Code No: **RT42013D** **R13** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018

WATERSHED MANAGEMENT

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A *(22 Marks)*

1. a) State the core principles of watershed management. [3]
   b) Explain the affect of socio-economic characteristics of a watershed. [4]
   c) Enumerate the limitation and advantages of Gabion as a control measure of erosion. [4]
   d) List out the techniques adopted for rain-water harvesting. [3]
   e) What are the factors involved in the management of waste Land? [4]
   f) Enlist the basic data required for any watershed modeling. [4]

PART–B *(3x16 = 48 Marks)*

2. a) Discuss in brief various multi-disciplinary approaches associated with watershed management. [8]
   b) Explain the significance of knowledge of watershed management based on the present day scenario. [8]

3. a) Discuss various basic database required within the perspective of holistic development of a watershed. [8]
   b) By means of a case study, explain the hydrology and hydrogeology characteristics of a watershed. [8]

4. a) State and explain the factors affecting the erosion. [8]
   b) By means of neat sketch, explain the principles of process involved in ploughing and trenching as a soil control measure. [8]

5. a) Differentiate between the process involved in surface and subsurface flow harvesting. [8]
   b) What are the various limitations applicable and assumptions required for proper application of rain water harvesting? [8]

6. a) Give the detailed classification of land capability and land use adopted in land management. [8]
   b) Discuss the salient features of forest and agricultural land management. [8]

7. a) What are the spatial considerations required in watershed modeling? Explain. [8]
   b) Explain various advances made in the physically-based watershed models. [8]

Code No: **RT42013D** **R13** **Set No. 2**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018

WATERSHED MANAGEMENT

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A *(22 Marks)*

1.	a)	State the stage of evolution of Watershed management.	[4]
	b)	How does Climate help in analyzing the watershed management?	[3]
	c)	Enlist the various principles of erosion.	[3]
	d)	Enumerate the limitation of percolation tanks.	[4]
	e)	What are alkaline soils? Give example and uses of the same.	[4]
	f)	List out the application of watershed models.	[4]

PART–B *(3x16 = 48 Marks)*

2.	a)	Explain the role of sustainability and good governance in Watershed management.	[8]
	b)	State the theory and concept associated with Integrated watershed management.	[8]
3.	a)	What do you understand by Watershed Deterioration? Explain in detail?	[8]
	b)	Discuss various slope and shape related problems in a watershed.	[8]
4.	a)	Discuss the stepwise procedure involved in estimation of soil loss using Universal soil loss equation.	[8]
	b)	Explain in detail the principle, advantages, disadvantages and limitations of check dams and terracing control measures of erosion.	[8]
5.	a)	By means of sketch explain any two surface flow harvesting methods.	[10]
	b)	State the importance of rainwater harvesting in agricultural practices.	[6]
6.	a)	How, when and why do we need land grading operation? Explain in brief.	[8]
	b)	Write a detailed note on Reclamation of Saline soils and land use for efficient land management.	[8]
7.	a)	Enumerate and explain the requirements for proper analyses in the use of any watershed model.	[8]
	b)	Show the detailed comparison between various watershed models that in common use.	[8]

Code No: **RT42013D** **R13** **Set No. 3**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018

WATERSHED MANAGEMENT

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A ***(22 Marks)***

1. a) What is the necessity of watershed development? [4]
   b) How do you think the soils structure contributes to watershed management? [3]
   c) Enumerate the causes of Erosion. [3]
   d) State the purpose that can be served by rain-water harvesting. [4]
   e) What are the causes of high salanity in soils? [4]
   f) State the limitations of watershed modelling techniques. [4]

PART–B ***(3x16 = 48 Marks)***

2. a) Explain how watershed management is going to help protection of over utilization of water. [8]
   b) Discuss in detail the objectives and strategies adopted in IWM. [8]

3. a) Discuss about various socio-economic characteristics of watersheds. [8]
   b) Explain how physiography and vegetation contribute towards watershed development. [8]

4. a) List and explain the various soil erosion prevention techniques. [8]
   b) Explain the Universal soil loss equation and discuss the various parameters required for estimation of soil erosion. [8]

5. a) Explain various components and objectives of rain-water harvesting. [8]
   b) By means of a neat sketch, explain the procedure involved in rain-water harvesting from roof top. [8]

6. a) Show the comparative significance between land and watershed management. [8]
   b) Give the detailed classification of land capability and also highlight its significance in land management. [8]

7. a) Discuss the steps involved in watershed modeling technique. [8]
   b) Highlight and explain the most common features suitable for the application of various modeling technique. [8]

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Code No: **RT42013D** **R13** **Set No. 4**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018

WATERSHED MANAGEMENT

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A *(22 Marks)*

1. a) List out the advantages of watershed approach. [4]
   b) State the significance of landuse in watershed management. [3]
   c) Show the equation adopted for estimation of soil erodibility factor of USLE along with its nomenclature. [3]
   d) Enumerate the advantages of watershed management. [4]
   e) Define the term: Reclamation of saline soils. [4]
   f) State the objectives of watershed modeling techniques. [4]

PART–B *(3x16 = 48 Marks)*

2. a) What are the functions of water shed? Also explain the various strategies followed towards management. [8]
   b) Explain the role of community participation in watershed development by means of a suitable case study. [8]

3. a) Explain how climate, hydrology and geology facilitate towards watershed development. [8]
   b) Define the terms: Stream Order, Bifurcation Ratio, Law of stream lengths, Basin shape. [8]

4. a) Discuss about different types and factors affecting the Erosion. [8]
   b) How do you control erosion by the use of gullying and brushwood dam? Explain in brief. [8]

5. a) Explain the process involved in rain-water harvesting through recharge wells. [8]
   b) Discuss in detail the parameters involved in the design of dugout ponds. [8]

6. a) How do the land management strategies differ for forest and agricultural lands? Explain in detail. [8]
   b) Write a short note on land grading operation. [8]

7. a) List out the various requirements NWS hydrologic modeling technique. [8]
   b) Show the detailed classification of advanced watershed modeling techniques. [8]