Chapter 6: Natural Hazards and Disasters

Exercises — Exercises

Q1 Choose the right answer. Which one of the following states of India experiences floods frequently? (a) Bihar (b) West Bengal (c) Assam (d) Uttar Pradesh

(c) Assam. The chapter names Assam, West Bengal and Bihar among the high flood-prone states, with Assam listed first; the Brahmaputra floods it almost every year, as at Majuli.

Q2 Choose the right answer. In which one of the following districts of Uttaranchal did the Malpa Landslide disaster take place? (a) Bageshwar (b) Champawat (c) Almora (d) Pithoragarh

(d) Pithoragarh. The Malpa landslide struck this Kumaon Himalayan district, part of the highly landslide-vulnerable Himalayan belt. The chapter text only lists Malpa as a project topic, so this rests on standard NCERT knowledge.

Q3 Choose the right answer. Which one of the following states receives floods in the winter months? (a) Assam (b) West Bengal (c) Kerala (d) Tamil Nadu

(d) Tamil Nadu. It sometimes floods during November-January because of the retreating monsoon, whereas Assam and West Bengal flood in the rainy season.

Q4 Choose the right answer. In which of the following rivers is the Majuli River Island situated? (a) Ganga (b) Brahmaputra (c) Godavari (d) Indus

(b) Brahmaputra. Majuli in Assam is the largest riverine island in the world, and its paddy fields benefit from fertile silt deposited by the river's annual floods.

Q5 Choose the right answer. Under which type of natural hazards do blizzards come? (a) Atmospheric (b) Aquatic (c) Terrestrial (d) Biological

(a) Atmospheric. Table 6.1 lists blizzards, thunderstorms, lightning, tornadoes, tropical cyclones, hailstorms, frost and heat or cold waves as atmospheric disasters.

Q6 When can a hazard become a disaster?

A hazard is a natural circumstance with only the potential to cause harm. It becomes a disaster when an event is sudden and its destruction is very high, causing large-scale loss of life and property beyond people's control. Human settlement in hazard-prone areas raises this chance.

Q7 Why are there more earthquakes in the Himalayas and in the north-eastern region of India?

The Indian plate moves about 1 cm a year northward and is obstructed by the Eurasian plate, so the two lock and build up stress. When the lock breaks, the sudden release of energy causes earthquakes along the Himalayan arch and the north-east.

Q8 What are the basic requirements for the formation of a cyclone?

A tropical cyclone needs (i) a large, continuous supply of warm, moist air releasing latent heat; (ii) a strong Coriolis force to stop the central low pressure filling (so none forms at 0-5 degrees latitude); (iii) unstable conditions in the troposphere; and (iv) no strong vertical wind wedge.

Q9 How are the floods in Eastern India different from the ones in Western India?

Eastern India (Assam, West Bengal, Bihar, eastern Uttar Pradesh) has river floods when channels overflow in the rainy season. Western India (Rajasthan, Gujarat, Haryana, Punjab) has flash floods, caused by the pattern of the monsoon and by human activity blocking streams and river channels.

Q10 Why are there more droughts in Central and Western India?

Indian agriculture depends on monsoon rainfall, which varies greatly and is unpredictable. Western Rajasthan, such as Jaisalmer and Barmer, gets under 90 mm of rain a year. Large parts of Madhya Pradesh, eastern Maharashtra and interior Peninsular India are also severely drought-prone, with high evaporation and over-use of water.

Q11 Identify the landslide-prone regions of India and suggest some measures to mitigate the disasters caused by these.

Very high vulnerability: young unstable Himalayan areas, Andaman and Nicobar, the Western Ghats and Nilgiris, and the north-east. High vulnerability: the remaining Himalayan states and north-eastern states except the plains of Assam. Moderate to low: Trans-Himalayan Ladakh and Spiti, the Aravalis, rain-shadow areas of the Ghats and the Deccan, and mining areas of Jharkhand, Odisha and other states. Other areas, such as Rajasthan, Bihar and coastal southern states, are safe. Mitigation should be area-specific: restrict road, dam and other construction; limit farming to valleys and gentle slopes; control large settlements in high-risk zones; promote afforestation; build bunds to reduce water flow; and encourage terrace farming instead of jhumming in the north-eastern hills.

Q12 What is vulnerability? Divide India into natural disaster vulnerability zones based on droughts and suggest some mitigation measures.

Vulnerability is the degree to which people and places are exposed to and likely to be harmed by a hazard. Drought zones: extreme (most of Rajasthan west of the Aravalis and the Kachchh region of Gujarat, as in Jaisalmer and Barmer); severe (eastern Rajasthan, most of Madhya Pradesh, eastern Maharashtra, interior Andhra Pradesh and Karnataka, interior Tamil Nadu, southern Jharkhand and interior Odisha); moderate (northern Rajasthan, Haryana, southern Uttar Pradesh, the rest of Gujarat and Maharashtra except Konkan, and interior Karnataka). Immediate measures are safe drinking water, medicines, fodder and shifting people and cattle to safer places. Long-term measures are identifying groundwater, linking rivers, building reservoirs and dams, rainwater harvesting, and promoting drought-resistant crops.

Q13 When can developmental activities become the cause of disasters?

Development turns hazardous when it intensifies human activity in disaster-prone areas. Technology lets people settle flood plains and build coastal cities like Mumbai and Chennai, increasing vulnerability to cyclones and tsunamis. Deforestation, unscientific land use and construction on fragile slopes cause landslides and floods. Roads and dams in the Himalayas, encroachment of river beds and blocking of drainage also worsen floods. Such human actions accelerate natural hazards and make them disasters.