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SRI KRISHNA INSTITUTE OF TECHNOLOGY, BANGALORE-90



COURSE PLAN

Academic Year 2019-20

Program:	B E – CIVIL Engineering
Semester:	6TH
Course Code:	17CV661
Course Title:	Water Resources Management
Credit / L-T-P:	4 / 4-0-0
Total Contact Hours:	40
Course Plan Author:	DR. K. SATISH

Academic Evaluation and Monitoring Cell

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1. University Model Question Paper	
2. SEE Important Questions	
Course Outcome Computation	
Academic Year:	
Odd / Even semester	27
ote : Remove "Table of Content" before including in CP Book	

Each Course Plan shall be printed and made into a book with cover page

Blooms Level in all sections match with A.2, only if you plan to teach / learn at higher levels

A. COURSE INFORMATION

1. Course Overview

Degree:	CIVIL ENGINEERING	Drogrami	B.E

Semester:	6	Academic Year:	2020
Course Title:	Water Resources Management	Course Code:	17CV661
Credit / L-T-P:	4/4-0-0	SEE Duration:	180 Minutes
Total Contact Hours:	40 Hours	SEE Marks:	60 Marks
CIA Marks:	40 Marks	Assignment	1 / Module
Course Plan Author:	DR. K. SATISH	Sign	Dt:
Checked By:		Sign	Dt:
CO Targets	CIA Target : 80 %	SEE Target:	85%

Note: Define CIA and SEE % targets based on previous performance.

2. Course Content

Content / Syllabus of the course as prescribed by University or designed by institute. Identify 2 concepts per module as in G.

Mod	Content	Teachi	Identified Module	Blooms
ule		ng	Concepts	Learning
		Hours		Levels
1	Hydrologic Cycle, Global water resources and Indian Water	80	Water Resources	L3
	resources, Surface Water Resources, Water Balance,	I		
	Available Renewable Water Resources, Water Scarcity, The	l		
	Water Balance as a Result of Human Interference,	l		
	Groundwater Resources, Types of Aquifers, Groundwater as a			
	Storage Medium	_		
	Necessity, System components, planning scales,		Planning and	L3
	Approaches, planning and management aspects, Analysis,		Management of	
	Models for impact prediction and evaluation, Adaptive		Water resources.	
	Integrated Policies, Post Planning and management Issues.	-0	DV/DNA D . I' . '	
3	Definition of IWRM, Principles, Implementation of IWRM,		IWRM Policies	L4
	Legislative and Organizational Framework, Types and Forms			
	of Private Sector Involvement.	00	Dogudations of	1 -
4	Legal Framework of Water – Substance of National Water Laws – Other key issues – Changing incentives through		Regulations of Water Policy	L3
	Regulation - National Water Policy - National-Level		water Policy	
	Commissions - Irrigation Management Transfer Policies and			
	Activities – Legal Registration of WUAs – Legal Changes in			
	Water Allocation, - Role of Local Institutions - Community			
	Based Organizations - Water Policy Reforms: India.			
5	Water Harvesting Techniques - Micro-catchments - Design	08	Water Harvesting	L3
	of Small Water Harvesting Structures - Farm Ponds -	l	and Conservation	
	Percolation Tanks - Yield from a Catchment, Rain water			
	Harvesting-various techniques related to Rural and Urban			
	area.			
-	Total	40	-	-

3. Course Material

Books & other material as recommended by university (A, B) and additional resources used by course teacher (C).

- 1. Understanding: Concept simulation / video ; one per concept ; to understand the concepts ; 15 30 minutes
- 2. Design: Simulation and design tools used software tools used ; Free / open source

3. Research: Recent developments on the concepts – publications in journals; conferences, etc.

3. Rese	3. Research. Recent developments on the concepts – publications injournats, conferences, etc.							
Modul	Details	Chapters	Availability					
es		in book						
Α	Text books (Title, Authors, Edition, Publisher, Year.)	-	-					
	K. Subramanya, "Engineering Hydrology".	3, 4	In Lib / In Dept					
	Jayarami Reddy, "A Text Book of Hydrology".	2, 4	In Lib/ In dept					
В	Reference books (Title, Authors, Edition, Publisher, Year.)	-	-					
	Lal, Ruttan. " Integrated Watershed Management in the Global		In Lib					

	Ecosystem".		
	Heathcote, I. W. Integrated Watershed Management: Principles and		Not Available
	Practice.		
			In lib
С	Concept Videos or Simulation for Understanding	-	-
C1			
C2			
C3			
C4			
C5			
C6			
C7			
C8			
C9			
C10			
D	Software Tools for Design	-	-
Е	Recent Developments for Research	-	-
	· .		
F	Others (Web, Video, Simulation, Notes etc.)	-	-
1	, , , , , , , , , , , , , , , , , , , ,		
?			
		1	

4. Course Prerequisites

Refer to GL01. If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.

Students must have learnt the following Courses / Topics with described Content . . .

Mod		Course Name	Topic / Descrip	otion Sem	Remarks	Blooms
ules	Code					Level
1						
2						
3						
4						
5						
-						

5. Content for Placement, Profession, HE and GATE

The content is not included in this course, but required to meet industry & profession requirements and help students for Placement, GATE, Higher Education, Entrepreneurship, etc. Identifying Area / Content requires experts consultation in the area.

Topics included are like, a. Advanced Topics, b. Recent Developments, c. Certificate Courses, d. Course Projects, e. New Software Tools, f. GATE Topics, g. NPTEL Videos, h. Swayam videos etc.

Mod	Topic / Description	Δrea	Remarks	Blooms

ules		Level
1		
2		
3		
4		
5		
-		

B. OBE PARAMETERS

1. Course Outcomes

Expected learning outcomes of the course, which will be mapped to POs. Identify a max of 2 Concepts per Module. Write 1 CO per Concept.

$\overline{}$	per Module. Write 1 CO per Concept.						
Mod	Course	Course Outcome	Teach.	Concept	Instr	Assessme	
ules	Code.#	At the end of the course, student	Hours		Method	nt	Level
		should be able to				Method	
1	17CV661.1	Students should be able to	80	Global	Lecture	Slip Test	Understand
		understand hydrological cycle,		Water			L3
		surface and groundwater, water		Resources			
		scarcity, vertical distribution of					
		groundwater, aquifers, etc.					
2	170\/661.2	Student should be able to	08	Planning	Lecture/	Assianme	Understand
-	1/0/001.2			and	Tutorial	nt	L3
		understand the importance		Manageme		110	_5
		of water, policies, planning		nt			
		and management.					
3	17CV661.3	Student should be able to	08	IWRM	Lecture	Assignme	
		Know how to implement				nt	L4
		IWRM in different regions and					
		private sector involvement.					
4	17CV661.4	Student should be able to	08	Policy	Lecture	Slip Test	Apply
'	,	understand the national		Implement			L3
				ation			_
		water law policies, Irrigation					
		Management Transfer					
		Policies and role of local					
		institutions.					
5	17CV661.5	Student should be able to	08	Water	Lecture	Slip test	Apply
		understand the different		Policy			L3
		methods adopted for		Regulation			
		harvesting of water and water		S			
		conservation methods in					
		different regions.					
		amerent regions.					
-	-	Total	40	-	-	-	L2-L4

2. Course Applications

Write 1 or 2 applications per CO.

Students should be able to employ / apply the course learnings to

_	ituat	chis should be able to employ 7 apply the coarse tearnings to		
1	Mod	Application Area	CO	Level
ŀ	ules	Compiled from Module Applications.		
Г	1	The main uses of surface and groundwater include drinking water and other public	CO1	L3

	uses, irrigation uses, industrial uses, and for the use by the thermoelectric power plant industry		
2	Water resource management helps in the planning, developing, distributing, and managing the optimum use of water resources.	CO2	L4
3	Implementation of IWRM in different regions and private sector involvement.	CO3	L3
4	It helps in making regulations and policies in the development of water management.	CO4	L3
5	Water harvesting and conservation of water include modern techniques involved in harvesting of rain water	CO5	L3

3. Articulation Matrix

CO - PO Mapping with mapping level for each CO-PO pair, with course average attainment.

<u> </u>	РО Марріпо	g with mapping level for each CO-	20	βdi	I, W	ILI I				_	_			еп				
-	-	Course Outcomes							ram									-
Мо	CO.#	At the end of the course	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO					Lev
dul		student should be able to	1	2	3	4	5	6	7	8	9	10	11	12	01	02	03	el
es																		
1	17CV661.1	Student should be able to	2.1	-	-	-	-	-	1.5	-	-	-	-	-	2.1	-	-	-
		understand the water resources.																
1	17CV661.2	Student should be able to	2.1	-	1	-	-	2.1	1.5	-	-	-	-	-	2.1	-	1	-
		understand the importance of																
		water and the aquifers																
2	17CV661.3	Student should be able to	2.1	2.2	-	-	-	2.1	-	-	-	-	-	-	2.1	2.2	-	-
		identify and address the issues		5												5		
		related to planning and																
		management of water resources																
3	17CV661.4	Student should be able to Know		2.2	-	-	-	2.1	-	-	-	1	-	-	-	2.2	-	-
		how to implement IWRM in		5												5		
		different regions																
4	17CV661.5	Student should be able to	-	-	-	-	-	2.1	-	-	-	-	-	-	-	-	-	-
		understand the legal issues,																
		regulations of water policy																
5	17CV661.6	Student should be able to	2.1	-	-	-	-	2.1	-	-	-	-	-	-	2.1	-	-	-
		understand the different																
		methods adopted for harvesting																
		of water.																
5	17CV661.7	Student should be able to	2.1	-	-	-	-	-	1.5	-	-	-	-	-	2.1	-	-	-
		understand the water																
		conservation methods in																
		different regions .																
			2.1	2.2	1	-	-	2.1	1.5	-	-	1	-	-	-	-	-	-
				5								<u> </u>			L			
-	PO, PSO	1.Engineering Knowledge; 2.Prob																
			1.Conduct Investigations of Complex Problems; 5.Modern Tool Usage; 6.The Engineer and															
		Society; 7.Environment and Si																
		10.Communication; 11.Project N											.Life	e-lo	ng	Le	earr	ning;
		S1.Software Engineering; S2.Data E	3ase	e Mo	ana	gen	nen	it; S	3.W/	eb l	Jes	ıgn						

4. Curricular Gap and Content

Topics & contents not covered (from A.4), but essential for the course to address POs and PSOs.

TOPIC.	o a contento not coverca	(1101117 (147, Dat 055)	stituation the course i	o address i es ana i	000.
Mod	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
ules					
1					
2					
3					
4					
5					

C. COURSE ASSESSMENT

1. Course Coverage

Assessment of learning outcomes for Internal and end semester evaluation. Distinct assignment for each

student. 1 Assignment per chapter per student. 1 seminar per test per student.

Mod	Title	Teach.								Levels
ules		Hours	CIA-1	CIA-2	CIA-3	Asg	Extra	SEE		
							Asg			
1	Surface and Ground water	08	2	-	-	1	1	2	CO1,CO2	L2
	Resources									
2	Water Resources Planning and	08	2	-	-	1	1	2	CO3	L4
	Management									
3	Integrated Water Resources	08	_	2	-	1	1	2	CO4	L2
	Management									
4	Water Governance and Water	08	_	2	-	1	1	2	CO5	L2
	Policy									
5	Water Harvesting and	08	_	-	4	1	1	2	CO6,CO7	L5
	Conservation.									
-	Total	40	4	4	4	5	5	10		L2-L5

2. Continuous Internal Assessment (CIA)

Assessment of learning outcomes for Internal exams. Blooms Level in last column shall match with A.2.

Mod	Evaluation			
		Weightage in	CO	Levels
ules		Marks		
1, 2	CIA Exam – 1	15	CO1, CO2, CO3,	L2,L4,L3,L2
3, 4	CIA Exam – 2	15	CO4,CO5	L2,L3,L3,L4
5	CIA Exam – 3	15	CO6,CO7	L5
1, 2	Assignment - 1	05	CO1, CO2, CO3,	L2,L4,L3,L2
3, 4	Assignment - 2	05	CO4,CO5	L2,L3,L3,L4
5	Assignment - 3	05	CO6,CO7	L5
1, 2	Seminar - 1		-	-
3, 4	Seminar - 2		-	-
5	Seminar - 3		-	-
1, 2	Quiz - 1		-	-
3, 4	Quiz - 2		-	-
5	Quiz - 3		-	-
			-	-
1 - 5	Other Activities – Mini Project	-	-	-
	Final CIA Marks	20	-	-

D1. TEACHING PLAN - 1

Title:	Surface and Ground water Resources	Appr	8
		Time:	
a	Course Outcomes	СО	Blooms
-	At the end of the topic the student should be able to	-	Level
1	Student should be able to understand the water resources.	CO1	L2
2	Student should be able to understand the importance of water and the aquifers	CO2	L2
b	Course Schedule	-	-

) I I	o Portion covered per hour	-	-
1	Hydrologic Cycle, Global water resources and Indian Water resources.	CO1	L2
2	Surface Water Resources.	CO1	L2
3	Water Balance.	CO1	L2
4	Available Renewable Water Resources.	CO1	L2
5	Water Scarcity.	CO1	L2
6	The Water Balance as a Result of Human Interference.	CO1	L2
7	Groundwater Resources, Types of Aquifers.	CO2	L2
8	Groundwater as a Storage Medium.	CO2	L2
c	Application Areas	-	
-	Students should be able employ / apply the Module learnings to	-	_
1	, , , , ,		
2			
d	Review Questions	-	
-	The attainment of the module learning assessed through following questions	-	-
1	With a neat sketch, explain hydrological cycle	CO1	L2
2	Give a summary on global water resources and indian water resources	CO1	L2
3	With a sketch, explain confined and unconfined aquifer	CO2	L2
4	What is water scarcity? Summarize the contributing factors of water scarcity	CO1	L2
5	Explain the ground water storage basin cross section	CO1	L2
6	Explain the different classification of saturation zone, based on their water bearing capacity	CO1	L2
7	Differentiate between confined aquifer and unconfined aquifer with neat sketches.	CO2	L2
е	Experiences		
1			
2			
2			
2			

Title:	Water Resources Planning and Management	Appr	7 Hrs			
		Time:				
a	Course Outcomes	СО	Blooms			
-	At the end of the topic the student should be able to	-	Level			
1	Student should be able to identify and address the issues related to planning and management of water resources.					
b	Course Schedule	-	-			
Class No	Class No Portion covered per hour					
13	Necessity, System components,	CO3	L2			
14	planning scales, Approaches,	CO3	L2			
15	Approaches,	CO3	L2			
16	planning and management aspects,	CO3	L2			
17	Analysis,	CO3	L4			
18	Models for impact prediction and evaluation,	CO3	L2			
19	Adaptive Integrated Policies,	CO3	L2			
18	Post Planning and management Issues.	CO3	L2			

С	Application Areas	-	-
-	Students should be able employ / apply the Module learnings to	-	-
1			
2			
d	Review Questions	-	-
-	The attainment of the module learning assessed through following questions	-	-
14	Explain the necessity of water resources planning and management.	CO3	L2
15	Explain the spatial and temporal scales of planning and management.	CO3	L2
16	With a typical analytical frame work for water resources management studies,	CO3	L4
	explain inception, development and selection phases		
17	Summarize the questions addressed in adaptive integrated policy an activities	CO4	L2
	of water resources planning and management.		
е	Experiences	-	-
1			
2			
3			
4			
5			

E1. CIA EXAM – 1

a. Model Question Paper - 1

a	oac	t adoptin	on apor	-						
Crs (Code	15EC71	Sem:	VII	Marks:	30	Time:	75 minute	S	
Cour	se:									
-	-	Note: Ans	swer all que	estions, ea	ch carry equa	ıl marks.	Module : 1, 2	Marks	СО	Level
1	а	With a ne	at sketch, e	xplain hyd	rological cycle	Э		07	CO1	L2
	b	Give a sui	mmary on g	lobal wate	er resources ar	nd indian	water resources	08	C02	L2
		With a sk	etch, explai	n confined	and unconfin	ed aquife	er			
					OR					
_		\V/bot io	water cook	oity (2. Cures		ontributir	ng factors of wa	tor OF	CO1	La
2	a	scarcity	ter 05	CO1	L2					
	b			classificati	on of saturatio	n zone, l	pased on their wa	ter 05	CO2	L2
		bearing c	apacity							
	С	Differentia sketches.		n confined	l aquifer and ı	unconfine	ed aquifer with ne	eat 05	CO2	L2
3	a	Evolain th	ne necessity	of water r	esources nlan	ning and	management.	07	CO ₃	L2
3	b						d management.	08	CO3	L2
	D	Explainti	ie spatiat ai	ia tempora	at scates of pla	ii ii iii ig ai i	и тападеттеп.	00	CO3	LZ
					OR					
4	a				e work for wa elopment and		urces manageme phases	ent 07	CO3	L3
	b		•		dressed in ac anning and ma	•	ntegrated policy nt.	an 08	СО	L2
				•						

b. Assignment -1

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions								
Crs Code:		Sem:	VII	Marks:	5	Time:	90 – 120 minutes	
Course:				·	Modu	ile : 1, 2		

Note:	Each student	to answer 2-3 assignments. Each assignment carries equal mar	k.		
SNo	USN	Assignment Description	Marks	CO	Level
1	1KT14CV065	With a neat sketch, explain hydrological cycle	05	CO1	L2
2	1KT14CV071	Give a summary on global water resources and indian water resources	05	CO1	L2
3		With a sketch, explain confined and unconfined aquifer	05	CO2	L2
4	_	What is water scarcity? Summarize the contributing factors of water scarcity	05	CO1	L2
5		Explain the ground water storage basin cross section.	05	CO2	L2
6		Explain the different classification of saturation zone, based on their water bearing capacity		CO2	L2
7		Differentiate between confined aquifer and unconfined aquifer with neat sketches.		CO2	L2
8		Explain the necessity of water resources planning and management.		CO1	L2
9		Explain the spatial and temporal scales of planning and management.		CO3	L2
10	ŕ	With a typical analytical frame work for water resources management studies, explain inception, development and selection phases		CO3	L2
11	1KT16CV008	Summarize the questions addressed in adaptive integrated policy an activities of water resources planning and management.		CO3	L2
12	1KT16CV009	Summarize the questions addressed in adaptive integrated policy an activities of water resources planning and management.		CO3	L2
13	1KT16CV011	With a typical analytical frame work for water resources management studies, explain inception, development and selection phases		CO3	L2
14	1KT16CV016	Explain the spatial and temporal scales of planning and management.	05	CO3	L2
15	1KT16CV017	Explain the necessity of water resources planning and management.		CO3	L2
16	1KT16CV018	Differentiate between confined aquifer and unconfined aquifer with neat sketches.	05	CO2	L2
17	1KT16CV019	Explain the different classification of saturation zone, based on their water bearing capacity	05	CO2	L2
18	1KT16CV021	Explain the ground water storage basin cross section.	05	CO2	L2
19	1KT16CV022	What is water scarcity? Summarize the contributing factors of water scarcity	05	CO1	L2
20	1KT16CV023	With a sketch, explain confined and unconfined aquifer	05	CO2	L2
21	1KT16CV027	Give a summary on global water resources and indian water resources	05	CO1	L2
22		With a neat sketch, explain hydrological cycle	05	CO3	L2
23		Explain the necessity of water resources planning and management.		CO3	L2
24	1KT16CV031	Explain the spatial and temporal scales of planning and management.	05	CO3	L2
25		With a typical analytical frame work for water resources management studies, explain inception, development and selection phases		CO3	L2
26		Summarize the questions addressed in adaptive integrated policy an activities of water resources planning and management.		CO3	L2
27		Summarize the questions addressed in adaptive integrated policy an activities of water resources planning and management.		CO3	L2
28		With a neat sketch, explain hydrological cycle	05	CO1	L2
29	1KT16CV436	Give a summary on global water resources and indian water	05	CO3	L2

resources resour		I				
MT16CV0447 What is water searcity? Summarize the contributing factors of CO2 L2	20	11/T16C\/0.440	resources N/ith a sketch explain confined and unconfined aguifor	0.5	COa	La
water scarcity water scarcity water storage basin cross section. 5 CO2 L2 31 IKT17CV400 Explain the ground water storage basin cross section. 5 CO2 L2 32 IKT17CV401 Explain the different classification of saturation zone, based of their water bearing capacity 33 IKT17CV406 Differentiate between confined aquifer and unconfined aquifer with neat sketches. 34 IKT17CV408 Explain the necessity of water resources planning and management. 5 IKT17CV410 Explain the spatial and temporal scales of planning and management. 5 IKT17CV410 With a typical analytical frame work for water resources of the management studies, explain inception, development and selection phases 38 IKT17CV416 Summarize the questions addressed in adaptive integrated policy an activities of water resources planning and management. 40 IKT17CV416 Summarize the questions addressed in adaptive integrated policy an activities of water resources planning and management. 41 IKT17CV415 With a typical analytical frame work for water resources planning and management. 42 IKT17CV405 With a typical analytical frame work for water resources planning and management. 43 IKT14CV405 Explain the spatial and temporal scales of planning and opolicy an activities of water resources planning and management. 44 IKT17CV408 Explain the necessity of water resources planning and management. 45 IKT14CV07 Explain the necessity of water resources planning and management. 46 IKT16CV016 Explain the different classification of saturation zone, based of their water bearing capacity 47 IKT16CV026 Explain the different classification of saturation zone, based of their water bearing capacity 48 IKT16CV016 Explain the different classification of saturation zone, based of their water bearing capacity 49 IKT16CV001 What is water scarcity? Summarize the contributing factors of 5 CO2 L2 40 IKT16CV002 Explain the ground water storage basin cross section. 50 IKT16CV001 What is water scarcity? Summarize the contributing factors of 5 CO2 L2 41 IKT16CV003 Explain the necessit						
33 1kTi7CV401 Explain the different classification of saturation zone, based on their water bearing capacity 05 CO2 L2 34 1kTi7CV406 Differentiate between confined aquifer and unconfined aquifer and unconfined aquifer with next sketches. 65 CO2 L2 35 1kTi7CV408 Explain the necessity of water resources planning and management. 05 CO3 L2 36 1kTi7CV410 Explain in the spatial and temporal scales of planning and management. 05 CO3 L2 37 1kTi7CV411 With a typical analytical frame work for water resources management studies, explain inception, development and selection phases 05 CO3 L2 38 1kTi7CV414 Summarize the questions addressed in adaptive integrated policy an activities of water resources planning and management. 05 CO3 L2 40 1kTi7CV416 Summarize the questions addressed in adaptive integrated policy an activities of water resources planning and management. 05 CO3 L2 41 1kTi7CV416 Summarize the questions addressed in adaptive integrated policy an activities of water resources planning and policy analytical frame work for water resources planning and policy analytical frame work for water resources planning and policy analytica			water scarcity			
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aquifer with neat sketches. StritryCV408 Explain the necessity of water resources planning and largement.	33	1KT17CV401	·	05	CO ₂	L2
management. Stylain the spatial and temporal scales of planning and management.	34	1KT17CV406		05	CO2	L2
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57 1KT16CV017 Give a summary on global water resources and indian water 05 CO1 L2 resources	55	1KT16CV011	policy an activities of water resources planning and	05	CO3	L2
resources	56	1KT16CV016	With a neat sketch, explain hydrological cycle	05	CO1	L2
58 1KT16CV018 With a sketch, explain confined and unconfined aquifer 05 CO2 L2	57	1KT16CV017	, ,	05	CO1	L2
	58	1KT16CV018	With a sketch, explain confined and unconfined aquifer	05	CO2	L2

59	1KT16CV019	What is water scarcity? Summarize the contributing factors of	05	CO1	L2
60	1KT16CV021	water scarcity Explain the ground water storage basin cross section.	05	CO2	L2
61			05	CO2	L2
		on their water bearing capacity			
62	1KT16CV023	Differentiate between confined aquifer and unconfined aquifer with neat sketches.	05	CO2	L2
63	1KT16CV027	Explain the necessity of water resources planning and management.	05	CO3	L2
64	1KT16CV029	Explain the spatial and temporal scales of planning and management.	05	CO2	L2
65	1KT16CV030	With a typical analytical frame work for water resources management studies, explain inception, development and selection phases	05	CO2	L2
66	1KT16CV031	Summarize the questions addressed in adaptive integrated policy an activities of water resources planning and management.	05	CO2	L2
67	1KT16CV037	Summarize the questions addressed in adaptive integrated policy an activities of water resources planning and management.	05	CO2	L2
68	1KT16CV0412	With a typical analytical frame work for water resources management studies, explain inception, development and selection phases	05	CO2	L2
69	1KT16CV0431	Explain the spatial and temporal scales of planning and management.	05	CO2	L2
70	1KT16CV436	Explain the necessity of water resources planning and management.	05	CO2	L2
71	1KT16CV0440	Differentiate between confined aquifer and unconfined aquifer with neat sketches.	05	CO2	L2
72	1KT16CV0447	Explain the different classification of saturation zone, based on their water bearing capacity	05	CO2	L2
73	1KT16CV045	Explain the ground water storage basin cross section.	05	CO2	L2
74	1KT17CV400	What is water scarcity? Summarize the contributing factors of water scarcity	05	CO2	L2
75	1KT17CV401	With a sketch, explain confined and unconfined aquifer	05	CO2	L2
76	1KT17CV405	Give a summary on global water resources and indian water resources	05	CO2	L2
77	1KT17CV406	With a neat sketch, explain hydrological cycle	05	CO2	L2
78	1KT17CV408	Explain the necessity of water resources planning and management.	05	CO2	L2
79	1KT17CV409	Explain the spatial and temporal scales of planning and management.	05	CO2	L2
80	1KT17CV410	With a typical analytical frame work for water resources management studies, explain inception, development and selection phases	05	CO2	L2

D2. TEACHING PLAN - 2

Title:	Integrated Water Resources Management	Appr	12 Hrs
		Time:	
a	Course Outcomes	СО	Blooms
-	At the end of the topic the student should be able to	-	Level
1	Student should be able to Know how to implement IWRM in different regions	CO4	L2
b	Course Schedule		
Class No	Portion covered per hour	_	_
17	Definition of IWRM Private Sector Involvement.	CO ₄	L2

18	Principles of IWRM.	CO ₄	L2
19	Implementation of IWRM.	CO ₄	L2
20	Legislative and Organizational Framework.	CO4	L2
21	Types of IWRM.	CO4	L2
22	Forms of IWRM.	CO4	L2
23	Private Sector Involvement.	CO4	L2
24	Private Sector Involvement.	CO ₄	L2
	Three education in votroments	004	
С	Application Areas	-	-
-	Students should be able employ / apply the Module learnings to	_	_
1	ден и поставание и		
2			
d	Review Questions	-	_
-	The attainment of the module learning assessed through following questions	-	-
18	With a sketch showing components, explain the principles of IWRM.	CO4	L2
19	Explain the guiding principles of Dublin statement and Rio declaration of	CO4	L2
	IWRM.		
20	With a figure of three pillars, economic efficiency, equity and environmental	CO4	L2
	sustainability explain the implementation process of IWRM.		
21	Summarize the sectors benefited by IWRM.	CO4	L2
22	Describe the necessity of water resource palnning and management.	CO4	L2
23	Explain the planning scales and system components of WRM.	CO4	L2
24	Explain the various aspects of WRM	CO4	L2
25	Deacribe about adaptive integrated policies and post planning management	CO4	L2
	issues of WRM		
26	Illustrate the WRM analysis with flow chart.	CO4	L2
27	Explain about models of impact prediction and management of WRM	CO ₄	L2
<u>e</u>	Experiences	-	-
1			
2			
3			
4			
5			

Title:	Water Governance and Water Policy	Appr	13 Hrs
	, in the second	Time:	
а	Course Outcomes	СО	Blooms
-	At the end of the topic the student should be able to	-	Level
1	Student should be able to understand the legal issues, regulations of water policy	CO5	L2
b	Course Schedule		
Class No	Portion covered per hour	-	-
32	Legal Framework of Water.	CO ₅	L2
33	Substance of National Water Laws.	CO ₅	L2
34	Other key issues – Changing incentives through Regulation.	CO ₅	L2
35	National Water Policy – National-Level Commissions.	CO ₅	L2
36	Irrigation Management Transfer Policies and Activities.	CO ₅	L2
37	Legal Registration of WUAs, Legal Changes in Water Allocation.	CO5	L2
38	Role of Local Institutions, Community Based Organizations.	CO ₅	L2
39	Water Policy Reforms: India.	CO5	L2

С	Application Areas	-	-
-	Students should be able employ / apply the Module learnings to	-	-
1			
2			
d	Review Questions	-	-
-	The attainment of the module learning assessed through following questions	-	-
32	Explain the existing legal framework and constitutional provisions for water in India.	CO5	L2
33	Explain the various deficiencies in the existing legal framework of water resources development in india.	CO ₅	L2
34	Summarize the salient features of Indian National Water Policy 2012.	CO5	L2
35	Summarize the scope of water user's association (WUA) and its function.	CO5	L2
36	Explain the necessity of national water policy.	CO5	L2
37	Explain the nature and scope of other issues of national water policy.	CO5	L2
38	Explain irrigation management transfer (IMT) policies.	CO5	L2
39	Write a note on national water commission (NWC) and its division?	CO5	L2
40	Describe the water reforms in India.	CO5	L2
41	What are the ten golden rules of water basin allocation?	CO ₅	L2
е	Experiences	-	-
1			
2			
3			
4		CO8	L3
5			

E2. CIA EXAM – 2

a. Model Question Paper - 2

Crs C	Code:	Sem: VII	Marks:	30	Time:	5 minute	·S	
Cour	se:							
-	-	Note: Answer all questions, each carry equal marks. Module : 3, 4						Level
1		With a sketch showing compo				05	CO4	L2
		Explain the guiding principles IWRM.	of Dublin state	ement an	d Rio declaration	of 05	CO ₄	L2
		With a figure of three penvironmental sustainability IWRM.					CO ₄	L2
			OD					
		Curana viza tha acatava harafi	OR			0.5	CO 4	1.0
2		Summarize the sectors benefit			l mana mana mana amat	05	CO4	L2
		Describe the necessity of water resource palnning and management.			05	CO4	L2	
	С	Explain the planning scales an	a system comp	onents (JI WRM.	05	CO ₄	L2
3		Explain the existing legal fra water in India.	amework and	constitut	ional provisions fo	or 05	CO ₅	L2
	b	Explain the various deficiencieresources development in indi		ng legal	framework of wate	er 05	CO ₅	L2
	С	Summarize the salient features	s of Indian Nati	onal Wat	er Policy 2012.	05	CO5	L2
			OR					
2	а	Explain irrigation management	t transfer (IMT)	policies.		05	CO5	L2
	b	Write a note on national water	commission (N	IWC) and	l its division?	05	CO5	L2
	С	Describe the water reforms in	India.			05	CO ₅	L2

b. Assignment – 2

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions Model Assignment Questions Model 3,4	Note:	A distinct assi	gnment to be assigned to each student.			
Course Module : 3, 4			Model Assignment Questions			
Note Each student to answer 2-3 assignments. Each assignment carries equal mark SNo USN Assignment Description Marks CO Level				0 – 120 i	minutes	S
SNO USN Assignment Description Marks CO Level						
1 kT14CV065 WRM. 2 lKT14CV071 Explain the guiding principles of Dublin statement and Rio declaration of WRM. 3 lKT15CV016 WRM a figure of three pillars, economic efficiency, equity and environmental sustainability explain the implementation process of WRM. 4 lKT15CV026 Summarize the sectors benefited by IWRM. 5 lKT16CV001 Describe the necessity of water resource palnning and process of WRM. 6 lKT16CV002 Explain the planning scales and system components of WRM. 7 lKT16CV004 Explain the various aspects of WRM. 8 lKT16CV005 Deacribe about adaptive integrated policies and post planning process of WRM. 9 lKT16CV006 Explain the various aspects of WRM. 10 lKT16CV006 Deacribe about adaptive integrated policies and post planning process of WRM. 11 lKT16CV006 Explain about models of impact prediction and management provisions for water in India. 12 lKT16CV007 Explain about models of impact prediction and management provisions for water in India. 13 lKT16CV008 Explain the various deficiencies in the existing legal framework of water resources development in india. 14 lKT16CV011 Summarize the scepe of water user's association (WUA) and its function. 15 lKT16CV012 Explain the necessity of national water policy. 16 lKT16CV013 Explain in the national provisions for water user's association (WUA) and its function. 17 lKT16CV014 Explain in the national explain in the india. 18 lKT16CV015 Summarize the scope of water user's association (WUA) and its function. 19 lKT16CV015 Explain in the national water policy. 10 lKT16CV016 Explain in the national water policy. 11 lKT16CV017 Explain in the national water of indian National Water Policy and its function. 19 lKT16CV019 Explain in the national water of morth policies. 10 lKT16CV021 Write a note on national water commission (NWC) and its given provisions for water in India. 21 lKT16CV022 Explain the validing legal framework and constitutional provisions for water in India. 22 lKT16CV030 Summarize the salient features of indian National Water Policy of water resources development in			,			_
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22 1KT16CV029 Explain the various deficiencies in the existing legal framework of water resources development in india. 23 1KT16CV030 Summarize the salient features of Indian National Water Policy 2012. 24 1KT16CV031 Summarize the scope of water user's association (WUA) and its function. 25 1KT16CV037 Explain the necessity of national water policy. 26 1KT16CV045 Explain the nature and scope of other issues of national water policy. 27 1KT16CV0412 Explain irrigation management transfer (IMT) policies. 28 1KT16CV0431 Write a note on national water commission (NWC) and its division? 29 1KT16CV436 Describe the water reforms in India. 30 1KT16CV0440 What are the ten golden rules of water basin allocation? 31 1KT16CV0447 With a sketch showing components, explain the principles of 05 CO4 L2	21	1KT16CV027		l 05	CO ₅	L2
1KT16CV030 Summarize the salient features of Indian National Water Policy 2012. 24 1KT16CV031 Summarize the scope of water user's association (WUA) and its function. 25 1KT16CV037 Explain the necessity of national water policy. 26 1KT16CV045 Explain the nature and scope of other issues of national water policy. 27 1KT16CV0412 Explain irrigation management transfer (IMT) policies. 28 1KT16CV0431 Write a note on national water commission (NWC) and its division? 29 1KT16CV436 Describe the water reforms in India. 30 1KT16CV0440 What are the ten golden rules of water basin allocation? 31 1KT16CV0447 With a sketch showing components, explain the principles of O5 CO4 L2	22	1KT16CV029	Explain the various deficiencies in the existing legal framework	< 05	CO ₅	L2
24 1KT16CV031 Summarize the scope of water user's association (WUA) and its function. 25 1KT16CV037 Explain the necessity of national water policy. 26 1KT16CV045 Explain the nature and scope of other issues of national water policy. 27 1KT16CV0412 Explain irrigation management transfer (IMT) policies. 28 1KT16CV0431 Write a note on national water commission (NWC) and its division? 29 1KT16CV436 Describe the water reforms in India. 29 1KT16CV0440 What are the ten golden rules of water basin allocation? 30 1KT16CV0447 With a sketch showing components, explain the principles of O5 CO4 L2	23	1KT16CV030	Summarize the salient features of Indian National Water Polic	05	CO ₅	L2
25 1KT16CV037 Explain the necessity of national water policy. 26 1KT16CV045 Explain the nature and scope of other issues of national water policy. 27 1KT16CV0412 Explain irrigation management transfer (IMT) policies. 28 1KT16CV0431 Write a note on national water commission (NWC) and its division? 29 1KT16CV436 Describe the water reforms in India. 20 1KT16CV0440 What are the ten golden rules of water basin allocation? 30 1KT16CV0447 With a sketch showing components, explain the principles of 05 CO4 L2	24	1KT16CV031	Summarize the scope of water user's association (WUA) and	05	CO ₅	L2
26 1KT16CV045 Explain the nature and scope of other issues of national water policy. 27 1KT16CV0412 Explain irrigation management transfer (IMT) policies. 28 1KT16CV0431 Write a note on national water commission (NWC) and its division? 29 1KT16CV436 Describe the water reforms in India. 20 1KT16CV0440 What are the ten golden rules of water basin allocation? 30 1KT16CV0447 With a sketch showing components, explain the principles of O5 CO4 L2	25	1KT16CV037		05	CO5	L2
271KT16CV0412Explain irrigation management transfer (IMT) policies.05CO5L2281KT16CV0431Write a note on national water commission (NWC) and its division?05CO5L2291KT16CV436Describe the water reforms in India.05CO5L2301KT16CV0440What are the ten golden rules of water basin allocation?05CO5L2311KT16CV0447With a sketch showing components, explain the principles of05CO4L2			Explain the nature and scope of other issues of national wate			
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291KT16CV436Describe the water reforms in India.05CO5L2301KT16CV0440What are the ten golden rules of water basin allocation?05CO5L2311KT16CV0447With a sketch showing components, explain the principles of05CO4L2			Write a note on national water commission (NWC) and it			
30 1KT16CV0440 What are the ten golden rules of water basin allocation? 05 CO5 L2 31 1KT16CV0447 With a sketch showing components, explain the principles of 05 CO4 L2	29	1KT16CV436		05	CO ₅	L2
31 1KT16CV0447 With a sketch showing components, explain the principles of 05 CO4 L2						
			With a sketch showing components, explain the principles o			

32	1KT17CV400	Explain the guiding principles of Dublin statement and Rio declaration of IWRM.	05	CO ₄	L2
33	1KT17CV401	With a figure of three pillars, economic efficiency, equity and environmental sustainability explain the implementation	05	CO4	L2
24	1KT17CV406	process of IWRM. Summarize the sectors benefited by IWRM.	05	CO ₄	
34 35	1KT17CV400	Describe the necessity of water resource palnning and	0 <u>5</u>	CO4	 L2
		management.	U5 		
36	1KT17CV410	Explain the planning scales and system components of WRM.	05	CO4	L2
37	1KT17CV411	Explain the various aspects of WRM	05	CO4	L2
38	1KT17CV414	Describe about adaptive integrated policies and post planning management issues of WRM	05	CO4	L2
39	1KT17CV416	Illustrate the WRM analysis with flow chart.	05	CO4	L2
	1KT17CV405	Explain about models of impact prediction and management of WRM	05	CO ₄	L2
41	1KT17CV415	Explain the existing legal framework and constitutional provisions for water in India.	05	CO5	L2
42	1KT17CV409	Explain the various deficiencies in the existing legal framework of water resources development in india.	05	CO5	L2
43	1KT14CV065	Summarize the salient features of Indian National Water Policy 2012.	05	CO5	L2
44	1KT14CV071	Summarize the scope of water user's association (WUA) and its function.	05	CO ₅	L2
45	1KT15CV016	Explain the necessity of national water policy.	05	CO ₅	L2
46	1KT15CV026	Explain the nature and scope of other issues of national water policy.	05	CO5	L2
47	1KT16CV001	Explain irrigation management transfer (IMT) policies.	05	CO5	L2
48	1KT16CV002	Write a note on national water commission (NWC) and its division?	05	CO5	L2
49	1KT16CV004	Describe the water reforms in India.	05	CO5	L2
50	1KT16CV005	What are the ten golden rules of water basin allocation?	05	CO5	L2
51	1KT16CV006	With a sketch showing components, explain the principles of IWRM.	05	CO ₄	L2
52	1KT16CV007	Explain the guiding principles of Dublin statement and Rio declaration of IWRM.	05	CO4	L2
53	1KT16CV008	With a figure of three pillars, economic efficiency, equity and environmental sustainability explain the implementation process of IWRM.	05	CO4	L2
54	1KT16CV009	Summarize the sectors benefited by IWRM.	05	CO4	L2
55	1KT16CV011	Describe the necessity of water resource palnning and management.	05	CO ₄	L2
56	1KT16CV016	Explain the planning scales and system components of WRM.	05	CO ₄	L2
57	1KT16CV017	Explain the various aspects of WRM	05	CO ₄	 L2
58	1KT16CV018	Describe about adaptive integrated policies and post planning management issues of WRM	05	CO ₄	L2
59	1KT16CV019	Illustrate the WRM analysis with flow chart.	05	CO4	L2
	1KT16CV021	Explain about models of impact prediction and management of WRM	05	CO ₄	L2
61	1KT16CV022	Explain the guiding principles of Dublin statement and Rio declaration of IWRM.	05	CO4	L2
62	1KT16CV023	With a figure of three pillars, economic efficiency, equity and environmental sustainability explain the implementation process of IWRM.	05	CO4	L2
63	1KT16CV027	Summarize the sectors benefited by IWRM.	05	CO4	L2
64	1KT16CV029	Describe the necessity of water resource palnning and	05	CO ₄	L2
65	1KT16CV030	management. Explain the planning scales and system components of WRM.	05	CO ₄	L2
	1KT16CV031	Explain the various aspects of WRM	05	CO ₄	L2
67	1KT16CV037	Deacribe about adaptive integrated policies and post planning	05	CO ₄	L2
<u> </u>	·	. 5 1 1 1 3			

		management issues of WRM			
68	1KT16CV0412	Illustrate the WRM analysis with flow chart.	05	CO4	L2
69	1KT16CV0431	Explain about models of impact prediction and management of WRM	05	CO4	L2
70	1KT16CV436	Explain the existing legal framework and constitutional provisions for water in India.	05	CO4	L2
71	1KT16CV0440	Explain the various deficiencies in the existing legal framework of water resources development in india.	05	CO4	L2
72	1KT16CV0447	Summarize the salient features of Indian National Water Policy 2012.	05	CO5	L2
73	1KT16CV045	Summarize the scope of water user's association (WUA) and its function.	05	CO ₅	L2
74	1KT17CV400	Explain the necessity of national water policy.	05	CO5	L2
75	1KT17CV401	Explain the nature and scope of other issues of national water policy.	05	CO ₅	L2
76	1KT17CV405	Explain irrigation management transfer (IMT) policies.	05	CO5	L2
77	1KT17CV406	Write a note on national water commission (NWC) and its division?	05	CO ₅	L2
78	1KT17CV408	Describe the water reforms in India.	05	CO ₅	L2
79	1KT17CV409	What are the ten golden rules of water basin allocation?	05	CO ₅	L2
80	1KT17CV410	Summarize the salient features of Indian National Water Policy 2012.	05	CO5	L2

D₃. TEACHING PLAN - 3

Title:	Water harvesting and conservation	Appr	10 Hrs
Title.	Water harvesting and conservation	Appr Time:	10 115
	Carriera Oritaniana		Diagram
a	Course Outcomes	СО	Blooms
-	At the end of the topic the student should be able to	-	Level
1	Student should be able to understand the different methods adopted for harvesting of water.		
2	Student should be able to understand the water conservation methods in different regions .		
b	Course Schedule	-	-
Class N	o Portion covered per hour	-	-
45	Water Harvesting Techniques.	CO6	L2
46	Micro-catchments.	CO6	L2
47	Design of Small Water Harvesting Structures.	CO6	L5
48	Farm Ponds.	CO7	L2
49	Percolation Tanks.	CO7	L2
50	Yield from a Catchment.	CO7	L2
51	Rain water Harvesting.	CO7	L2
52	various techniques related to Rural and Urban area.	CO7	L2
С	Application Areas	-	-
-	Students should be able employ / apply the Module learnings to	-	-
1			
2			

d	Review Questions	-	-
-	The attainment of the module learning assessed through following questions	-	-
42	What is rain water harvesting? Explain the needs for rainwater harvesting	CO6	L2
43	Explain the different types of lining done to control seepage in ponds.	CO6	L2
44	What is percolation tank? Describe the general guidelines to be followed in proposing a percolation tank	CO6	L2
45	Briefly explain the various techniques of rain water harvesting in urban area.	CO6	L2
46	Explain roof top harvesting in detail with appropriate figures.	CO7	L2
47	Explain advantages and disadvantages of roof top rainwater harvesting.	CO7	L2
48	What are the different rural and urban rain water harvesting methods	CO7	L2
49	Explain the design criteria for form ponds	CO7	L2
50	Summarize the micro catchment method of water harvesting also add a note on merits and demerits of micro catchment method.	CO7	L2
е	Experiences	-	-
1			
2			
3			
4			
5			

E3. CIA EXAM – 3

a. Model Question Paper - 3

Crs C	Code:	15EC71	Sem:	VII	Marks:	30	Time:	75 minute	es	
	Course:									
-	-	Note: Answ	wer all que	stions, eac	h carry equa	l marks. N	10dule : 5	Marks	СО	Level
1	а	What is rai	n water ha	rvesting? Ex	plain the ne	eds for rai	nwater harvesting	g 07	CO6	L2
	b	Explain the	e different t	ypes of linir	ng done to co	ontrol see	page in ponds.	08	CO6	L2
					OR					
1	а				be the gene	ral guideli	nes to be followe	ed 07	CO7	L2
		in proposir	<u> </u>							
		, ,	olain the va	arious tech	niques of rai	n water h	arvesting in urb	an 08	CO7	L2
		area.								
		F l . !	. 6 4		hadi aadha aanaa	!-1- C			000	1.0
2					tail with appr			07	CO6	L2
	b	Explain ad	vantages a	ınd disadva	ntages of roc	of top rain	water harvesting.	08	CO6	L2
					OR					
-		N// 1	1.4						00-	
2	<u>a</u>					iter narves	sting methods	05	CO7	L2
				iteria for for				05	CO7	L2
	С				it method of nicro catchm		vesting also add od.	la 05	CO ₇	L2

b. Assignment - 3

Note: A distinct assignment to be assigned to each student.

		Model Assignment Questions			
Crs C	ode:	Sem: VII Marks: 5 Time:	90 – 120 i	minutes	5
Cours		Module : 3, 4			
		to answer 2-3 assignments. Each assignment carries equal ma			
SNo	USN	Assignment Description	Marks	CO	Level
1		What is rain water harvesting? Explain the needs for rainwate harvesting		CO6	L2
2	1KT14CV071	Explain the different types of lining done to control seepage i ponds.	n 05	CO6	L2
3	1KT15CV016	What is percolation tank? Describe the general guidelines t be followed in proposing a percolation tank	0 05	CO7	L2
4	1KT15CV026	Briefly explain the various techniques of rain water harvestin in urban area.	g 05	CO6	L2
5	1KT16CV001	Explain roof top harvesting in detail with appropriate figures.	05	CO6	L2
6	1KT16CV002	Explain advantages and disadvantages of roof top rainwate harvesting.	er 05	CO6	L2
7	1KT16CV004	What are the different rural and urban rain water harvestin methods	g 05	CO6	L2
8		Explain the design criteria for form ponds	05	CO7	L2
9	1KT16CV006	Summarize the micro catchment method of water harvestin also add a note on merits and demerits of micro catchmer method.		CO6	L2
10	1KT16CV007	Summarize the micro catchment method of water harvestin also add a note on merits and demerits of micro catchmer method.		CO6	L2
11	1KT16CV008	Explain the design criteria for form ponds	05	CO7	L2
12	1KT16CV009	What are the different rural and urban rain water harvestin methods	g 05	CO6	L2
13	1KT16CV011	Explain advantages and disadvantages of roof top rainwate harvesting.	er 05	CO6	L2
14	1KT16CV016	Explain roof top harvesting in detail with appropriate figures.	05	CO6	L2
15	1KT16CV017	Briefly explain the various techniques of rain water harvestin in urban area.	g 05	CO6	L2
16	1KT16CV018	What is percolation tank? Describe the general guidelines to be followed in proposing a percolation tank	0 05	CO6	L2
17	1KT16CV019	Explain the different types of lining done to control seepage i ponds.	n 05	CO6	L2
18	1KT16CV021	What is rain water harvesting? Explain the needs for rainwate harvesting	er 05	CO6	L2
19	1KT16CV022	Explain the design criteria for form ponds	05	CO7	L2
20	1KT16CV023	What are the different rural and urban rain water harvestin methods		CO6	L2
21	1KT16CV027	Explain advantages and disadvantages of roof top rainwate harvesting.	er 05	CO6	L2
22		Explain roof top harvesting in detail with appropriate figures.	05	CO6	L2
23		Briefly explain the various techniques of rain water harvestin in urban area.		CO6	L2
24	1KT16CV031	What is percolation tank? Describe the general guidelines t be followed in proposing a percolation tank		CO7	L2
25	1KT16CV037	Explain the different types of lining done to control seepage i ponds.	n 05	CO6	L2
26	1KT16CV045	What is rain water harvesting? Explain the needs for rainwate harvesting	er 05	CO6	L2
27	1KT16CV0412	What is rain water harvesting? Explain the needs for rainwate harvesting	er 05	CO6	L2
28	1KT16CV0431	Explain the different types of lining done to control seepage i ponds.	n 05	CO6	L2
29	1KT16CV436	What is percolation tank? Describe the general guidelines t be followed in proposing a percolation tank	0 05	CO6	L2

30	1KT16CV0440	Briefly explain the various techniques of rain water harvesting in urban area.	05	CO6	L2
31	1KT16CV0447	Explain roof top harvesting in detail with appropriate figures.	05	CO6	L2
32	1KT17CV400	Explain advantages and disadvantages of roof top rainwater harvesting.	05	CO6	L2
33	1KT17CV401	What are the different rural and urban rain water harvesting methods	05	CO6	L2
34	1KT17CV406	Explain the design criteria for form ponds	05	CO7	L2
35	1KT17CV408	Summarize the micro catchment method of water harvesting also add a note on merits and demerits of micro catchment method.	05	CO6	L2
36	1KT17CV410	Summarize the micro catchment method of water harvesting also add a note on merits and demerits of micro catchment method.	05	CO6	L2
37	1KT17CV411	What are the different rural and urban rain water harvesting methods	05	CO6	L2
38	1KT17CV414	Explain advantages and disadvantages of roof top rainwater harvesting.	05	CO6	L2
39	1KT17CV416	Explain roof top harvesting in detail with appropriate figures.	05	CO6	L2
40	1KT17CV405	Briefly explain the various techniques of rain water harvesting in urban area.	05	CO6	L2
41	1KT17CV415	What is percolation tank? Describe the general guidelines to be followed in proposing a percolation tank	05	CO7	L2
42	1KT17CV409	Explain the different types of lining done to control seepage in ponds.	05	CO6	L2
43	1KT14CV065	What is rain water harvesting? Explain the needs for rainwater harvesting	05	CO6	L2
44	1KT14CV071	hat is rain water harvesting? Explain the needs for rainwater arvesting		CO6	L2
45	1KT15CV016	Explain the different types of lining done to control seepage in ponds.		CO6	L2
46	1KT15CV026	What is percolation tank? Describe the general guidelines to be followed in proposing a percolation tank	05	CO6	L2
47	1KT16CV001	Briefly explain the various techniques of rain water harvesting in urban area.	05	CO6	L2
48	1KT16CV002	Explain roof top harvesting in detail with appropriate figures.	05	CO6	L2
49	1KT16CV004	Explain advantages and disadvantages of roof top rainwater harvesting.	05	CO6	L2
50	1KT16CV005	What are the different rural and urban rain water harvesting methods	05	CO6	L2
51		Explain the design criteria for form ponds	05	CO6	L2
52	1KT16CV007	Summarize the micro catchment method of water harvesting also add a note on merits and demerits of micro catchment method.	05	CO6	L2
53	1KT16CV008	Summarize the micro catchment method of water harvesting also add a note on merits and demerits of micro catchment method.	05	CO6	L2
54	1KT16CV009	Briefly explain the various techniques of rain water harvesting in urban area.	05	CO6	L2
55	1KT16CV011	Explain roof top harvesting in detail with appropriate figures.	05	CO7	L2
56	1KT16CV016	Explain advantages and disadvantages of roof top rainwater harvesting.	05	CO7	L2
57	1KT16CV017	What are the different rural and urban rain water harvesting methods	05	CO7	L2
58	1KT16CV018	Explain the design criteria for form ponds	05	CO7	L2
59	1KT16CV019	Summarize the micro catchment method of water harvesting also add a note on merits and demerits of micro catchment method.	05	CO7	L2
60	1KT16CV021	Summarize the micro catchment method of water harvesting	05	CO6	L2
		,			

also add a note on merits and demerits of micro catchment method. 61 1KT16CV022 What are the different rural and urban rain water harvesting of methods 62 1KT16CV023 Explain advantages and disadvantages of roof top rainwater harvesting. 63 1KT16CV027 Explain roof top harvesting in detail with appropriate figures. 64 1KT16CV029 Brighty explain the various techniques of rain water harvesting of co6 L2 in urban area. 65 1KT16CV030 What is percolation tank? Describe the general guidelines to o5 CO6 L2 in urban area. 66 1KT16CV031 Explain the different types of lining done to control seepage in o5 CO6 L2 harvesting. 67 1KT16CV037 What is rain water harvesting? Explain the needs for rainwater o5 CO6 L2 harvesting. 68 1KT16CV0412 What is rain water harvesting? Explain the needs for rainwater harvesting. 69 1KT16CV0412 What is rain water harvesting? Explain the needs for rainwater harvesting. 69 1KT16CV0412 What is rain water harvesting? Explain the needs for rainwater harvesting. 70 1KT16CV0413 Explain the different types of lining done to control seepage in o5 CO7 L2 ponds. 70 1KT16CV0440 What is percolation tank? Describe the general guidelines to o5 CO7 L2 ponds. 71 1KT16CV0440 Briefly explain the proposing a percolation tank 72 1KT16CV0447 Explain the different rural and urban rain water harvesting o5 CO7 L2 Explain advantages and disadvantages of roof top rainwater o5 CO6 L2 Explain advantages and disadvantages of roof top rainwater o5 CO6 L2 Explain advantages and disadvantages of roof top rainwater o5 CO6 L2 Explain the design criteria for form ponds 71 1KT17CV400 What are the different rural and urban rain water harvesting o5 CO6 L2 Explain the design criteria for form ponds 72 1KT17CV404 Explain the design criteria for form ponds 73 1KT17CV405 Summarize the micro catchment method of water harvesting o5 CO6 L2 ponds. 74 1KT17CV408 What is rain water harvesting? Explain the needs for rainwater o5 CO6 L2 ponds. 75 1KT17CV409 Explain the different types of lining done to control seepage in o5 C		I				
methods 1KT16CV023 Explain advantages and disadvantages of roof top rainwater harvesting. 1KT16CV027 Explain roof top harvesting in detail with appropriate figures. 1KT16CV029 Briefly explain the various techniques of rain water harvesting of CO6 L2 through a rea. 1KT16CV030 What is percolation tank? Describe the general guidelines to be followed in proposing a percolation tank of CO6 L2 ponds. 1KT16CV031 Explain the different types of lining done to control seepage in ponds. 1KT16CV037 What is rain water harvesting? Explain the needs for rainwater harvesting are harvesting. 1KT16CV0412 What is rain water harvesting? Explain the needs for rainwater harvesting. 1KT16CV0413 Explain the different types of lining done to control seepage in ponds. 1KT16CV0431 Explain the different types of lining done to control seepage in ponds. 1KT16CV0431 Explain the different types of lining done to control seepage in ponds. 1KT16CV0431 Explain the different types of lining done to control seepage in ponds. 1KT16CV0431 Explain the various techniques of rain water harvesting in urban area. 1KT16CV0440 Briefly explain the various techniques of rain water harvesting in urban area. 1KT16CV0447 Explain roof top harvesting in detail with appropriate figures. 1KT16CV045 Explain advantages and disadvantages of roof top rainwater harvesting. 1KT17CV400 What are the different rural and urban rain water harvesting of CO6 L2 harvesting. 1KT17CV400 Explain advantages and disadvantages of roof top rainwater harvesting also add a note on merits and demerits of micro catchment method. 1KT17CV400 Summarize the micro catchment method of water harvesting of CO6 L2			also add a note on merits and demerits of micro catchment method.			
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F. EXAM PREPARATION

1. University Model Question Paper

Course:						Month /	/ Year	May /2	2018
Crs C	ode:	Sem:	VII	Marks:	80	Time:		180 mi	inutes
Mod	Note	Answer all FIVE full c	uestions. All q	uestions carry ec	jual marks.		Marks	СО	Level
ule			•		-				
1	а	With a neat sketch, e	xplain hydrolo	gical cycle			80	CO1	L2
	Ь	Give a summary on g	lobal water res	sources and India	an water res	ources	08	CO1	L2
				OR					
1	а	With a sketch, explai	n confined and	l unconfined aqu	ifer		08	CO2	L2
		What is water scarcity? Summarize the contributing factors of water scarcity					08	CO1	L2
2	а	Explain the necessity	of water resou	ırces planning ar	nd manager	nent.	08	CO3	L2
	b	Explain the spatial ar	xplain the spatial and temporal scales of planning and management.					CO3	L2

		OR			
2	а	With a typical analytical frame work for water resources management studies, explain inception, development and selection phases	08	CO3	L2
	b	Summarize the questions addressed in adaptive integrated policy an activities of water resources planning and management.	08	CO3	L2
3	а	With a figure of three pillars, economic efficiency, equity and environmental sustainability explain the implementation process of IWRM.	08	CO4	L2
	b	Summarize the sectors benefited by IWRM.	08	CO4	L2
		OR			
3	а	With a sketch showing components, explain the principles of IWRM.	80	CO4	L2
	b	Explain the guiding principles of Dublin statement and Rio declaration of IWRM.	80	CO ₄	L2
4	а	Explain the existing legal framework and constitutional provisions for water in India.	80	CO ₅	L2
	b	Explain the various deficiencies in the existing legal framework of water resources development in india.	80	CO5	L2
		OR			
4	а	Summarize the salient features of Indian National Water Policy 2012.	08	CO ₅	L2
	b	Summarize the scope of water user's association (WUA) and its function.	08	CO ₅	L2
5	а	What is rain water harvesting? Explain the needs for rainwater harvesting	08	CO6	L2
_ 5	b	Explain the different types of lining done to control seepage in ponds.	08	CO6	<u></u>
		OR			
5	a	What is percolation tank? Describe the general guidelines to be followed in proposing a percolation tank	80	CO7	L2
	b	Briefly explain the various techniques of rain water harvesting in urban area.	80	CO7	L2

2. SEE Important Questions

Course:		Hydrology and Irrigation Month	/ Year	May /2	2018
Crs C	ode:	Sem: 7 Marks: 80 Time:		180 mi	nutes
	Note	Answer all FIVE full questions. All questions carry equal marks.	-	_	
Mod	Qno.	Important Question	Marks	CO	Year
ule					
1	а	With a neat sketch, explain hydrological cycle	07	CO1	2018
	b	Give a summary on global water resources and Indian water resources	07	CO1	2018
	С	With a sketch, explain confined and unconfined aquifer	08	CO2	2018
	d	What is water scarcity? Summarize the contributing factors of water	07	CO1	2018
		scarcity			
2		Explain the necessity of water resources planning and management.	07	CO3	2018
		Explain the spatial and temporal scales of planning and management.	07	CO3	2018
	С	With a typical analytical frame work for water resources management	08	CO3	2018
	studies, explain inception, development and selection phases				
	d Summarize the questions addressed in adaptive integrated policy an				2018
		activities of water resources planning and management.			

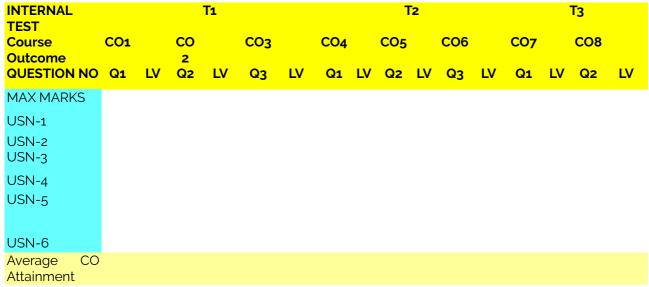
COURSE PLAN - CAY 2019-20

	е	Explain the guiding principles of Dublin statement and Rio declaration of IWRM.	08	CO3	2018
	f	With a figure of three pillars, economic efficiency, equity and environmental sustainability explain the implementation process of IWRM.	07	CO3	2018
	g	Summarize the sectors benefited by IWRM.	07	CO3	2018
4	а	Explain the existing legal framework and constitutional provisions for water in India.	07	CO ₄	2018
	b	Explain the various deficiencies in the existing legal framework of water resources development in india.	08	CO ₄	2018
	С	Summarize the salient features of Indian National Water Policy 2012.	07	CO4	2018
	d	Summarize the scope of water user's association (WUA) and its function.	08	CO4	2018
5	а	What is rain water harvesting? Explain the needs for rainwater harvesting	07	CO5	2018
	b	Explain the different types of lining done to control seepage in ponds.	07	CO ₅	2018
	С	What is percolation tank? Describe the general guidelines to be followed	08	CO5	2018
		in proposing a percolation tank			
	d	Briefly explain the various techniques of rain water harvesting in urban area.	08	CO ₅	2018

Course Outcome Computation

Academic Year:

Odd / Even semester



LV Threshold: 3:>60%, 2:>=50% and <=60%, 1: <=49%

CO1 Computation :(2+2+2+3)/4 = 10/4=2.5

PO Computation

Program Outcome Weight of CO - PO	PO1	PO3	PO3	PO1	PO12	PO12	PO6	PO1
Course Outcome	CO1	CO2	CO3	CO4	CO ₅	CO6	CO7	CO8
Test/Quiz/Lab		T1			T2		Т	- 3
QUESTION NO	Q1	L Q2 LV V	Q3 LV	Q1 LV	Q2 LV	Q3 LV	Q1 LV	Q2 LV
MAX MARKS								
USN-1								
USN-2								
USN-3								
USN-4								
USN-5								
USN-6								
Average CO Attainment								