Disaster Management · GS - III

Discuss about the vulnerability of India to earthquake related hazards. Give examples including the salient features of major disasters caused by earthquakes in different parts of India during the last three decades.

EXAM YEAR	PAPER	SUBJECT
2021	GS - III	Disaster Management

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Indian and Eurasian tectonic plates, Himalayan seismic belt, seismic Zones III–V, active faults, urban vulnerability, Bhuj earthquake 2001, Kashmir earthquake 2005, Sikkim earthquake 2011, Nepal earthquake 2015 impacts in India, building-code enforcement, disaster preparedness

Model Answer

Introduction

India is highly vulnerable to earthquakes because of active tectonic processes, particularly the collision of the Indian and Eurasian plates. Rapid urbanisation and unsafe construction increase the potential for disasters.

Major Vulnerability Factors

- **Himalayan region:** Ongoing plate convergence creates substantial seismic risk in Jammu and Kashmir, Himachal Pradesh, Uttarakhand and the Northeast.
- **Peninsular India:** Although comparatively stable, regions around Kutch and parts of central India also experience damaging earthquakes.
- **Urban exposure:** Dense settlements, weak buildings, lifeline infrastructure and inadequate emergency access increase casualties.

- **Secondary hazards:** Landslides, liquefaction, fires and dam or infrastructure damage can compound earthquake impacts.

Major Earthquakes

- **Gujarat, 2001:** The Bhuj earthquake devastated Kutch, caused extensive building collapse and exposed weaknesses in construction practices.
- **Kashmir, 2005:** The earthquake caused widespread destruction in Jammu and Kashmir, particularly in mountainous areas, with severe effects on housing and infrastructure.
- **Sikkim, 2011:** The earthquake triggered landslides and damaged roads and buildings in difficult Himalayan terrain.
- **Nepal, 2015:** Although centred outside India, the earthquake caused deaths and damage in adjoining Indian states and highlighted cross-border disaster risks.

Way Forward

Strict enforcement of seismic building codes, retrofitting vulnerable structures, microzonation, public drills and resilient emergency infrastructure are essential.

Conclusion

Earthquakes cannot be prevented, but scientific planning and preparedness can substantially reduce loss of life and property.

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