Geography · GS - I

Major cities of India are becoming vulnerable to flood conditions. Discuss.

EXAM YEAR	PAPER	SUBJECT
2016	GS - I	Geography

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Urban flooding; unplanned urbanisation; drainage congestion; wetland loss; extreme rainfall; encroachment; floodplain management; urban resilience

Model Answer

Introduction

Urban flooding occurs when rainfall and runoff exceed the capacity of drainage systems and natural water bodies. Indian cities are increasingly vulnerable because rapid urbanisation often outpaces infrastructure and environmental management.

Major Causes

1. Unplanned Urbanisation

Expansion into floodplains, low-lying areas and natural drainage channels obstructs the movement and storage of stormwater.

2. Loss of Natural Buffers

Encroachment and reclamation of wetlands, lakes and ponds reduce the capacity of cities to absorb and temporarily store rainfall.

3. Impervious Surfaces

Concrete roads, buildings and paved areas prevent infiltration, increasing surface runoff and overwhelming drainage systems.

4. Inadequate Drainage

Poorly maintained drains, solid-waste accumulation, undersized stormwater networks and sewage-drain mixing aggravate waterlogging.

5. Extreme Rainfall and Climate Change

Intense rainfall events can exceed the design capacity of urban infrastructure. Climate change can increase the risk of extreme precipitation in many regions, although impacts vary geographically.

6. Institutional Weaknesses

Fragmented responsibilities among municipal bodies, development authorities and disaster-management agencies often undermine coordinated planning.

Consequences

Urban floods damage homes, roads, electricity and transport networks; disrupt businesses; contaminate drinking water; and disproportionately affect residents of informal settlements. They can also cause fatalities and spread waterborne diseases.

Measures for Mitigation

- Enforce floodplain zoning and prevent construction in drainage channels.
- Restore wetlands, urban lakes and natural waterways.
- Upgrade stormwater drainage based on current rainfall patterns.
- Promote permeable pavements, rain gardens, green roofs and rainwater harvesting.
- Improve solid-waste management and desilt drains before monsoon periods.
- Develop flood forecasting, early-warning systems and evacuation plans.
- Coordinate urban planning with watershed-level management.

Conclusion

Urban flooding is not simply a rainfall problem; it reflects planning and governance failures. Resilient cities require nature-based solutions, effective drainage and risk-sensitive development.