Geography · GS - I

How can Artificial Intelligence (AI) and drones be effectively used along with GIS and RS techniques in locational and areal planning?

EXAM YEAR	PAPER	SUBJECT
2025	GS - I	Geography

MARKS	WORD LIMIT
15	~250 words

Answer Hint

GIS, remote sensing, AI, drones, spatial analysis, land-use planning, urban planning, precision agriculture, disaster management, infrastructure mapping

Model Answer

Introduction

GIS and Remote Sensing provide spatial data and visualisation, while AI and drones enhance data collection, interpretation and real-time decision-making. Their integration can substantially improve spatial planning.

1. Land-Use and Urban Planning

Satellite imagery and drone surveys can identify land-use changes, encroachments and urban expansion. AI can classify imagery and predict growth patterns, helping planners optimise housing, transport and infrastructure locations.

2. Infrastructure Planning

Drones can conduct high-resolution surveys of roads, bridges and construction sites. GIS can integrate these datasets with demographic and environmental information to identify optimal locations.

3. Agriculture

Remote sensing can monitor crop health, soil moisture and land-use patterns, while drones enable targeted field-level assessment. AI can analyse these datasets for precision agriculture and resource optimisation.

4. Environmental and Disaster Planning

GIS and RS can map flood-prone, landslide-prone and ecologically sensitive areas. AI can support risk prediction, while drones can provide rapid post-disaster imagery.

5. Governance

Integrated spatial dashboards can support evidence-based decisions and reduce planning errors.

Conclusion

The convergence of AI, drones, GIS and Remote Sensing can make planning predictive, precise and participatory, provided data privacy, accuracy and institutional capacity are adequately addressed.

BECOME IAS
AI POWERED UPSC PREP