Disaster Management · GS - III

Explain how earthquake depth, magnitude and tectonic setting influence the severity of earthquake impacts. Discuss measures to reduce earthquake-related risks in vulnerable regions.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 01/11/2026	GS - III	Disaster Management

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Tectonic plate boundaries; earthquake magnitude; focal depth; seismic waves; tsunami risk; disaster preparedness

Model Answer

Introduction

Earthquakes result from the sudden release of energy within the Earth's crust. Their impacts depend not only on magnitude but also on focal depth, distance from populated areas, local geology and the vulnerability of infrastructure.

Factors Influencing Impacts

1. Magnitude and Depth

Magnitude measures the energy released. Shallow earthquakes generally produce stronger surface shaking near the epicentre than comparable deep earthquakes. However, large deep-focus earthquakes can still affect extensive areas.

2. Tectonic Setting

Japan lies near several tectonic plate boundaries, exposing it to frequent seismic activity. Undersea earthquakes can generate tsunamis when they cause substantial vertical displacement of the seabed.

3. Exposure and Vulnerability

Building quality, population density, soil conditions and preparedness determine the extent of casualties and economic losses.

Risk-Reduction Measures

- Enforce earthquake-resistant building codes and retrofit vulnerable structures.
- Strengthen seismic monitoring, public alerts and tsunami-warning systems.
- Conduct evacuation drills and public-awareness campaigns.
- Protect critical infrastructure and prepare emergency response teams.
- Improve coordination among scientific agencies, local authorities and communities.

Conclusion

Earthquakes cannot be prevented, but scientific monitoring, resilient infrastructure and effective preparedness can significantly reduce their human and economic consequences.

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