practical solutions for minimising plastic waste in marine environments.**

**Q2. Analyse the economic and social aspects of sustainable ocean conservation. How can sustainable practices be economically viable and socially equitable for communities dependent on marine resources?**