

**BIOTECHNOLOGY**

❖ **Genetically modified crops and their regulation in India**

❖ **CONTEXT:** On October 18 2022, the Environment Ministry’s Genetic Engineering Appraisal Committee (GEAC) cleared the proposal for the commercial cultivation of genetically modified (GM) mustard. The GEAC had previously cleared the proposal in 2017, but it was vetoed by the ministry and the committee was told to conduct more studies on the GM crop. The GEAC’s recommendation will again go to the Environment Ministry for approval.

- The latest GEAC approval allows for the environmental release of two varieties of genetically engineered mustard for developing new parental lines and hybrids under the supervision of the Indian Council of Agriculture Research (ICAR).
- ❖ What is GEAC?
- The Genetic Engineering Appraisal Committee (GEAC), under the Ministry of Environment, Forest and Climate Change (MoEF&CC), is responsible for the assessment of proposals related to the release of genetically engineered organisms and products into the environment, including experimental field trials.
- GEAC or people authorised by it have the power to take punitive actions under the Environment Protection Act.
- ❖ What are genetically modified crops?
- A genetically modified organism (GMO) is any living organism whose genetic material has been modified to include certain desirable techniques. Genetic modification has previously been used for the large-scale production of insulin, vaccines, and more.



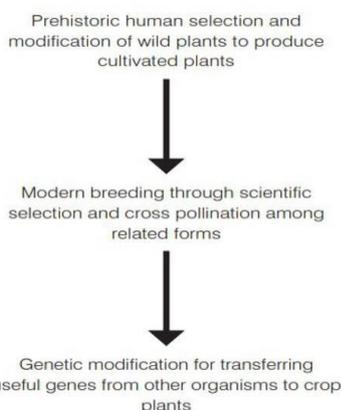
Teosinte to primitive maize



Modern maize

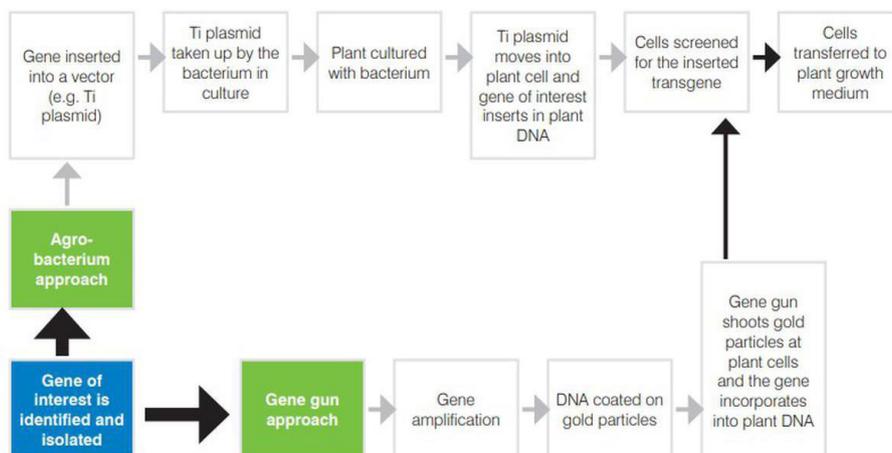


Insect resistant GM maize (top) non GM susceptible maize (bottom)



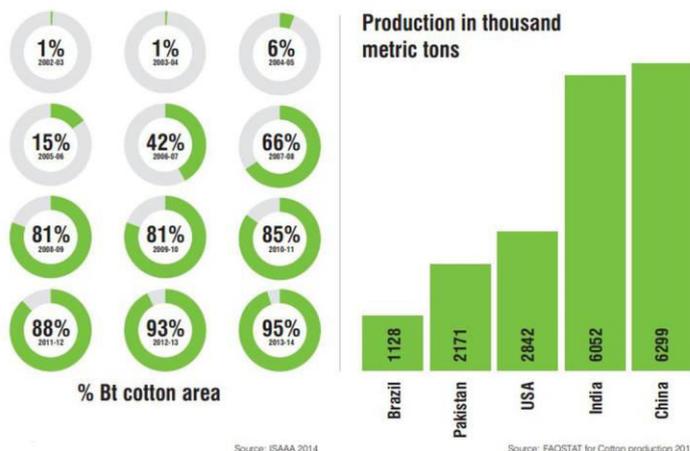
**IAS**  
**JPSC/OPSC**

- In crops, genetic modification involves the manipulation of DNA instead of using controlled pollination—the conventional method to improve crops—to alter certain characteristics of the crop.
- Soyabean, maize, cotton, and canola with herbicide tolerance and insect resistance are the most widely grown GM crops around the world. Other common genetically modified characteristics include virus resistance, drought resistance, and fruit and tuber quality.
- To genetically modify a crop, the gene of interest is identified and isolated from the host organism. It is then incorporated into the DNA of the crop to be grown. The performance of the GM crop is tested under strict laboratory and field conditions.



❖ **GM crops in India**

- Indian farmers started cultivating Bt cotton, a pest-resistant, genetically modified version of cotton, in 2002-03. Bt modification is a type of genetic modification where the Bt gene obtained from the soil bacterium *Bacillus thuringiensis* is introduced into the target crop – in this case, cotton. Bt cotton is resistant to bollworm, a pest that destroys cotton plants.
- By 2014, around 96% of the area under cotton cultivation in India was Bt cotton, making India the fourth-largest cultivator of GM crops by acreage and the second largest producer of cotton.



❖ **Regulatory framework in India**

- Strict regulations are in place to control threats to animal health, human safety, and biodiversity at large during the processes of development, cultivation and transboundary movement of GM crops.
- Acts and rules that regulate GM crops in India include:
  - Environment Protection Act, 1986 (EPA)
  - Biological Diversity Act, 2002
  - Plant Quarantine Order, 2003
  - GM policy under Foreign Trade Policy
  - Food Safety and Standards Act, 2006
  - Drugs and Cosmetics Rule (8th Amendment), 1988

Mandate of Ministries/Departments	
Ministry of Environment, Forest and Climate Change	<ul style="list-style-type: none"> <li>• Primarily responsible for conservation and protection of environment, ensuring environmental and human health safety before release of GMOs / LMOs.</li> <li>• Nodal agency for implementing Rules, 1989 and the Cartagena Protocol on Biosafety</li> </ul>
Department of Biotechnology (Ministry of Science & Technology)	<ul style="list-style-type: none"> <li>• Nodal department for promoting biotechnology programs</li> <li>• Provides scientific support in implementation of biosafety regulations</li> <li>• Provide services in areas of research, infrastructure, generation of human resource</li> </ul>
Ministry of Agriculture	<ul style="list-style-type: none"> <li>• Policies aimed at agriculture growth.</li> <li>• Indian Council of Agricultural Research (ICAR) responsible for monitoring agronomic benefits of GM technology.</li> <li>• Monitoring post-release performance of GM crops.</li> </ul>
Ministry of Health and Family Welfare	<ul style="list-style-type: none"> <li>• Policies aimed at protecting and monitoring human health.</li> <li>• Food Safety and Standards Authority of India responsible for regulating genetically engineered foods.</li> </ul>
Ministry of Commerce and Industries	<ul style="list-style-type: none"> <li>• Enhance trade with other countries through export/import policies.</li> <li>• Nodal agency for implementing DGFT notification on GMOs</li> </ul>
Central Board of Excise and Customs, Department of Revenue, Ministry of Finance	<ul style="list-style-type: none"> <li>• Enforcement of regulation pertaining to transboundary movement of GMOs/LMOs at point of entry</li> </ul>

- Broadly, the rules cover:
  - All activities related to research and development of GMOs
  - Field and clinical trials of GMOs
  - Deliberate or unintentional release of GMOs
  - Import, export, and manufacture of GMOs

❖ **What is GM mustard?**

- Dhara Mustard Hybrid (DMH -11) was developed by a team of scientists at Delhi University led by former vice-chancellor and genetics professor Deepak Pental under a government-funded project. It uses a system of genes from soil bacterium that makes mustard — generally a self-pollinating plant — better suited to hybridisation than current methods.
- In September 2017, a feasibility report said that the developers of DMH-11 claimed a yield increase of 25-30% over non-hybrids, which was refuted by several NGOs.

- However, even a yield increase of 25-30% “does not seem to be high enough to promote the introduction of IP and labelling requirements at all levels, especially at the levels of small and medium farmers as the consequence of introduction of such a system would considerably deplete the price preference that are expected, resulting from the increased yield.”
- The GEAC cleared “the environmental release of mustard hybrid Dhara Mustard Hybrid (DMH-11) for its seed production and testing as per existing ICAR guidelines and other extant rules/regulations prior to commercial release.”
- ❖ **Recommendations of the October 18 meeting**
- The GEAC has recommended:
  - Environmental release of “genetically engineered mustard parental lines bn 3.6 carrying barnase and bar genes, and modbs 2.99 containing barstar and bar genes”
  - Environmental release of mustard hybrid DMH-11 for seed production and testing as per existing ICAR guidelines
  - Conduct field demonstration studies with respect to the effect of GM mustard on honey bees and other pollinators post-environmental release
- The approval is limited to a period of four years, renewable for two years at a time based on a compliance report.
- ❖ **The response from farmers' associations**
- Left-wing farmers’ organisation **All India Kisan Sabha (AIKS) has welcomed the development** related to GM mustard. General Secretary Hannan Mollah, however, said the control of the technology should remain with the governments and the public sector and extensive testing of the hybrid seed must be done by ICAR.
- However, Rashtriya Swayamsewak Sangh’s (RSS) farmer body **Bharatiya Kisan Sangh (BKS) opposed the move.**
- “The technology is mostly carcinogenic. It is a killer technology that kills soil, microbes, pollinators, almost all medicinal herbs and adversely affects crop diversity. It can also cause cancer in humans,” Mohini Mohan Mishra, All India General Secretary of BKS, said.

### GOVERNANCE

- ❖ **The amendments to the IT Rules, 2021**
- ❖ **CONTEXT: The Ministry of Electronics and IT (MeitY) has notified amendments to the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 (IT Rules, 2021). In June 2022, MeitY had put out a draft of the amendments and solicited feedback from the relevant stakeholders.**
- ❖ **What are the IT Rules, 2021?**
- World over, governments are grappling with the issue of regulating social media intermediaries (SMIs). Given the multitudinous nature of the problem — the centrality of SMIs in shaping public discourse, the impact of their governance on the right to freedom of speech and expression, the magnitude of information they host and the constant technological innovations that impact their governance — it is important for governments to update their regulatory framework to face emergent challenges.
- In a bid to keep up with these issues, India in 2021, replaced its decade old regulations on SMIs with the IT Rules, 2021 that were primarily aimed at placing obligations on SMIs to ensure an open, safe and trusted internet.
- ❖ **What was the need to amend the IT Rules, 2021?**
- The draft amendments in June 2022, the stated objectives of the amendments were three-fold. **First**, there was a need to ensure that the interests and constitutional rights of netizens are not being contravened by big tech platforms. **Second**, to strengthen the grievance redressal framework in the Rules. **Third**, that compliance with these should not impact early stage Indian start-ups.
- This translated into a set of proposed amendments that can be broadly classified into two categories. The first category involved placing additional obligations on the SMIs to ensure better protection of user interests while the second category involved the institution of an appellate mechanism for grievance redressal.
- ❖ **What are the additional obligations placed on the SMIs?**
- **First**, the original IT Rules, 2021 obligated the SMIs to merely inform its users of the “rules and regulations, privacy policy and user agreement” that governed its platforms along with the categories of content that users are prohibited from hosting, displaying, sharing etc. on the platform.
- This obligation on the SMIs has now been extended to ensuring that its users are in compliance with the relevant rules of the platform. Further, SMIs are required to “make reasonable” efforts to prevent prohibited content being hosted on its platform by the users.
- To a large extent, this enhances the responsibility and concomitantly the power of SMIs to police and moderate content on their platforms.
- This has been met with skepticism by both the platforms and the users given the subjective nature of speech and the magnitude of the information hosted by these platforms.
- While the SMIs are unclear of the extent of measures they are now expected to undertake, users are apprehensive that the increased power of the SMIs would allow them to trample on freedom of speech and expression.
- **Second**, a similar concern arises with the other newly introduced obligation on SMIs to “respect all the rights accorded to the citizens under the Constitution, including in the articles 14, 19 and 21”.
- Given the importance of SMIs in public discourse and the implications of their actions on the fundamental rights of citizens, the horizontal application of fundamental rights is laudable. However, the wide interpretation to which this obligation is open to by different courts, could translate to disparate duties on the SMIs.
- Frequent alterations to design and practices of the platform, that may result from a case-to-case based application of this obligation, could result in heavy compliance costs for them.
- **Third**, SMIs are now obligated to remove information or a communication link in relation to the six prohibited categories of content as and when a complaint arises.

- They have to remove such information within 72 hours of the complaint being made. Given the virality with which content spreads, this is an important step to contain the spread of the content.
- **Fourth**, SMIs have been obligated to “take all reasonable measures to ensure accessibility of its services to users along with reasonable expectation of due diligence, privacy and transparency”. While there are concerns that ensuring “accessibility” may obligate SMIs to provide services at a scale that they are not equipped to, the obligation is meant to strengthen inclusion in the SMI ecosystem such as allowing for participation by persons with disabilities and diverse linguistic backgrounds.
- In this context, the amendments also mandate that “rules and regulations, privacy policy and user agreement” of the platform should be made available in all languages listed in the eighth schedule of the Constitution.
- ❖ **What are the newly-introduced Grievance Appellate Committees?**
- The cornerstone of empowering users of social media platforms is to design a robust grievance redressal mechanism that can effectively and efficiently address their concerns.
- Prior to the IT Rules, 2021, platforms followed their own mechanisms and timelines for resolving user complaints. The IT Rules uniformed this by mandating that all social media platforms should have a grievance officer who would acknowledge the receipt of a complaint within 24 hours and dispose it within 15 days.
- However, the performance of the current grievance redressal mechanism has been sub-optimal. As evidenced by the transparency reports of SMIs, such as Facebook and Twitter, there is no common understanding of what is meant by resolution of the complaint.
- For example, Facebook records only mention the number of reports where “appropriate tools” have been provided. These “appropriate tools” could just mean the automated replies pointing out the tools available on the platform that have been sent to the complainants.
- As opposed to this format, Twitter records outline the number of URLs against which action has been taken after the receipt of a complaint.
- Transparency reports show that the number of user complaints continue to be quite low when compared to the content against which the platform acts proactively or is obligated to remove due to governmental or court orders. This may be because users are either not aware of this facility or find it futile to approach the platform for complaint resolution. It might also be because, even in cases where action has been taken on the content, there is no way to assess whether the complainant has been satisfied with the resolution of the complaint.
- Moreover, the extant framework does not provide for any recourse if the complainant is dissatisfied with the grievance officer’s order. Possibly, the only course available to the complainant is to challenge the order under the writ jurisdiction of the High Courts or Supreme Court. This is not efficacious given that it can be a resource and time intensive process.
- To remedy this, the government has instituted Grievance Appellate Committees (GAC). The committee is styled as a three-member council out of which one member will be a government officer (holding the post ex officio) while the other two members will be independent representatives. Users can file a complaint against the order of the grievance officer within 30 days. Importantly, the GAC is required to adopt an online dispute resolution mechanism which will make it more accessible to the users.
- It is unclear whether this is a compulsory tier of appeal or not, that is will the user have to approach the grievance appellate committee before approaching the court. The confusion arises from the fact that the press note expressly stated that the institution of the GAC would not bar the user from approaching the court directly against the order of the grievance officer. However, the final amendments provide no such indication.
- While this makes the in-house grievance redressal more accountable and appellate mechanism more accessible to users, appointments being made by the central government could lead to apprehensions of bias in content moderation.
- The IT Rules, 2021 do not provide any explicit power to the GAC to enforce its orders.
- If users can approach both the courts and the GAC parallelly, it could lead to conflicting decisions often undermining the impartiality and merit of one institution or the other.

## PRELIMS

### 1. The Mengtian module

- ❖ **CONTEXT: China launched the final component — the Mengtian module — of its permanent space station October 31, 2022 from Hainan, the country’s southernmost island province.**
- Mengtian (literal meaning: Dreaming of the Heaven) was sent to the earth’s lower orbit, over 380 kilometres above the surface, aboard the Long March-5B Y4 carrier rocket. After docking on to the core module Tianhe within hours of lift-off, it will finish the T-shaped structure of the space station.
- The rendezvous and docking of Mengtian will be monitored by the three Chinese astronauts aboard the space station.
- Mengtian is the second of the two modules that will house science labs for carrying out experiments. The other lab module Wentian was sent in July 2022. Together, they will complete the two arms of China’s space station Tiangong, which means ‘Palace in the Sky’.
- The United States banned its National Aeronautics and Space Administration from sharing data with China and thereby excluding the Chinese scientists from the International Space Station. In 2021, the country began the process of building its own space station and once finished, will be the third country in the world to do so.
- Mengtian will host workstations for Chinese astronauts and those from “friendly” countries. Over a 1,000 experiments will be conducted on the space station in the next 10 years.
- Experiments in the Mengtian wing will be mostly on the fields of microgravity scientific studies as well as frontier scientific projects covering fluid physics, combustion and materials science and space technologies.

**2. HARIT Aaykar initiative**

❖ **CONTEXT: The Income Tax Department has launched the HARIT Aaykar initiative on the occasion of National Unity Day to increase greenery and create micro forests.**

• HARIT is the abbreviation of Hariyali Achievement Resolution by Income Tax. Under this initiative, the Department resolves to increase the green cover by planting trees and creating micro-forests in and around Income Tax Department's buildings and other public areas.

❖ **Central Board Of Direct Taxes**

• The Central Board of Direct Taxes is a statutory authority functioning under the Central Board of Revenue Act, 1963.  
• The officials of the Board in their ex-officio capacity also function as a Division of the Ministry of Finance dealing with matters relating to levy and collection of direct taxes.

• The Central Board of Direct Taxes (CBDT) is a part of the Department of Revenue in the Ministry of Finance, Government of India.

• It provides essential inputs for policy and planning of direct taxes in India and is also responsible for administration of the direct tax laws through Income Tax Department.

• It is India's official Financial Action Task Force unit.

• The Central Board of Revenue as the Department apex body charged with the administration of taxes came into existence as a result of the Central Board of Revenue Act, 1924.

• Initially the Board was in charge of both direct and indirect taxes. However, when the administration of taxes became too unwieldy for one Board to handle, the Board was split up into two, namely the Central Board of Direct Taxes and Central Board of Excise and Customs in 1964.

• The CBDT Chairman and Members of CBDT are selected from Indian Revenue Service (IRS), a premier civil service of India, whose members constitute the top management of Income Tax Department.

**3. Capitation fee**

❖ **Context: The Madras High Court held that any amount collected by educational institutions in excess of the prescribed fee, either directly or indirectly, should be treated as capitation fee even if it happened to be a voluntary contribution/donation and that collection of capitation fee is illegal and punishable.**

• The judgment was delivered while dealing with a batch of tax case appeals related to Income Tax proceedings initiated against a group of trusts.

• The HC said that the modus operandi adopted by the college management was to demand capitation fee from the parents but insist that it should be deposited into the account of a sister trust not from the bank accounts of the parents but from that of their relatives or friends.

• Such deposits get routed from one trust to another before reaching the college management as corpus fund.

• In the process, the trusts also end up claiming exemption from payment of Income Tax on the ground that they were charitable institutions and that the funds were actually voluntary contributions made by different donors.

❖ **What is capitation fee?**

• Capitation fee refers to an illegal transaction in which an organisation that provides educational services collects a fee higher than that approved by regulatory norms.

• In the context of Indian law, a capitation fee refers to the collection of payment by educational bodies not included in the prospectus of the institution, usually in exchange for admission to the institution.

• The Prohibition of Unfair Practices in Technical Educational Institutions, Medical Institutions and Universities Bill 2010 defines it as any amount that is

• This practice is widely prevalent in private colleges and universities in India, especially those that grant degrees in engineering, IT and sciences.

• The capitation fee has been one of the major contributors to corruption in education and society.

**ANSWER WRITING**

**Q. Discuss the role of the National Commission for Backward Classes in the wake of its transformation from a statutory body to a constitutional body.**

The National Commission on Backward Classes (NCBC) was a statutory body under the Ministry of Social Justice and Empowerment. Later, the 102nd Constitutional Amendment Act of 2018, provided constitutional status to the NCBC.

There are various transformations that have happened in the new NCBC:

- As a statutory body, it derives its powers from statutes or laws made by parliament while now as a constitutional body it derives its powers and authorities from the Indian constitution.
- 102<sup>nd</sup> Constitutional Amendment Act (CAA) inserted Article 338B which is regarding NCBC to examine complaints and welfare measures. This was lacking in the previous NCBC.
- 102<sup>nd</sup> CAA also inserted a new Article 342A, which brings greater transparency as the Act specified the concurrence of parliament which is mandatory in the amendment of the list of backward classes.
- In the new NCBC, the focus has shifted from reservation to the development of the backward class and the inclusion of grievance redressal.

However, there are some underlying issues like, the recommendation of the NCBC is not mandatory and it has no responsibility to define backwardness.

Thus, NCBC is an important commission for social progress. It should be gender sensitive and there should be no vote bank politics for better implementation of its rules.

**MCQs**

1. With reference to "Union Home Minister's Special Operation Medal" for year 2022 award consider the following statements
  1. The medal was constituted in 2020 for the first time.
  2. The award is conferred for Special Operation only related to counter terrorism which have high degree of planning, high significance for the security of the country.
  3. It is announced on 31st of October every year.
  4. In a year, normally 4 Special Operations are considered for the award and in extra ordinary circumstances; the award may be given up to 5 Special Operations.
 Which of the above statement/s is/are not correct?  
 a) 1,2 and 3 only      b) 2,3 and 4 only      **c) 1,2 and 4 only**      d) 2 and 4 only
2. Income Tax Department launches HARIT Aaykar initiative, which of the following statement is correct regarding this initiative?
  - a) **The initiative aims to increase greenery and create micro forests.**
  - b) The initiative aims to increase the Income Tax base across the citizens.
  - c) It is to provide easy method to Income Tax payers to file taxes.
  - d) It is a tax exemption initiative on plantation of trees.
3. EAM S. Jaishankar participated in virtual 21<sup>st</sup> Heads of Government meet of Shanghai Cooperation Organisation (SCO) recently; with reference to SCO consider the following statements.
  1. For the first time India hosted SCO's 21<sup>st</sup> Heads of Government meet since India became a member of SCO.
  2. India and Pakistan joined the grouping in 2017 in its first round of expansion.
  3. To become a SCO member it will require the consensus of all the founding member states only.
 Which of the above statement/s is/are not correct?  
 a) 1 and 2 only      **b) 1 and 3 only**      c) 2 and 3 only      d) 1,2 and 3
4. With reference to International Space Station (ISS) consider the followings
  1. International Space Station is stationary, when seen from Earth
  2. An astronaut in International Space Station feels complete weightlessness
  3. International Space Station is always in a state of Free fall
 Which among the above statements is/ are correct?  
 a) Only 1 is correct      **b) Only 3 is correct**      c) 2 and 3 are correct      d) 1, 2 and 3 are correct
5. Consider the following statements about Central Board of Direct Taxes (CBDT).
  1. The Central Board of Direct Taxes is a statutory authority functioning under the Central Board of Revenue Act, 1963.
  2. It provides essential inputs for policy and planning of direct & Indirect taxes in India.
  3. The CBDT is headed by Chairman and it comprises of seven members.
  4. It is India's official Financial Action Task Force unit.
 Which of the following statements are correct about CBDT?  
 a) 1,2 and 3 only      b) 1 and 2 only      c) 2,3 and 4 only      **d) 1,2 and 4 only**
6. Acts and rules that regulate GM crops in India include:
  1. Environment Protection Act, 1986 (EPA)
  2. Biological Diversity Act, 2002
  3. Food Safety and Standards Act, 2006
 Choose the correct answer using the codes given below  
 a) 1 and 2 only      b) 2 and 3 only      c) 1 and 3 only      **d) 1,2,3**
7. A genetically modified organism (GMO), whose DNA has been altered using genetic engineering techniques can be a/an:
  1. Animal
  2. Plant
  3. microbe
 Choose the correct answer using the codes given below  
 a) 1 and 3 only      b) 1 and 2 only      c) 2 and 3 only      **d) All of the above**
8. With reference to capitation fee recently seen in news consider the following
  1. Capitation fee refers to the collection of payment by educational bodies not included in the prospectus of the institution, usually in exchange for admission to the institution.
  2. It has been defined under National education policy 2020
 Choose the correct statement/s using the codes given below  
 a) **1 only**      b) 2 only      c) Both 1 and 2      d) Neither 1 nor 2
9. With regards to Information Technology (Guidelines for Intermediaries and Digital Media Ethics Code) Rules, 2021, consider the following statements.
  1. The guidelines are for Over the Top (OTT) platforms only
  2. It has the Code of Ethics and Procedure and Safeguards for the intermediaries (as defined in the guidelines)
  3. The Ministry of Information and Broadcasting, Govt. of India is responsible for formulate an oversight mechanism.
  4. The rules require intermediaries to set up a grievance redressal mechanism.
 Which of the statements given above is/are correct?  
 a) 1 and 2 only      b) 2 only      **c) 2, 3 and 4 only**      d) 4 only
10. Investment in Indian capital markets via participatory notes rose in recent months, with reference to Participatory Notes (P-Notes), consider the following statements:
  1. These are financial instruments used by investors that are not registered with the SEBI to invest in Indian securities.
  2. The investors enjoy the voting rights in relation to shares invested through the P-Notes.
 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