

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Sixth Semester

Agricultural Engineering

AI3016 - ON-FARM WATER MANAGEMENT

Regulations – 2021

Duration : 3 Hrs

Maximum : 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	List the key functions of a field channel in agricultural irrigation.	RE	1	2
2.	Compare and contrast Kennedy's and Lacey's theories.	UN	1	2
3.	List any four key components of the relationship between duty and delta in water management.	RE	2	2
4.	Examine the factors affecting the efficiency of a rotational irrigation system.	AP	2	2
5.	Recall the word irrigation demand.	RE	3	2
6.	Define probability matrix.	RE	3	2
7.	Show the functions of weekly water balance.	UN	4	2
8.	Write down four indicators used to measure agricultural productivity.	AP	4	2
9.	Do moles improve drainage? Justify your comments.	AN	5	2
10.	What do you understand by agricultural drainage? Enumerate its objectives.	RE	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Design an erodible irrigation channel using the tractive force method for the following case study: a farming community situated in a hilly region prone to soil erosion. The community heavily relies on irrigation for their crops, and the existing concrete channels have proven to be inadequate due to high maintenance costs and environmental concerns.	AP	1	13
	Or			
	b Apply various land leveling methods to enhance agricultural productivity and provide a detailed explanation of each method.	AP	1	13
12.	a Determine the key elements and results of the CADA Programs in Tamil Nadu, assessing their impact on the improvement and administration of command regions.	AP	2	13
	Or			
	b Briefly describe the methods of water distribution utilized in command areas.	AP	2	13

13.	a	i	What factors influence irrigation demand, and how do these factors affect water management practices.	AN	3	7
		ii	List two ways to enhance water requirement and utilization in agriculture.	UN	3	6
Or						
	b	i	Analyze rainfall data using the Markov chain method to determine the probabilities of consecutive wet and dry days.	AN	3	7
		ii	Discuss in detail about dependable rainfall.	UN	3	6
14.	a		Develop a new technology or system that could revolutionize water use efficiency in agricultural sector.	AN	4	13
	Or					
	b		Develop a methodology to improve the estimation of groundwater recharge in a groundwater balance model.	AN	4	13
15.	a		Explain the concept of leaching requirements and its relationship with irrigation water quality and soil type. Provide examples.	UN	5	13
	Or					
	b		List and describe the factors influencing the design of open drains for agricultural fields.	UN	5	13

*PART – C (Marks 1*15 = 15)*

Q.No		Questions	BLT	CO	Marks
16.	a	Derive Kennedy's equation for uniform flow in irrigation channels and explain its limitations.	UN	1	15
Or					
	b	Discuss in detail about surface drainage system and its types along with purpose and benefits of it.	UN	5	15