Disaster Management · GS - III

Examine the factors governing the formation and intensification of tropical cyclones in the North Indian Ocean. Discuss their implications for coastal communities and the importance of early warning systems in disaster risk reduction.

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

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Ocean temperature, atmospheric moisture, vertical wind shear, Coriolis force, steering currents, coastal vulnerability, fishermen's safety, IMD warnings, evacuation and preparedness.

Model Answer

Introduction

Tropical cyclones are intense low-pressure systems that develop over warm tropical oceans. The Bay of Bengal and Arabian Sea are particularly vulnerable to such disturbances.

Factors Governing Formation and Intensification

- **Warm sea surface:** Ocean temperatures of around 26.5°C or higher provide the heat and moisture required for cyclone development.
- **Atmospheric instability:** Rising moist air and latent heat release support the development of a strong convective system.
- **Low vertical wind shear:** Favourable wind conditions allow the cyclone to maintain its organised structure.
- **Coriolis force:** Provides the rotation necessary for cyclone formation, making development uncommon near the equator.

- **Steering currents:** Influence the direction and speed of cyclone movement.

Implications and Disaster Preparedness

Cyclones threaten coastal settlements through storm surges, flooding, strong winds, infrastructure damage and livelihood disruption. Fishermen and vulnerable coastal populations face particularly high risks.

Accurate forecasting, timely evacuation, cyclone shelters, communication networks and restrictions on fishing during hazardous conditions are essential. Community awareness and resilient coastal infrastructure further reduce vulnerability.

Conclusion

An integrated approach combining scientific forecasting, community preparedness and resilient infrastructure is crucial for reducing cyclone-related losses and strengthening coastal disaster resilience.

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