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CURRENT AFFAIRS

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EARTHQUAKES

This article covers "Daily Current Affairs" and the topic details "Earthquakes". This topic has relevance in the "Geography" section of the UPSC CSE exam.

For Prelims:

What is Earthquake?

What are its causes?

For Mains:

GS1: Geography

Why in the news?

On September 8th, Morocco was struck by the most devastating earthquake ever recorded, claiming the lives of over 2,400 individuals and reducing numerous residences and structures to debris.

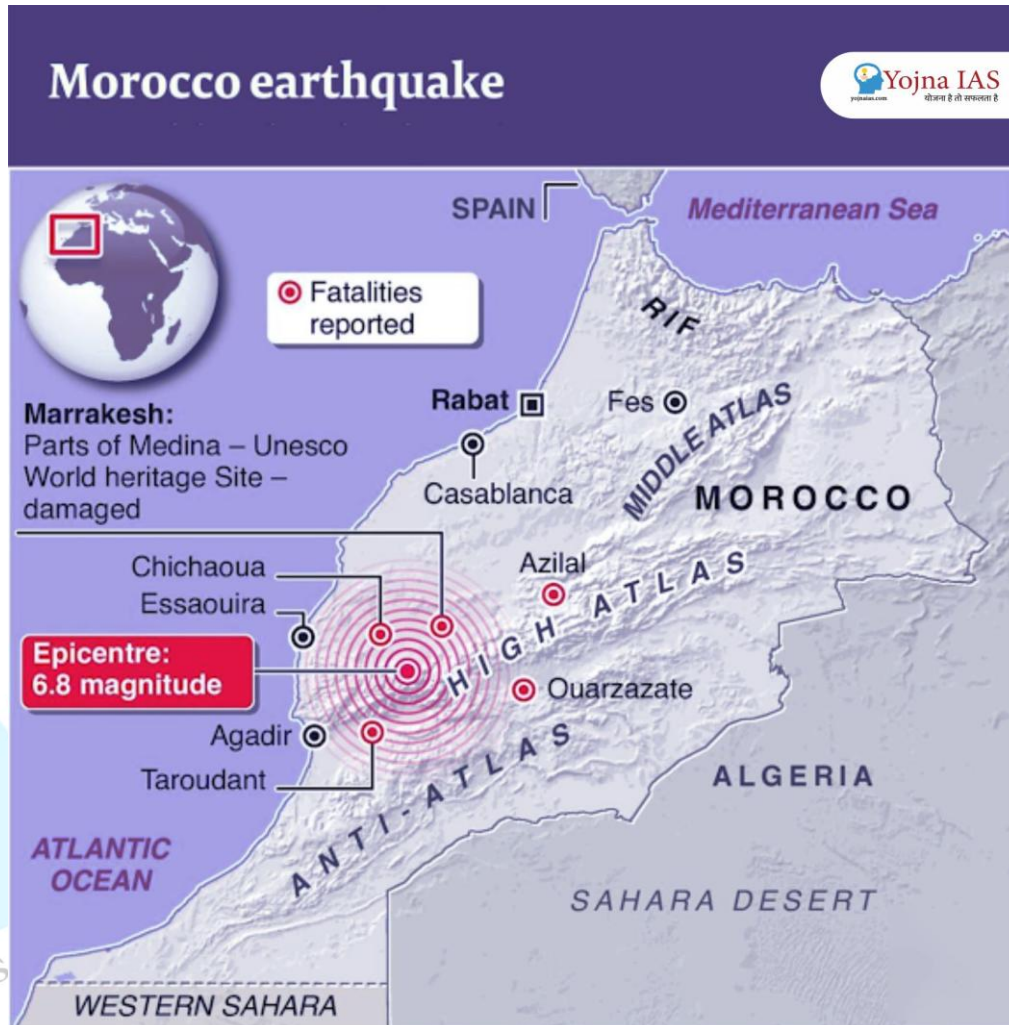
Understanding Earthquakes:

- **Definition:** An earthquake is a powerful shaking of the Earth's surface triggered by movements beneath its crust.
- **Hypocentre:** The point beneath the Earth's surface where the earthquake originates is the hypocentre.
- **Epicentre:** The epicentre is the location directly above the hypocentre on the Earth's surface.
- **Cause:** Earthquakes occur when two tectonic plates abruptly slide past each other, releasing accumulated elastic strain energy. This energy transforms into seismic waves, resulting in ground shaking.
- **Measurement:** Earthquakes are assessed using various scales:
 - **Moment Magnitude Scale (M_w):** Measures the total moment release based on fault movement distance and force.
 - **Richter Scale (Magnitude Scale):** Gauges energy released, ranging from 0 to 10.
 - **Intensity Scale/Mercalli Scale:** Evaluates visible damage on a scale from 1 to 12.
- Earthquakes pose a significant challenge as they cannot be predicted accurately, and no early warning systems currently exist.

More About Morocco Earthquake:

- **Epicentre and Magnitude:** The earthquake's epicentre was situated in the High Atlas Mountain range, approximately 72 kilometres from Marrakech. It registered a magnitude of 6.8, categorising it as a "strong" earthquake.

- **Shallow Depth:** Notably, the quake occurred at a relatively shallow depth beneath the Earth's surface. According to the US Geological Survey (USGS), the focus was recorded at 18.5 km, while Morocco's seismic agency estimated it at 11 km. Shallow earthquakes are more destructive as they transfer greater energy to the surface than deeper quakes.
- While earthquakes of this size are infrequent in the region, they are not unprecedented. The US Geological Survey notes Morocco has experienced immense, damaging earthquakes in the western Mediterranean.

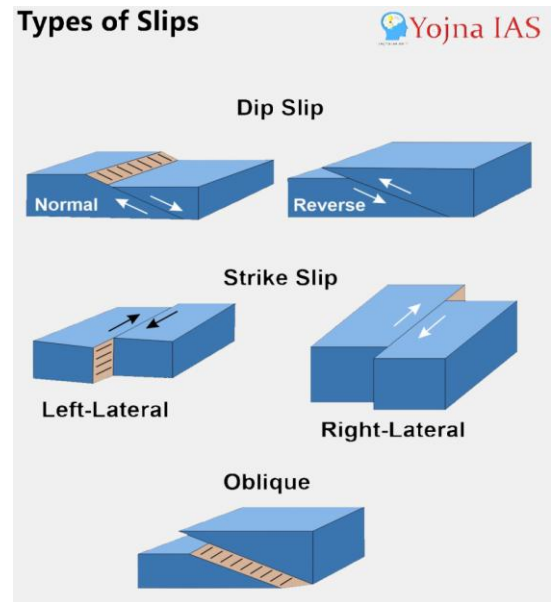


Understanding the Morocco Earthquake Cause:

- **Tectonic Plate Convergence:** The seismic activity in Morocco can be attributed to the northward convergence of the African plate with respect to the Eurasian plate along a complex plate boundary.
- **Faulting Explanation:** The earthquake resulted from oblique-reverse faulting occurring at a shallow depth within the Moroccan High Atlas Mountain range.

What is Faulting?

- **Fault Definition:** A fault represents a fracture or zone of fractures between rock blocks, enabling their relative movement, and potentially causing earthquakes during rapid shifts.
- **Fault Types:** Faults are classified based on their dip (angle with respect to the surface) and slip direction:
- **Dip-Slip Faults:** These move along the dip plane direction.
- **Strike-Slip Faults:** They exhibit horizontal movement.
- **Oblique-Slip Faults:** Combining characteristics of dip-slip and strike-slip faults.
- **Reverse Faulting:** This term denotes a situation where the upper block, positioned above the fault plane, moves upward and over the lower block.
- **Oblique-Reverse Faulting:** Also known as oblique-thrust faulting, this geological faulting type involves vertical and horizontal movement of rocks on one side of the fault plane due to compressional forces. It is frequently observed in areas where tectonic plates converge.



Earthquake Vulnerability in India:

- **Geographical Location:** India's landmass is penetrating into the Eurasian plate, making the country prone to earthquakes of moderate to very high intensity.
- **Seismic Zoning:** According to the Bureau of Indian Standards (BIS), more than 58.6 per cent of India's landmass is prone to earthquakes of moderate to very high intensity. The seismic zoning in India was revised after the Killari earthquake in 1993, with the low hazard zone or Seismic Zone I being merged with Seismic Zone II.
- **Population Density and Urbanization:** Densely populated areas, extensive unscientific constructions, and unplanned urbanisation have increased risks associated with earthquake hazards.
- **Specific Regions:** The Andaman & Nicobar Islands frequently experience damaging earthquakes due to being situated on an inter-plate boundary. Regions in the Himalayan foothills are vulnerable to liquefaction and landslides due to earthquakes.

Challenges in Earthquake Prediction:

- **Predictive Complexity:** Accurately forecasting earthquakes necessitates the detection of preliminary signals originating from within the Earth, signifying an impending significant seismic event. Additionally, these signals must exclusively manifest before major earthquakes, avoiding false alarms for minor surface movements.
- **Equipment Limitations:** Currently, the absence of appropriate equipment capable of identifying such precursory signals poses a significant hurdle in earthquake prediction, even if these signals indeed exist.

Sources:

Morocco earthquake kills more than 2,000 people, survivors sleep rough as homes destroyed | World News – The Indian Express

Q1. What geological faulting type involves vertical and horizontal movement of rocks on one side of the fault plane due to compressional forces and is frequently observed in areas where tectonic plates converge?

- (a) Dip-slip faulting
- (b) Strike-slip Faulting
- (c) Oblique- reverse Faulting
- (d) Normal Faulting

ANSWER: (c)

Q2. Consider the following statements about earthquakes:

1. The hypocentre is the point on the Earth's surface directly above the earthquake's origin.
2. The Richter Scale measures visible damage caused by an earthquake.
3. The Moment Magnitude Scale (Mw) measures the total moment release based on fault movement distance and force.

How many of the statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

ANSWER: (a)

Q3. In light of recent earthquakes in Morocco, discuss the Geological and Geographical Factors Influencing Earthquake Vulnerability in India.

Gaurav Nikumbh

CANNABIS

This article covers "Daily Current Affairs" and the Topic details "Cannabis". This Topic has relevance in the Public Health section of the UPSC CSE exam.

For Prelims:

About Cannabis?

For Mains:

GS 2: Public Health

Benefits of Cannabis Cultivation?

Concerns Related to Cannabis Cultivation in India?

Way Forward?

Why in the news:

Himachal Pradesh Government is considering to legalise Cannabis cultivation

WHO's Definition of Cannabis

- According to the World Health Organization (WHO), cannabis is a term encompassing various psychoactive preparations derived from the Cannabis sativa plant.
- WHO identifies cannabis as the most extensively cultivated, trafficked, and misused illicit drug worldwide.
- Cannabis plant species are typically dioecious, with male and female plants. Unpollinated female plants yield a substance known as hashish.
- The primary psychoactive component in cannabis is Delta9 tetrahydrocannabinol (THC).

NDPS Act, 1985 Definition

- As per the Narcotic Drugs and Psychotropic Substances (NDPS) Act of 1985, a "cannabis plant" encompasses all plants of the cannabis genus.
- 'Charas' is the separated resin extracted from the cannabis plant, covering separated resin forms, whether crude or purified. This definition also includes concentrated preparations and resin-like hashish oil or liquid hashish.
- 'Ganja' is defined as the flowering or fruiting tops of the cannabis plant but explicitly excludes seeds and leaves.
- The NDPS Act prohibits any mixture, with or without neutral materials, of charas and ganja or any beverage derived from them.
- The Act specifically excludes seeds and leaves from its provisions due to their minimal THC content.

Benefits of Cannabis Cultivation:

Expanding Hemp Cultivation

- Hemp, a variant of Cannabis sativa, has significant industrial and medicinal applications.
- In Himachal Pradesh, hemp cultivation currently occurs illegally under the NDPS Act of 1985.

Economic Advantages

- Legalizing and regulating hemp cultivation can provide substantial economic benefits.
- Revenue Generation: Cannabis cultivation can generate revenue for Himachal Pradesh, contributing to the state's finances.
- Alternative Income Source: It offers an alternative income source for local communities, potentially reducing dependence on traditional agriculture.

Diverse Applications

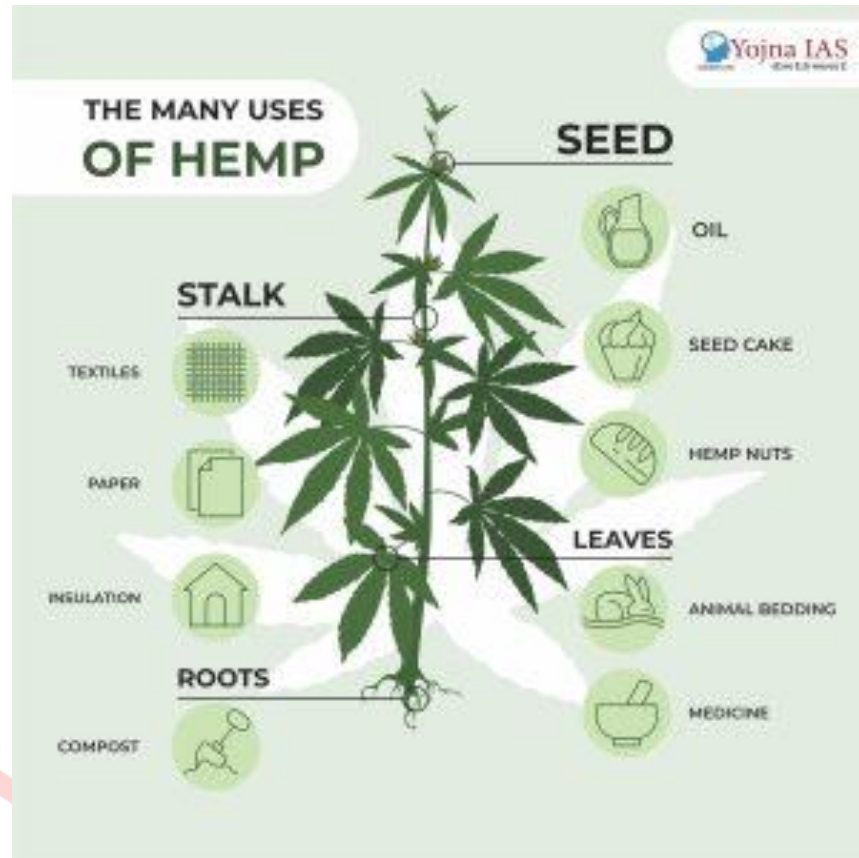
- Beyond recreational use, cannabis has various applications:
 - Phytoremediation: Cannabis can help in soil and environmental cleanup.
 - Fiber and Cloth: Hemp fibers are used in textile and cloth manufacturing.
 - Medicinal Uses: Cannabis has medicinal properties, including pain management and anti-inflammatory properties.
 - Pulp and Paper Industry: Hemp can be utilized in the pulp and paper industry.

Preserving Traditional Practices

- Hemp has a history of traditional uses in Himachal Pradesh, such as rope and textile making from hemp fibers, shoe manufacturing, and seed consumption.
- Legalization can help revive and preserve these traditional practices disrupted by the ban on cultivation.

Scientific Research

- Legalizing cannabis for medicinal, industrial, and scientific purposes allows for research into its potential benefits and applications.
- It can harness the plant's medicinal properties for the betterment of healthcare.



Concerns Related to Cannabis Cultivation in India

- **Drug Addiction:**
 - Nearly 95% of drug addicts in Himachal Pradesh use cannabis and its derivatives.
 - Critics argue that legalizing cultivation might encourage youth to experiment with cannabis, potentially leading to addiction issues, and hampering their socio-economic contributions.
- **Health Risks:**
 - Cannabis use can have adverse health effects, such as impaired cognitive function, respiratory problems (when smoked), and an increased risk of mental health disorders.
 - Widespread cannabis use raises concerns about public health, especially among vulnerable populations.
- **Psychiatric Issues:**
 - Prolonged and excessive cannabis use can contribute to psychiatric problems like anxiety, depression, and psychosis.
 - Legalizing cultivation may exacerbate these issues without adequate mental health support and education.
- **Illicit Market:**
 - The illicit cannabis market may persist alongside legal cultivation.

- Continued illegal production and distribution could lead to increased criminal activities, perpetuating the challenges faced by law enforcement.
- **Enforcement Challenges:**
 - Regulating cannabis cultivation and use presents enforcement challenges.
 - Establishing legal limits, enforcing age restrictions, and preventing diversion to the illicit market requires a robust and well-funded regulatory framework.

Way Forward

- **Comprehensive Regulation:** Develop a balanced regulatory framework that enables medical access while preventing misuse.
- **In-Depth Research:** Conduct thorough research on cannabis, including its medicinal benefits, economic potential, and health risks.
- **Robust Framework:** Create a strong regulatory system addressing drug abuse, health concerns, and criminal activities, with clear guidelines for licensing, oversight, age restrictions, product labelling, and quality control.

SOURCE:

<https://www.thehindu.com/news/national/other-states/himachal-pradesh-inches-closer-to-cannabis-cultivation/article67291491.ece>

Q.1 The term “Delta9 tetrahydrocannabinol (THC)”, recently seen in the news is:

- (a) A chemical used in Detergents
- (b) An Enzyme used in Gene Editing
- (c) A psychoactive component
- (d) An Enzyme used in SARS-COV-2 Vaccine

ANSWER: C

Q.2 Consider the following statements regarding cannabis:

1. All parts of Cannabis are prohibited under the NDPS Act 1985.
2. The primary psychoactive component in cannabis is cannabidiol (CBD).
3. Legalising cannabis cultivation can help in textile Production.

How many of the above statement/s is/are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

ANSWER: B

Q.3 Cannabis legalization is a complex issue that involves economic, social, and health considerations. Discuss the potential benefits and challenges of legalizing cannabis cultivation in India

Rishabh