Disaster Management · GS - III

Explain the mechanism and occurrence of cloudburst in the context of the Indian subcontinent. Discuss two recent examples.

EXAM YEAR	PAPER	SUBJECT
2022	GS - III	Disaster Management

MARKS	WORD LIMIT
10	~150 words

Answer Hint

A cloudburst is extremely intense rainfall over a small area in a short period, commonly associated with deep convective clouds and strong moisture convergence. Himalayan terrain, monsoon circulation and orographic uplift favour such events. They can trigger flash floods, landslides and severe damage to settlements and infrastructure.

Model Answer

Introduction

A cloudburst is conventionally described in India as rainfall exceeding about 100 mm in an hour over a small area.

Mechanism and Occurrence

Moist monsoon air rises rapidly due to orographic uplift and atmospheric instability. Condensation produces deep cumulonimbus clouds, while continuous moisture supply sustains intense rainfall. The western Himalayas and other mountainous regions are particularly vulnerable because of steep slopes and complex terrain.

Recent Examples

The **Amarnath region of Jammu and Kashmir in July 2022** experienced intense rainfall that triggered flash flooding and caused casualties near the pilgrimage route. In **Himachal Pradesh during the 2023 monsoon**, cloudburst-associated heavy rainfall triggered flash floods and landslides, damaging settlements and infrastructure.

Conclusion

Doppler weather radars, local rainfall monitoring, early-warning dissemination, hazard mapping and regulated construction can reduce losses. Because cloudbursts are highly localised, stronger community preparedness and rapid evacuation are essential.

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