

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-GURUJADA VIZINAGARAM
III B. Tech I Semester Regular Examinations November -2025
WATERSHED DEVELOPMENT AND MANAGEMENT
(Civil Engineering)

Time: 3 hours

Max. Marks: 70

The Question paper consists of Part A & Part B.

Part A is compulsory, Answer all questions. Part B Answers any one question from each unit.

1		PART-A	(20Marks)
	a)	Define the term 'Watershed' and explain its significance in resource planning.	[2]
	b)	List any four objectives of watershed management.	[2]
	c)	What are the main factors influencing watershed delineation?	[2]
	d)	Explain the importance of land capability classification in watershed planning.	[2]
	e)	What is the role of vegetation in controlling soil erosion?	[2]
	f)	List different types of water harvesting structures used in watershed development.	[2]
	g)	Define runoff and mention the factors affecting it.	[2]
	h)	What are the components of a typical watershed management plan?	[2]
	i)	Explain the importance of community participation in watershed development.	[2]
	j)	What is the function of check dams in a watershed?	[2]
		PART-B	(50Marks)
		Question from Unit - I	
2	a)	Describe the classification of watersheds based on size, shape, and physiographic features.	[5]
	b)	Explain the principles and objectives of watershed management with suitable examples.	[5]
		(OR)	
3	a)	Discuss the factors affecting the watershed characteristics and their influence on hydrology.	[5]
	b)	Explain the importance of integrated watershed management for sustainable development.	[5]
		Question from Unit - II	
4	a)	Explain various methods of soil and water conservation used in watershed management.	[5]
	b)	Discuss the design and functioning of contour bunds and terraces.	[5]
		(OR)	
5	a)	What are gully control structures? Explain different types with neat sketches.	[5]
	b)	Describe the role of vegetative measures in erosion control.	[5]
		Question from Unit - III	
6	a)	Explain the process of water harvesting and groundwater recharge techniques.	[5]
	b)	Discuss the design principles of percolation tanks and farm ponds.	[5]
		(OR)	
7	a)	Explain in detail the planning and maintenance of drainage line	[5]

		treatment structures.	
	b)	Describe the construction and maintenance of check dams with neat diagrams.	[5]
		Question from Unit - IV	
8	a)	What is remote sensing? Explain its application in watershed delineation and monitoring.	[5]
	b)	Describe the use of GIS in watershed planning and management.	[5]
		(OR)	
9	a)	Explain various data types used in GIS and their relevance in watershed analysis.	[5]
	b)	Discuss the integration of remote sensing and GIS for decision-making in watershed projects.	[5]
		Question from Unit - V	
10	a)	Explain the role of community participation and capacity building in watershed development.	[5]
	b)	Discuss the institutional arrangements and funding mechanisms for watershed programs in India.	[5]
		(OR)	
11	a)	Explain the monitoring and evaluation process in watershed management projects.	[5]
	b)	Write short notes on: (i) Watershed sustainability indicators (ii) Impact assessment of watershed programs.	[5]
