

06CE7113

Reg. No _____

Name _____

A P J ABDUL KALAM TECHNOLOGICAL UNIVERSITY**M.TECH DEGREE EXAMINATION, DECEMBER 2016****THIRD SEMESTER****Branch: Civil Engineering****Sustainable Water Resource Management****Time: 3 Hours****Max. Marks: 60****PART A***Answer ALL questions*

1. Explain sustainability indicators for water resource management
2. Discuss various rainwater harvesting methods
3. What is hydrological drought?
4. What is water foot print?

(4 x 5 marks =20 marks)**PART B**

5. Kerala's future is linked to watershed management. Why? (10 marks)
OR
6. Equity is perhaps the most difficult objective to achieve within the context of a watershed programme. Explain (10 marks)
7. Explain how eco restoration approaches can help in sustainable water resource management (10 marks)
OR
8. Explain the ecological consequences of Inter-basin transfer of water (10 marks)
9. Explain drought management strategies in India (10 marks)
OR
10. Discuss the reasons and controlling strategies for urban flood (10 marks)
11. Explain the concept of virtual water trade. (10 marks)
OR
12. Discuss progress in India with PPP in the water sector (10 marks)

(4 x 10 marks =40 marks)

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1. Discuss briefly the Dublin principles.
2. What are the advantages of rainwater harvesting?
3. Describe the various techniques available for real-time flood forecasting.
4. Explain the concept of virtual water trade.

(4 x 5 marks =20 marks)**PART B**

5. What are the land and water related problems in arid regions. Illustrate watershed management strategies for various problems in arid region.

OR

6. (a) Why integrated approach is needed in water resources management? (7 marks)
(b) List few sustainable water resources indicators. (3 marks)

7. Briefly describe the various issues and challenges associated with river inter linking projects in India. (10 marks)

OR

8. Explain the mechanism of soil water retention in water cycle. (10 marks)

9. (a) Show that in level pool routing the peak of the outflow hydrograph must intersect the inflow hydrograph. (4 marks)

- (b) Discuss the various structural and non-structural measures adopted for flood management. (6 marks)

OR

10. Discuss briefly the various aspects to be considered in the planning of wastewater irrigation system. (10 marks)

11. What is water footprint? With the help of examples discuss the various applications of water footprint. (10 marks)

OR

12. What are the various factors that contribute to the success and failure of PPP projects in urban water supply sector. (10 marks)

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Exam Slot: A

Reg Number.....

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**A P J ABDUL KALAM TECHNOLOGICAL UNIVERSITY
M.TECH DEGREE EXAMINATION, DECEMBER 2018
THIRD SEMESTER**

**ENVIRONMENTAL ENGINEERING
Sustainable Water Resource Management**

Time: 3 Hrs

Maximum Marks:60

PART A

Answer ALL Questions

1. What are the components of virtual water? Explain.
2. What is the role played by biomass as regulator of water cycle?
3. Differentiate meteorological and hydrological drought.
4. What is meant by water audit?

4 x 5 marks = 20 marks

PART B

5. Discuss in detail about the physiographic and geological characteristics of a watershed.

10 marks

OR

6. Discuss the salient features and outcomes of Dublin conference.
7. Discuss in detail, the various rainwater harvesting methodologies.

10 marks

10 marks

OR

8. Discuss the common methods adopted for restoration of streams. How is the effectiveness of stream restoration evaluated?

10 marks

9. Discuss any five structural measures to mitigate flood disaster in a watershed.

10 marks

OR

10. a) Why is storm water management needed in urban areas? What are the design requirements of storm water drains?

5 marks

b) Discuss some storm water management practices adopted in urban areas.

5 marks

11. Discuss the economic, regulatory and institutional instruments for demand management.

10 marks

OR

12. What is water footprint? With the help of examples discuss the various applications of water footprint.

10 marks

4 x 10 marks = 40 marks