

## 03 Jul 2022: UPSC Exam Comprehensive News Analysis



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**A. GS 1 Related**

*Nothing here for today!!!*

**B. GS 2 Related**

**Category: HEALTH**

**1. Why India should support antibiotics development**

*Syllabus: Issues relating to development and management of Social Sector/Services relating to Health*

*Prelims: Facts about Antimicrobial resistance*

*Mains: Antimicrobial resistance (AMR) crisis - causes, solutions and recommendations*

**Context**

Recent report on Antimicrobial resistance (AMR) by Global Research on AntiMicrobial resistance (GRAM).

**Antimicrobial resistance (AMR)**

- Antimicrobial drugs include the likes of antibiotics, antivirals, antifungals and antiparasitics which are used to prevent and treat infections in humans, animals and plants.
- Antimicrobial Resistance (AMR) refers to the mutations in the disease-causing microbes such as bacteria, viruses, fungi and parasites which make them immune to medicines which eventually makes it harder to treat infections and increases the risk of disease spread, severe illness and death.

**Know more about - [Antimicrobial Resistance \(AMR\)](#)**

**Data on Antimicrobial Resistance (AMR)**

- According to the report by GRAM, about 49.5 lakh people suffered from a minimum of one drug-resistant infection and AMR was directly linked to 12.7 lakh deaths in 2019.
- AMR is one of the major public health challenges in India which account for nearly 30% of deaths due to neonatal sepsis across India.
  - Most of these deaths are due to multidrug-resistant (MDR) hospital-acquired infections

- Further, about 30% of the COVID-19 deaths in India can be attributed to the failure to treat the secondary bacterial infections caused by MDR pathogens with the appropriate antibiotics.

### Causes of AMR

- Irrational use of antibiotics and other antimicrobial drugs used by the medical community, the general public and the farmers generate drug-resistant superbugs.
- The release of pharmaceutical wastes and hospital effluents into the water bodies without being adequately treated has aggravated antimicrobial resistance.
- Further, inadequate infection control measures in the hospitals and the issues with clean water, sanitation and hygiene (WASH) have resulted in the increased spread of these superbugs.

### Solutions to the AMR crisis

- Increased investment in the R&D of new antibiotics
- Development of rapid and affordable diagnostic methods
- Enhancing infection control and prevention approaches
- Formulation of antibiotic regulation initiatives across the country
  - Example: the ban on the use of streptomycin and tetracycline in agriculture and the growth promotional use of colistin in poultry farming by the Government.
- Ensuring equitable access to life-saving antibiotics.

### Recommendations

- Antibiotic development has been impacted due to a lack of investments and the exit of big pharma companies from the AMR space because of the low return on investment.
  - Further, the reimbursement provisions in various countries have discouraged hospitals from using a costly comprehensive antibacterial agent as cheaper generic options are available.
  - There is an urgent need to reverse this trend and **introduce a sustainable development model** that helps in addressing the AMR crisis in the long run.
- The use of **push-pull model**
  - Where “**push**” incentives lower the cost to develop a new antibacterial drug and the “**pull**” incentives reward only a successful result.
  - Small pharma companies being provided with early-stage funding from public-private partnerships is an example of the push model.
  - The pull factor refers to providing government contracts to firms that develop crucial antibiotics for drug-resistant infections.
- Further, an **AMR Action Fund** can be created that can be used to address the challenges in the development of new antibiotics and boost their development.

**Nut graf:** With AMR being a significant health crisis in India and India being ranked as one of the top countries of the world in total consumption of antibiotics for human use, there is a need to create a sustainable drug model in India which requires robust investment in R&D from both public and private sectors.

### C. GS 3 Related

#### Category: SCIENCE AND TECHNOLOGY

#### 1. India's patent law safeguards under fire

**Syllabus:** Issues relating to intellectual property rights

**Prelims:** Patent Laws in India

**Mains:** Critical evaluation of the recommendations by the Economic Advisory Council (EAC) to reform the Indian Patent system.

#### Context

The Economic Advisory Council (EAC) to the Prime Minister has recommended new reforms to the Indian Patent system.

#### What is a Patent?

- According to the [World Intellectual Property Organization \(WIPO\)](#), "A patent is an exclusive right granted for an invention, which in the process provides a new way of doing something, or offers a new technical solution to a problem".
- To get patent rights, technical information about the invention must be disclosed to the public in a patent application.

#### Patent laws in India

- Patent laws in India are defined by the provisions in the **Patents Act, 1970**.
- The **Office of the Controller General of Patents, Designs and Trademarks (CGPDTM)** famously known as the **Indian Patent Office** working under the Department for Promotion of Industry and Internal Trade (DPIIT) is the agency that administers the Indian law of Patents, Designs and Trademarks.
- The Act was amended by the **Patents (Amendment) Act, 2005** under which:

- Lawmakers from all political parties brought changes into the Indian patent law to ensure that the Indian patent office did not grant monopolies on old science or for common compounds already used in the public domain.
- It prevents drug manufacturing firms from indulging in “**evergreening**” which is a common strategy employed by the firms to obtain separate patent monopolies relating to the same medicine by extending the term of a granted patent that is about to expire
- The amended act also provided that any individual would be permitted to raise a “**pre-grant opposition**” anytime before the patent is granted or rejected.

Read more about- [Indian Patents Act](#)

### Recommendations by the Economic Advisory Council (EAC)

- Hiring more Patent Officers
  - Currently, the patent offices in India are understaffed.
  - India has only about 850 officers but has over 1,60,000 pending patent applications.
- Use of advanced technologies like [Artificial Intelligence \(AI\)](#) to simplify the process at the Indian Patent Office and to become globally competitive.
- Fixing a timeline of just **six months** for “pre-grant opposition” proceedings from the date of its publication

### The significance of “pre-grant opposition”

- As the Indian Patent Offices get over 50,000 patent applications annually, the officers miss certain critical information about the patent application a few times.
  - A study on pharmaceutical patents in India showed that 7 out of 10 patents are granted in error by the Indian Patent Office.
- Hence an efficient pre-grant opposition system acts as an additional administrative layer of scrutiny that prevents errors in the grant of patents.
- A first pre-grant opposition was filed by the Cancer Patient Aid Association (CPAA) in 2005 against a patent application of **Imatinib Mesylate (Gleevec)** which is a life-saving anti-cancer drug.
  - CPAA argued that this patent application claimed a salt form of old medicine which was a common practice within the pharmaceutical industry, and should not be considered patentable.
  - Based on this, the patent office rejected the patent, and the move was upheld by the High Court and the Supreme Court.
  - The rejection of the patent rights reduced the prices of this crucial drug from about ₹14 lakh/patient/year to about ₹40,000/patient/year from generic manufacturers.



- Various generic manufacturers and people infected with HIV, DR-TB, and viral hepatitis have filed pre-grant opposition to ensure that quality and affordable generic drugs can be procured through various health programmes.
- In 2006, PLHIV networks raised a pre-grant opposition against a patent application by Glaxo Group Limited (GSK) for **Combivir** on a fixed-dose combination of two AIDS drugs, **zidovudine/lamivudine**.
  - The drug manufacturing firm withdrew its patent application in India and several other countries after the patent oppositions highlighted that the patent claims did not account for a new invention as it just used the combination of two existing drugs.
- The reduction in the prices on account of the rejection of patent claims has resulted in extending antiretroviral treatment to lakhs of people in low and middle-income countries.

### Criticism of the recommendations of fixing a timeline for pre-grant oppositions

- Fixing a timeline and putting limits on a window period for pre-grant opposition will make it difficult to challenge fraudulent patent applications on life-saving drugs and vaccines.
- It also hinders the ability of the public to go through the information in patent applications and identify loopholes and errors in the claims.
- Further, the reduction in the timeline for the pre-grant oppositions will not translate into speedy processing of the pending patent claims or reducing pendency.
  - Instead, these pre-grant oppositions help provide critical information to the officers and hence speed up the process.

***Nut graf:** The pre-grant opposition provision in the Indian patent system has played a key role in ensuring the speedy and efficient processing of patent claims. The efforts to impose a timeline on these pre-grant oppositions will adversely impact the scrutiny of patent applications.*

## D. GS 4 Related

*Nothing here for today!!!*

## E. Editorials

**Category: GEOGRAPHY**

### 1. Measuring quakes

***Syllabus:** Important Geophysical Phenomena such as earthquakes*

***Prelims:** Richter scale*

**Mains:** *Earthquake-prone regions in India; Mitigating the impact of earthquakes.*

**Context:**

- Recently an earthquake of magnitude 5.9 on the Richter scale struck eastern Afghanistan, killing over a thousand and injuring many more. The earthquake struck about 44km from the city of Khost and tremors were felt as far away as Pakistan and India.
- In this context, the article discusses the possibility of having early warning systems to mitigate the damage caused by earthquakes.

**Background:**

**Causes and types of earthquakes:**

- According to the **theory of plate tectonics**, the Earth's crust consists of lithospheric plates which are continuously moving relative to each other. These plates can get stuck at their edges due to friction. When the stress on the edge overcomes the friction, there is an earthquake that releases seismic energy in waves that travel through the earth's crust towards the surface resulting in tremors on the ground.
- Apart from such tectonic reasons, earthquakes can also be of the **induced type** caused by human activity like tunnel construction, filling reservoirs and implementing geothermal or fracking projects, or volcanic activities or can also be of the collapse type of earthquakes.

For detailed information on causes and types of [earthquakes](#), along with different types of waves observed during earthquakes refer to the linked article.

**Measurement of earthquakes:**

- Earthquakes are measured by seismic stations which measure the shaking of the ground.
  - The **National Centre for Seismology** under the Ministry of Earth Sciences is the nodal agency of the Government of India for monitoring earthquakes in and around the country. For this purpose, NCS maintains a **National Seismological Network (NSN)** consisting of 115 observatories spread across the country. The information about earthquakes reported by NCS is being disseminated to the concerned central and state disaster authorities in the least possible time to initiate adequate mitigation measures.
- The **Richter magnitude scale** is used as a measure of the magnitude of an earthquake. The magnitude of an earthquake is the logarithm of the amplitude of the waves measured by the seismographs. Given the relationship between the quantum of energy released and the wave amplitude, it is possible to convert the measured wave amplitude into the energy released for that earthquake.

### Earthquake-prone regions in India:

- A total of 59% of the land mass of India (covering all states of India) is prone to earthquakes of different intensities.
- Based on seismicity, the intensity of earthquakes experienced, and geological and tectonic qualities of a region, **India is divided into four seismic zones. Zone V is seismically the most active region, while zone II is the least.** Approximately, 11% area of the country falls in zone V, 18% in zone IV, 30% in zone III and remaining in zone II.

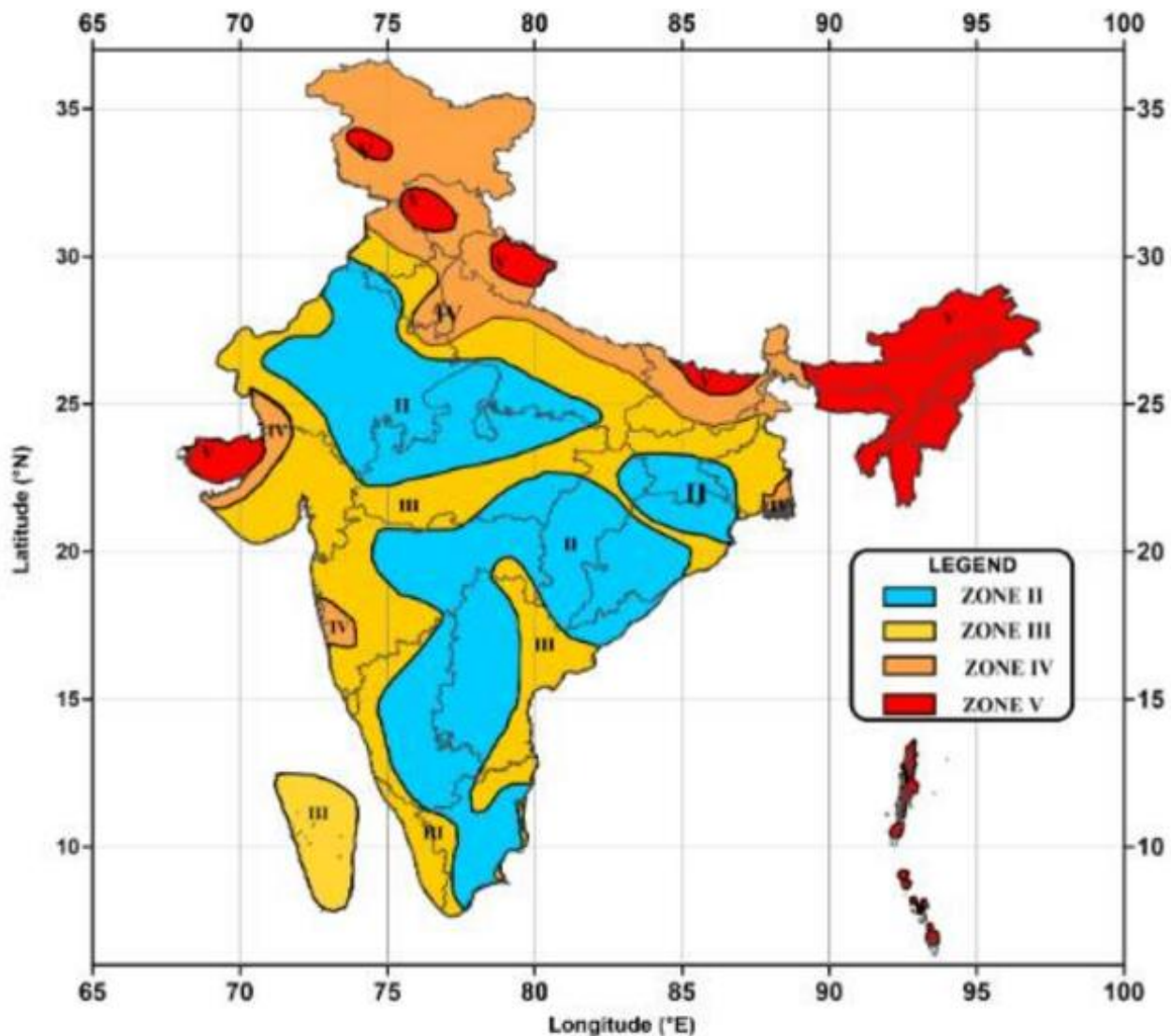


Image Source: PIB

### Mitigating the impact of earthquakes:



### Earthquake prediction:

- Earthquake prediction involves determining when and where earthquakes will occur.
- Since the parameters of the earthquake are unknown, it is near impossible to make scientifically valid predictions for a certain day or month.

### Early warning systems for earthquakes:

- In the case of seismic energy released during earthquakes, two kinds of waves are noticed. They are the **primary wave** which reaches first, and the second one called the **secondary wave**, are more destructive.
- If the primary waves can be measured in a timely manner, this can help predict secondary waves and their amplitudes. If it is known that the amount of energy released is extremely high, trains and power grids can be shut down and the damage minimised.
- Notably, **Japan has a successful early warning system in place** which has helped the nation take precautionary steps to mitigate the adverse impact of earthquakes.

### Earthquake preparedness:

- To reduce the impact of earthquakes on buildings and other physical capital, these structures should be so designed to make them capable of withstanding earthquakes.
- **Seismic retrofitting** can be used to alter existing buildings to increase their earthquake protection.

### Nut Graf:

*Given the potential of earthquakes to cause damage to life and property, all measures to mitigate the impact of earthquakes like the development of an early warning system for earthquakes and earthquake preparedness needs to be prioritized.*

### Category: INTERNATIONAL RELATIONS

#### 1. Is NATO stronger after Ukraine invasion?

**Syllabus:** *Bilateral, Regional and Global Groupings and Agreements involving India and/or affecting India's interests.*

**Prelims:** NATO

**Mains:** *Impact of the Russia-Ukraine war on the influence of NATO*

### Context:

- Leaders of the [North Atlantic Treaty Organization \(NATO\)](#), met recently in Madrid, Spain amidst the continuing war in Ukraine. In the meeting, the **decision to integrate Sweden and Finland into NATO** was taken.

### Status of NATO before the Ukraine war:

- NATO appeared to be weakened during the administration of former U.S. President Donald Trump, who had frequently asked the **NATO member states to contribute higher amounts** to be able to make use of the U.S.'s protective umbrella. This stance had threatened to strike a body blow to the unity and solidarity among the NATO member countries.
- Also, the **unilateral decision of the U.S. administration to pull its troops out of Afghanistan** from a mostly NATO military mission also undermined the collective spirit of NATO.

### Status of NATO in the aftermath of the Ukraine war:

- Russia's war in Ukraine seems to have strengthened the North Atlantic Treaty Organization.
- The NATO allies have in recent times firmly committed to **financing the organisation's military needs**. Their combined defence investments have jumped by substantial amounts, in part driven by Russia's annexation of Crimea.
- In the context of the prolonged conflict in Ukraine, NATO has announced that it will **increase its forces at "high readiness"**. It is projected to increase the forces at high readiness from 40,000 to over 3,00,000 by mid-2023.
- Finland and Sweden, which have previously maintained a position of neutrality, having had to face strategic insecurity from their neighbours Russia are set to join NATO within a year. This **expansion of membership** will only further strengthen NATO.

### Challenges to the NATO:

- Despite, some firmness to sanction Russia for its aggression against Ukraine, NATO member states continue to face pressures from **rising inflation and high energy and food prices** even as they have had to finance weaponry and critical war supplies to Ukraine.
- The destabilising **economic ripple effects of the war** in Ukraine would be hard for the member nations of NATO to bear in case of a prolonged war in Ukraine. This could undermine the unity of NATO.

### Nut Graf:

*Russia's war in Ukraine seems to have strengthened the North Atlantic Treaty Organization as an organization as it has galvanized its member nations to commit more finances and resources to meet the*

organisation's military needs and has also pushed countries like Sweden and Finland to seek membership. However, a prolonged war in Ukraine along with its economic ripple effects might test the resolve and unity of NATO.

## F. Prelims Facts

### 1. Chenkuringji

**Syllabus:** GS3, Environment, Conservation

**Prelims:** Chenkuringji and the Shendurney Wildlife Sanctuary

#### Chenkuringji

- The Shendurney Wildlife Sanctuary derives its name from *Gluta travancorica*, a species endemic to the Agasthyamala Biosphere Reserve which is locally known as 'Chenkuringji'.
- Chenkuringji belongs to the Anacardiaceae family.
- *Gluta travancorica* was once abundant in the hills on the southern parts of the Aryankavu Pass in Kerala's Kollam district, but its presence has depleted as it is very susceptible to climate change.
- The tree was widely seen in places such as Pandimala, Vilakkumaram and Rosemala.
- The tree is also seen inside the shola forests near Ponmudi, but effective pollination hardly takes place in this shola habitat.
- The tree is said to have medicinal properties and is used to treat high blood pressure and arthritis.
- The heartwood is sturdy with deep red colour, and trees were felled for wood earlier.

## G. Tidbits

### 1. 2°C temp. rise can damage Earth's species

- A recent study by scientists highlights that global emissions are expected to cause the planet to continue heating rapidly over the next few years and the global average temperature would breach the Paris agreement's target, which aims to restrict the warming to between 1.5°C and 2°C.
- The study also reveals that a temporary overshoot would cause waves of irreversible extinctions and lasting damage to thousands of species and requires the world to expect to make deep emission cuts.

- The increase in the global temperatures above 2°C can impact the world's most important ecosystems which include the tropical forest turning into savanna and the world would lose a critical global carbon sink, leaving the planet more vulnerable.

## 2. Northeast needs international routes

- The disruption caused in the surface communication in the major areas of northeastern India on account of floods and landslides has highlighted the need for fast-tracking the railway and road connectivity with India's "mainland" through Bangladesh.
- The major parts of northeast are dependent on the Lumding-Badarpur railway line and the two national highways which are prone to be affected due to floods and landslides.
- This requires the revival of old British-era routes through Mahisasan on the Assam-Bangladesh border
- The Chittagong-Badarpur-Haflong railway line is one of the oldest set up by the British to carry goods and traffic.
- Mahisasan in Barak Valley was also connected to Chittagong via Kulaura.
- The Maitri Bridge across the Feni River connects Sabroom in Tripura and Ramgarh in Bangladesh and another railway line is being constructed that connects Agartala and Akhaura in Bangladesh.

### H. UPSC Prelims Practice Questions

#### Q1. Which of the following statements is/are correct with respect to (Level - Medium)

1. It was a peasant uprising led by Mahatma Gandhi.
2. It was directed against the forcible cultivation of indigo on the land of farmers.
3. The British constituted the Indigo Commission as a fact-finding committee and then came up with the Champaran Agrarian Law in 1918 to protect the farmers from forced cultivation of Indigo in the aftermath of the Champaran Satyagraha.

#### Options:

- a. 1 and 2 only
- b. 2 and 3 only
- c. 1 and 3 only
- d. 1, 2 and 3

**Answer: a**

**Explanation:**

- **Statement 1 is correct**, Mahatma Gandhiji led the Champaran Sathyagraha
- **Statement 2 is correct**, The farmers had revolted against the British against the conditions that they imposed for indigo cultivation.
- **Statement 3 is not correct**, The **Indigo commission** was a commission set up in the late 1850s by the British to look into the grievances of the Indigo farmers following the movement of the raiyats of Bengal against the European indigo planters.
  - Whereas, the **Champaran Agrarian Law** was passed by the British Government in 1918 post the Champaran Satyagraha Movement which abolished the forcible cultivation of indigo on the land of farmers.

**Q2. Consider the following statements with respect to Konark Sun Temple. (Level - Easy)**

1. It is believed to have been built by King Narasimhadeva I of the Eastern Ganga dynasty in the 13th century AD.
2. It is based on the Kalinga architecture style of temple building.
3. It is a designated UNESCO world heritage site.

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

- a. 1 and 2 only
- b. 2 and 3 only
- c. 1 and 3 only
- d. 1, 2 and 3

**Answer: d**

**Explanation:**

- **Statement 1 is correct**, The Konark Sun Temple is said to be built by Narasimhadeva I of the Eastern Ganga dynasty in the years around 1250
- **Statement 2 is correct**, the Konark Sun temple represents the Kalinga Style of Architecture.
- **Statement 3 is correct**, The temple was declared a UNESCO World Heritage Site in 1984.

**Q3. Consider the following pairs: (Level - Medium)**

Dam	States
1. Harangi	Tamil Nadu
2. Hirakud	Odisha
3. Maithon	Chhattisgarh



4. Tehri                      Uttarakhand

**How many pairs given above are not correctly matched?**

- a. Only one pair
- b. Only two pairs
- c. Only three pairs
- d. All four pairs

**Answer: b**

**Explanation:**

- **Pair 1 is not correct**, Harangi is built across the Harangi river (a tributary of the Kaveri) in **Karnataka**.
- **Pair 2 is correct**, Hirakud Dam is built across the Mahanadi River in Odisha.
- **Pair 3 is not correct**, Maithon Dam is in **Jharkhand** and is built across River Barakar (a tributary of the Damodar River).
- **Pair 4 is correct**, Tehri Dam is built across the Bhagirathi River in Uttarakhand.
  - It is the tallest dam in India.

**Q4. Steel slag, a by-product of steel production finds application in which of the following? (Level - Medium)**

- 1. Road construction material
- 2. Land fill material
- 3. Agricultural soil improvement
- 4. Soil fertilizer
- 5. Cement industry raw material

**Options:**

- a. 1, 2 and 5 only
- b. 1, 3 and 5 only
- c. 1, 2, 3, 4 and 5
- d. 2 and 4 only

**Answer: c**

**Explanation:**

- Steel slag is an industrial byproduct obtained from the steel manufacturing industry.

- Steel slag finds its application in road construction material, landfill material, agricultural soil improvement, soil fertilizer and cement industry raw material.

**Q5. Recently, there was a growing awareness in our country about the importance of Himalayan nettle (*Girardinia diversifolia*) because it is found to be a sustainable source of (Level - Difficult) PYQ (2019)**

- a. Anti-malarial drug
- b. Biodiesel
- c. Pulp for paper industry
- d. Textile fibre

**Answer: d**

**Explanation:**

- **Himalayan nettle (*Girardinia diversifolia*)** is a fibre-yielding plant, and has become an important source of livelihood for the people in the remote villages of the Hindu Kush mountains.

### I. UPSC Mains Practice Questions

1. Evergreening strategies are regularly employed by giant branded pharmaceutical firms as a tactic to bypass existing patent laws and limit generic competition in the marketplace. In the light of the statement, discuss the key provisions that prevent Ever Greening of Patents in India. (10 Marks, 150 Words) (GS III - Science and Technology)
2. To tackle the antimicrobial resistance (AMR) crisis, India needs robust investment in the research and development of new antibiotics. Examine. (10 Marks, 150 Words) (GS II - Health)