ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

Shobhavana Campus, Mijar, Moodabidri, Mangalore Taluk, D.K – 574225
Phone: 08258-262725, Fax: 08258-262726

DEPARTMENT OF CIVIL ENGINEERING

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

Civil Engineering (CV)

Course Name : HYDROLOGY AND IRRIGATION ENGINEERING (15CV73)

Class : Semester 7 A

**Ms Veena D Savanth,
Assistant Professor,
2019-20**

Page 1 of 40

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INSTITUTE LEVEL

VISION	Transformative education by pursuing excellence in Engineering and Management through enhancing skills to meet the evolving needs of the community.
MISSION	• To bestow quality technical education to imbibe knowledge, creativity and ethos to students community. • To inculcate the best engineering practices through transformative education. • To develop a knowledgeable individual for a dynamic industrial scenario • To inculcate research, entrepreneurial skills and human values in order to cater the needs of the society.

DEPARTMENT LEVEL

VISION	To become a leader in the field of Civil Engineering by imparting quality education in developing highly competent manpower and promote research to meet the current and future challenges in Civil Engineering.
MISSION	• To impart knowledge by creating conducive teaching-learning environment. • To produce civil engineers of high caliber, technical skills and ethical values, to serve the society. • To promote innovation in the minds of future engineers to face the challenges.

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DEPARTMENT OF CIVIL ENGINEERING

PROGRAMME OUTCOMES
(PRESCRIBED BY NBA)

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

PO2. Problem analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health, safety, cultural, societal and environmental considerations.

PO4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

PO5. Modern tool usage: Create, select, apply appropriate techniques, resources, modern engineering, IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO's)

- To provide the students a strong foundation in fundamentals that will enable them to identify and solve real time problems in Civil engineering for Industries and Research activities.

- To develop abilities and talents, leading to creativity and productivity in professional and industrial field beyond the curriculum and thus enhance the employability skill.

- To explore and apply the modern engineering tools for planning, design, execution and maintenance of works those are technically and economically viable, and socially acceptable.

PROGRAMME SPECIFIC OUTCOMES (PSO's)

- The graduates will have the ability to plan, analyze, design, execute and maintain cost effective civil engineering structures without overexploitation of natural resources.

- The graduates of civil engineering program will have the ability to take up employment, entrepreneurship, research and development for sustainable civil society.

- The graduates will be able to pursue opportunities for personal and professional growth, higher studies, demonstrate leadership skills and engage in lifelong learning by active participation in the civil engineering profession.

- The graduates will be able to demonstrate professional integrity and an appreciation of ethical, environmental, regulatory and issues related to civil engineering projects.

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DEPARTMENT OF CIVIL ENGINEERING

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
(A Unit of Alva's Education Foundation)
Shobhavana Campus, Mijar-574225, Moodbidri, D.K
Phone: 08258-262725, Fax: 08258-262726
Affiliated to VTU Belagavi and Approved by AICTE, New Delhi, Recognized by Govt. of Karnataka

CALENDAR OF EVENTS (ODD SEMESTER 2019-20) BE & MBA

VISION
"Transformative education by pursuing excellence in Engineering and Management through enhancing skills to meet the evolving needs of the community"
MISSION
• To bestow quality technical education to imbibe knowledge, creativity and ethos to students community.   • To inculcate the best engineering practices through transformative education.   • To develop a knowledgeable individual for a dynamic industrial scenario.   • To inculcate research, entrepreneurial skills and human values in order to cater the needs of the society.

Week	Month	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Activities
1	July	29	30	31					29th : Commencement of III, V & VII-Sem BE
1	AUG				1	2	3	4	1st : Commencement of I - Sem BE
2		5	6	7	8	9	10	11	1st : Inauguration Program for I-Semester BE 1st to 14th : Induction Program for I-Sem BE
3		12	13	14	15	16	17	18	8th : Commencement of III - Sem MBA 12th : Bakrid
4		19	20	21	22	23	24	25	15th : Independence day
5		26	27	28	29	30	31		
5	SEP							1	2nd : Varasiddhi Vinayaka Vratha 10th : Last day of Muharram
6		2	3	4	5	6	7	8	19th, 20th, 21st : I-IA Test for III, V, VII-Sem BE and III - Sem MBA
7		9	10	11	12	13	14	15	28th : Mahalaya Amavasye
8		16	17	18	19	20	21	22	
9		23	24	25	26	27	28	29	
10		30							
10	OCT		1	2	3	4	5	6	2nd : Gandhi Jayanthi 7th : Ayudhapooja
11		7	8	9	10	11	12	13	8th : Vijayadashami 24th, 25th, 26th : II-IA Test for III, V, VII-Sem
12		14	15	16	17	18	19	20	BE and III - Sem MBA
13		21	22	23	24	25	26	27	29th : Deepavali
14		28	29	30	31				
14	NOV				1	2	3		1st : Kannada Rajyothsava 15th : Kanakadasa Jayanthi
15		4	5	6	7	8	9	10	26th, 27th, 28th : III-IA Test for III, V, VII-Sem BE
16		11	12	13	14	15	16	17	29th : Last Working Day of I-Sem- BE
17		18	19	20	21	22	23	24	30th : Last Working Day of III, V, VII-Sem- BE
18		25	26	27	28	29	30		
18	DEC							1	2nd, 3rd, 4th : III-IA Test for III - Sem MBA
19		2	3	4	5	6	7	8	5th : Last Working Day of III-Sem- MBA

Approved by IQAC Chairman

INDIVIDUAL TIMETABLE (ODD SEMESTER 2019-20)

Name of the Faculty	Mrs. Veena D Savanth (VDS)				With Effect From: 29/07/2019			
Period	1	2	3	4	5	6	7	No. of Units
Time / Day	09.00 – 09.50	09.50 – 10.40	11.00 – 11.50	11.50 – 12.40	01.40 – 02.30	02.30 – 03.20	03.30 – 05.00	
Monday		ENV Lab 7A-A1			FM (3A)			5
Tuesday		HIE (7A)				HIE (7A)		4
Wednesday			FM (3A)			HIE (7A)		4
Thursday	HIE (7A)			FM (3A)		FM (3A)		6
Friday		BMT LAB 3A –A1			HIE (7A)			5
Saturday		FM (3A)						2
							Total Units*	26

(Column 5-6-7 lunch break label: L U N C H B R E A K)

* EXCLUDING OTHER ACTIVITIES

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Mijar, MOODBIDRI – 574 225

Date: 26/07/2019

Time Table with effect from 29/07/2019
DEPARTMENT OF CIVIL ENGINEERING

Academic Year	Scheme	Semester	Section	Room No		Class Coordinator
2019-20	2015	VII	A	505		Mr. Santhosh K

Time / Day	9.00 To 9.50	9.50 To 10.40	10.40 To 11.00	11.00 To 11.50	11.50 To 12.40	12.40 To 1.40	1.40 To 2.30	2.30 To 3.20	3.30 To 5.00
MON	DCBS (TR)	ENV LAB 7A-A1 (HGU/VDS) CAD STRUCTURES LAB 7A-A2 (AGS/MR)				L U N C H	MIWE (AH)	DRSS (SP)	Social Activity/Model Making/ Innovation (HGU/SKS/SR)
TUE	UTP (KA)	HIE (VDS)	B R E A K	DCBS (TR)	FUNDA MENTA LS (MR)		DRSS (SP)	HIE (VDS)	Construction Practices/Consultancy (SWT/SND/KA)
WED	DRSS (SP)	UTP (KA)		PROJECT WORK			MIWE (AH)	HIE (VDS)	Seminar Presentation Skills (HGU/VDS/SKS)
THU	HIE (VDS)	DCBS (TR)		PROJECT WORK			MIWE (AH)	DRSS (SP)	English Language Writing (SYS/SWT/KA)
FRI	DCBS (TR)	MIWE (AH)		DRSS (SP)	UTP (KA)		HIE (VDS)	FUNDAME NTALS (AS)	Modern Tools in Civil Engineering (AGS/VDS/AS/SR)
SAT	UTP (KA)	ENV LAB 7A-A2 (HGU/AS) CAD STRUCTURES LAB 7A-A1 (AGS/MR)					*****		*****

Allocation of Subjects

		Subjects	Staffs	Staff Code	
MIWE	15CV71	Municipal and Industrial Wastewater Engineering	Dr. H Ajith Hebbar	AH	
DRSS	15CV72	Design of RCC and Steel Structures	Mr. Surendra P	SP	
HIE	15CV73	Hydrology and Irrigation Engineering	Mrs. Veena D Savanth	VDS	
DCBS	15CV743	Design Concept of Building Services	Ms. Tanvi Rai	TR	
UTP	15CV751	Urban Transportation and Planning	Ms. Kavyashree	KA	
ENV LAB	15CVL76	Environmental Engineering Laboratory	7A-A1 Dr. H G Umeshchandra / Mrs. Veena D Savanth 7A-A2 Dr. H G Umeshchandra/ Mr. Ashish Shetty	HGU/VDS HGU/AS	
CADS LAB	15CVL77	Computer Aided Detailing of Structures	7A-A1 -Mr. Arun Kumar G S/Mr. Mohan Raj 7A-A2- Mr. Arun Kumar G S/Mr. Mohan Raj	AGS/MR AGS/MR	
PROJECT	15CVP78	Project Phase I +Project Seminar	ALL FACULTIES	****	

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Mijar, MOODBIDRI - 574 225, D.K.

VII SEMESTER "A" – SECTION STUDENT LIST 2019 – 20

SL. NO.	USN	NAME OF THE STUDENTS
1.	4AL14CV062	PRAJWAL R
2.	4AL15CV017	ARPITHA B SHETTY
3.	4AL15CV022	BASAVARAJ
4.	4AL15CV061	MUHAMMED NIHAL
5.	4AL15CV073	RAGHAVENDRA V
6.	4AL15CV080	RAVIKEERTHI K C
7.	4AL15CV099	SOIBAM PRITAMJIT SINGH
8.	4AL16CV002	ABHISHEK
9.	4AL16CV004	AKSHAY PRAVEENKUMAR KALMATH
10.	4AL16CV005	AMITH R
11.	4AL16CV006	ANILDA S FERNANDES
12.	4AL16CV007	ANILKUMAR AMBARAYA HAVANI
13.	4AL16CV008	ANOOP G SHIRANI
14.	4AL16CV009	ANUSHA K P
15.	4AL16CV011	ASHWIN Y N
16.	4AL16CV016	BHAGAYSHREE AKKALAKOT
17.	4AL16CV017	BHARATH A C
18.	4AL16CV019	BHOOMIKA T C
19.	4AL16CV021	BRUNDA Y M
20.	4AL16CV023	CHAITHRA S G
21.	4AL16CV024	CHANDANA V
22.	4AL16CV026	DHARSHINI T R
23.	4AL16CV028	GANESH L
24.	4AL16CV029	GAUTHAM DAYANAND BANGERA
25.	4AL16CV031	GAUTHAM

26.	4AL16CV032	GURURAJ
27.	4AL16CV036	KEDAR KAMATH M
28.	4AL16CV037	KEERTHANA K C
29.	4AL16CV039	LAISHRAM LINTHOINGANBI
30.	4AL16CV040	LAXMIDEVI AMARESH KARADAKALL
31.	4AL16CV042	M SURAJ ACHARYA
32.	4AL16CV044	MAHESH B
33.	4AL16CV046	MANOJ J D
34.	4AL16CV051	MUSHAHID ALY YUSUF
35.	4AL16CV052	MUTHURABASIMAYUM KRISHNAKUMARI DEVI
36.	4AL16CV053	N H SHARATH
37.	4AL16CV054	NAGALAKSHMI A
38.	4AL16CV057	NEHA C
39.	4AL16CV061	NONGMAITHEM ROSHAN
40.	4AL16CV062	PRABHULING K D
41.	4AL16CV063	PRAJWAL D BORE
42.	4AL16CV065	PRANAV YADAV K V
43.	4AL16CV066	PRAVEEN TIRUPATI KHURADE
44.	4AL16CV071	RAMESH

HOD

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Dept. of Civil Engineering
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Course Title: Hydrology and Irrigation Engineering

[As per Choice Based Credit System (CBCS) scheme]

SEMESTER: VII

Subject Code	15CV73	IA Marks	20
Number of Lecture Hours/Week	04	Exam Marks	80
Total Number of Lecture Hours	50	Exam Hours	03
	CREDITS – 04	**Total Marks-100**	

Course Objectives: This course will enable students to;

1. Understand the concept of hydrology and components of hydrologic cycle such as pricipitation, infiltration, evaporation and transpiration.
2. Quantify runoff and use concept of unit hydrograph.
3. Demonstrate different methods of irrigation, methods of application of water and irrigation procedure.
4. Design canals and canal network based on the water requirement of various crops.
5. Determine the reservoir capacity.

Modules	Teaching Hours	Revised Bloom's Taxonomy (RBT) Level
Module -1		
Hydrology: Introduction, Importance of hydrology, Global and Indian water availability, Practical application of hydrology, Hydrologic cycle (Horton's) qualitative and engineering representation. **Precipitation:** Definition, Forms and types of precipitation, measurement of rain fall using Symon's and Syphon type of rain gauges, optimum number of rain gauge stations, consistency of rainfall data (double mass curve method), computation of mean rainfall, estimation of missing data, presentation of precipitation data, moving average curve, mass curve, rainfall hyetographs.	10 hours	L2, L3
Module -2		
Losses: Evaporation: Introduction, Process, factors affecting evaporation, measurement using IS class-A Pan, estimation using empirical formulae (Meyer's and Rohwer's equations) Reservoir evaporation and control **Evapo-transpiration:** Introduction, Consumptive use, AET, PET, Factors affecting, Measurement, Estimation by Blaney-Criddle equation, **Infiltration:** Introduction, factors affecting infiltration capacity, measurement by double ring infiltrometer, Horton's infiltration equation, infiltration indices.	10 Hours	L2, L3
Module -3		
Runoff: Definition, concept of catchment, factors affecting runoff, rainfall – runoff relationship using regression analysis. **Hydrographs:** Definition, components of hydrograph, base flow separation, unit hydrograph, assumption, application and limitations, derivation from simple storm hydrographs, S curve and its computations, Conversion of UH of different durations	10 Hours	L2, L4

Module -4		
Irrigation: Definition. Benefits and ill effects of irrigation. System of irrigation: surface and ground water, flow irrigation, lift irrigation, Bandhara irrigation. **Water Requirements of Crops:** Duty, delta and base period, relationship between them, factors affecting duty of water crops and crop seasons in India, irrigation efficiency, frequency of irrigation.	10 Hours	L2, L4
Module -5		
Canals: Types of canals. Alignment of canals. Definition of gross command area, cultural command area, intensity of irrigation, time factor, crop factor. Unlined and lined canals. Standard sections. Design of canals by Lacey's and Kennedy's method. **Reservoirs:** Definition, investigation for reservoir site, storage zones determination of storage capacity using mass curves, economical height of dam.	10 Hours	L2, L4

Course outcomes: After studying this course, students will be able to:

1. Understand the importance of hydrology and its components.
2. Measure precipitation and analyze the data and analyze the losses in precipitation.
3. Estimate runoff and develop unit hydrographs.
4. Find the benefits and ill-effects of irrigation.
5. Find the quantity of irrigation water and frequency of irrigation for various crops.
6. Find the canal capacity, design the canal and compute the reservoir capacity.

Program Objectives:

Engineering knowledge

Problem analysis

Interpretation of data

Question paper pattern:

The question paper will have 5 modules comprising of ten questions. Each full question carrying 16 marks

There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.

Each full question shall cover the topics as a module

The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Text Books:

1) K. Subramanya, "Engineering Hydrology", Tata McGraw Hill Publishers, New Delhi.

2) Jayarami Reddy, "A Text Book of Hydrology", Lakshmi Publications, New Delhi.

3) Punmia and LalPandey, "Irrigation and Water Power Engineering" Lakshmi Publications, New Delhi.

Reference Books:

1) H.M. Raghunath, "Hydrology", Wiley Eastern Publication, New Delhi.

2) Sharma R.K., "Irrigation Engineering and Hydraulics", Oxford & IBH Publishing Co., New Delhi.

3) VenTe Chow, "Applied Hydrology", Tata McGraw Hill Publishers, New Delhi.

4) Modi P.N "Water Resources and Water Power Engineering"-. Standard book house, Delhi.

3) Garg S.K, "Irrigation Engineering and Hydraulic Structures" Khanna publications, New Delhi.

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Civil Engineering (CV)

6 . Course Information

6 . 1 Course Content

Title of the Course : HYDROLOGY AND IRRIGATION ENGINEERING
Semester : 7

Academic Year : 2019-20

Subject Code : 15CV73	IA Marks : 20
Hours/week : 4	Total Hours : 50
Exam Hours : 3	Exam Marks : 80
Course Plan Author : Veena D	Planned Date : 2019-07-29
Checked by : Dr H Ajith Hebbar	At the end of this course student will be able to : 2019-07-29

Objectives: To enable students

1 . Understand the concept of hydrology and components of hydrologic cycle such as pricipitation, infiltration, evaporation and transpiration

2 . Quantify runoff and use concept of unit hydrograph

3 . Demonstrate different methods of irrigation, methods of application of water and irrigation procedure

4 . Design canals and canal network based on the water requirement of various crops

5 . Determine the reservoir capacity

Course Outcomes (COs) :

1 . Understand the importance of hydrology and its components

2 . Measure precipitation and analyze the data and analyze the losses in precipitation

3 . Estimate runoff and develop unit hydrographs

4 . Find the benefits and ill-effects of irrigation

5 . Find the quantity of irrigation water and frequency of irrigation for various crops

6 . Find the canal capacity, design the canal and compute the reservoir capacity

DATE: 20/07/2019

ACADEMIC YEAR : 2019-20

PROGRAMME : B.E. - CIVIL ENGINEERING

SEMESTER : 7

COURSE : HYDROLOGY AND IRRIGATION ENGINEERING

COURSE CODE : 15CV73

CO NUMBER	COURSE OUTCOME
CO-1	Understand the importance of hydrology and its components
CO-2	Measure precipitation and analyze the data and analyze the losses in precipitation
CO-3	Estimate runoff and develop unit hydrographs
CO-4	Find the benefits and ill-effects of irrigation
CO-5	Find the quantity of irrigation water and frequency of irrigation for various crops
CO-6	Find the canal capacity, design the canal and compute the reservoir capacity

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DEPARTMENT OF CIVIL ENGINEERING

DATE: 20/07/2019

ACADEMIC YEAR : 2019-20
PROGRAMME : B.E. - CIVIL ENGINEERING
SEMESTER : 7
COURSE : HYDROLOGY AND IRRIGATION ENGINEERING
COURSE CODE : 15CV73

PROGRAMME OUTCOMES:
Engineering Graduates will be able to:

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

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PO7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

CO-PO MAPPING MATRIX

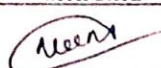| PO\CO	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6
PO1	1	1	0	1	0	1
PO2	2	1	2	0	0	1
PO3	1	0	0	1	0	1
PO4	1	0	1	1	0	1
PO5	0	1	0	2	0	0
PO6	1	2	0	2	0	2
PO7	2	2	1	2	2	2
PO8	0	0	0	1	0	2
PO9	0	1	0	1	0	0
PO10	0	0	1	2	2	0
PO11	0	0	0	0	0	0
PO12	1	0	0	0	0	0
PSO1	0	0	0	0	0	0
PSO2	0	0	0	0	0	0
PSO3	0	0	0	0	0	0

0 – NO MAPPING   1 – SLIGHT   2 – MODERATE   3 – HIGH
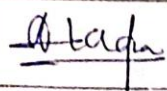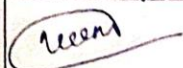
PREPARED BY:			
FACULTY NAME	**FACULTY SIGNATURE WITH DATE**	**FACULTY NAME**	**FACULTY SIGNATURE WITH DATE**
Prof. Veena D Savanth			
APPROVED BY:			
Prof. H Ajith Hebbar		Dr. H G Umeshchandra	
Prof. Sanjay S		Prof. Veena D Savanth	

CBCS SCHEME

USN | | A | L | E | V | 0 | 0 | 0 | 2 | 4 | 74 | 15CV73

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Hydrology and Irrigation Engineering

Time: 3 hrs.   Max. Marks: 80

Note: 1. Answer FIVE full questions, choosing one full question from each module.
2. Assume missing data suitably.

Module-1

1 a. With engineering representation, explain hydrologic cycle along with processes involved in it. **(06 Marks)**
   b. Explain how consistency of rainfall data is checked using double mass curve technique. **(05 Marks)**
   c. The average annual rainfall of 5 raingauge stations in a basin are 89, 68, 54, 45, 41 and 55 cm. If the error in the estimation of basin rainfall should not exceed 10%. How many additional raingauges should be installed in the basin. **(05 Marks)**

OR

2 a. Define precipitation. List its types and explain with neat sketch how its amount is measured using Symon's raingauge. **(08 Marks)**
   b. What are the importances of hydrology? With neat sketch explain mass curve of rainfall and rainfall hyetograph. **(08 Marks)**

Module-2

3 a. Explain how evaporation amount is measured using IS class-A pan? List the factors affecting it. **(08 Marks)**
   b. What is evapotranspiration? Write its measurement using Lysimeter method, with sketch. **(05 Marks)**
   c. List the factors affecting evapotranspiration. Write Blaney-Criddle equation used to estimate ET. **(03 Marks)**

OR

4 a. Define infiltration. With neat sketch, explain double ring infiltrometer. **(06 Marks)**
   b. Write a Horton's infiltration equation used to estimate infiltration rate. **(02 Marks)**
   c. For a storm of 3 hr duration the rainfall rates are as follows:

Time Period (minutes)	30	30	30	30	30	30
Rainfall rate (cm/hr)	1.4	3.4	4.8	3.2	2.0	1.2

   If the surface run off is 3.4 cm determine the ϕ-index and W-index assume initial ϕ-index is more than 1.4 cm/hr. **(08 Marks)**

Module-3

5 a. What is runoff? List and explain factors affecting it. **(08 Marks)**
   b. Define hydrograph. With sketch explain component parts of hydrograph. **(08 Marks)**

1 of 2

15C

OR

6 a. The hourly ordinates of a two hour unit hydrograph are given below. Derive a 6-hours unit hydrograph for the same catchment.   (08 Marks)

Time (hours)	00	01	02	03	04	05	06	07
Discharge (Cumecs)	00	1.0	2.7	5.0	8.0	9.8	9.0	7.5

Time (hours)	08	09	10	11	12	13	14	15
Discharge (Cumecs)	6.3	5.0	4.0	2.9	2.1	1.3	0.5	00

   b. Find out the ordinates of a storm hydrograph resulting from a 3 hour storm with rainfall of 3, 4.5 and 1.5 cm during subsequent 3 hour intervals. The ordinates of unit hydrograph are given in the table below.

Hours	00	03	06	09	12	15	18
OVH (cumecs)	00	90	200	350	450	350	260

Hours	21	24	03	06	09	12
OVH (cumecs)	190	130	80	45	20	00

Assume an initial loss of 5 mm infiltration index of 5 mm / hr and base flow of 20 cumecs.   (08 Marks)

Module-4

7 a. Define Irrigation. List and explain benefits and ill effects of irrigation.   (08 Marks)
   b. What are Duty, delta and base period? Explain factors affecting Duty of water.   (08 Marks)

OR

8 a. What is Irrigation efficiency? Define different efficiencies of Irrigation water.   (05 Marks)
   b. What are flow Irrigation and Lift Irrigations. Explain types of flow irrigations.   (08 Marks)
   c. (i) Give relationship between Duty, delta and base period.
       (ii) Write a short note on frequency of Irrigation.   (03 Marks)

Module-5

9 a. What is canal? List its types and explain with neat sketch its classification based on Alignment.   (08 Marks)
   b. Explain different storage zones of reservoir with neat sketch.   (08 Marks)

OR

10 a. The Channel section is to be designed for the following data:
        Discharge, Q = 5 cumecs
        Lacy's silt factor, f = 1
        Side slope = $1\frac{1}{2}$ H to 1 V

        Also determine the bed slope of the channel.   (08 Marks)
    b. Explain hydrological investigations of reservoir planning. List the points to be considered for selection of site for a reservoir.   (08 Marks)

* * * * *

2 of 2

18

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(1/5)

Scheme & Solution

Signature of Scrutinizer

Subject Title: Hydrology and Irrigation Engineering Subject Code: 15CV73

Question Number	Solution	Marks Allocated
01	**Module - 1** (a) Engineering Representation Sketch of Hydrological Cycle Showing Hydrology processes	01½
	Explanation of Hydrological cycle processes — (i) Precipitation (ii) Evaporation — (1½) (iii) Runoff — (1½) (1)	4½
	(b) Double mass curve sketch — (02), Explanation — (03)	05
	(c) $\bar{P}$ = 58.66cm — (01) Std dev σ_{m-1} = 17.55cm — (02) Coeff·Vari C_v = 29.91%. No. of raingauges N = 8·94 ≈ 9 } (01) Additional raingauges 9-6=3 — (01)	05
		(16)
02	(a) Defn of precipitation — (01) Types — (i) Cyclonic (ii) convective (iii) orographic } (1½)	08
	Symon's raingauge sketch — (1½) Explanation — (03)	
	(b) Importance of Hydrology — (02) Sketches — 1) Mass curve of Rainfall 2) Rainfall hyetograph } (03) Explanations of both — (03)	08
		(16)
03	**Module - 2** (a) IS class-A pan Sketch — (02) Explanation (04) List of factors affecting evaporation — (02)	08
	(b) Evapotranspiration Defn — (01), Lysimeter Sketch — (01) Explanation — (03)	05
	(c) List of factors affecting Evapotranspiration — (1½) Blaney-Criddle equation — (1½)	03
	E_T = 2.54 K F , where F = Sum of monthly consumptive use factors and F = $\Sigma P_h \bar{T}_f / 100$ for the period P_h = monthly % of annual day-time hours E_T = PET in a crop season in cm. T_f = mean monthly temp in °F K = An emperical coeff. depend upon type of the crop and stage of growth	(16)

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DEPARTMENT OF CIVIL ENGINEERING

Subject Title: **Subject Code:**

Question Number	Solution	Marks Allocated
04.	(a) Definition of Infiltration — ① Double ring infiltrometer Sketch — ② Explaination — ③	⑤
	(b) Horton's infiltration equation — ② $$f_p = f_c + (f_o - f_c)\,e^{-k_h t} \quad \text{for } 0 \ge t \le t_c$$ where f_p = Infiltration capacity at any time t from the start of the rainfall f_o = Initial infiltration capacity @ $t=0$ f_c = final steady state infiltration capacity @ $t=t_c$ k_h = Horton's decay coeff	②
	(c) $R = 6.7 - 2\phi$ $W\text{-index} = \dfrac{P-R-S}{t_f}$ $3.4 = 6.7 - 2\phi$, $= \dfrac{8-3.4}{3}$ S being impossible to find $\therefore\ 2\phi = 6.7 - 3.4$ $\boxed{\phi_{index} = 1.65\ cm/hr}$ — ④ $\boxed{W\text{-index} = 1.53\ cm/hr}$ — ④	⑧
		⑯
	Module – 3	
05.	(a) Defn of Runoff — ①, List of factors affecting runoff — ② Explaination of factors with Sketches reqd wherever — ⑤	⑧

	(b) Defn of Hydrograph — ① Sketch — ② component parts
	    (i) Rising Limb
	    (ii) Crest Segment
	    (iii) falling (Recession) limb
	    Explaination — ⑤
		⑧

		⑯
06.	(a) offsets of unit hydrograph — ② Sum — ③ Sum — 0, 1, 2.7, 6, 10.7, 15.8, 19.9, 22.3, 19.3, 15.4, 12.6, 9.2, 6.6, 4.2, 2.6, 1.3, 0.5, 0 ordinates of 6-hr unit hydrograph — ③ 0, 0.33, 0.9, 2.0, 3.57, 5.17, 6.57, 7.43, 7.47, 7.43, 6.43, 5.13, 4.13, 3.07, 2.30, 1.40, 0.87, 0.48, 0.17, 00	⑧

	(b) Rainfall excess for 1st 3hr = 10cm - 3cm)
	     for 2nd 3hr = 3cm - 3cm } ②
	     for last 3hr = 0cm	

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Subject Title:	Subject Code:	Marks Allocated
Question Number	Solution	

Conti ---

06 (b) Sum of Surface runoff from rainfall excess — ③
ordinates

08

ordinates of Storm hydrograph — ③
20, 110, 490, 970, 1520, 1720, 1330, 970, 720, 490, 305, 175, 80 and 20.

16

Module – 4

07. (a) Defn of Irrigation — ①
List of benefits and ill effects — ②
Explaination — ⑤

08

(b) Defn of Delta, Duty and Base period — ③
Factors affecting Duty. Explaination — ⑤

08

16

08. (a) Irrigation Efficiency defn — ①
Different types — ④ Definitions

05

$\eta_c = \dfrac{W_f}{W_r} \times 100$

$\eta_a = \dfrac{W_s}{W_f} \times 100$

$\eta_u = \dfrac{W_u}{W_d} \times 100$ } Any four

$\eta_s = \dfrac{W_s}{W_\eta} \times 100$

$\eta_d = 100 \left[1 - \dfrac{y}{d}\right]$

and $\eta_{cu} = \dfrac{W_{au}}{W_d} \times 100$

(b) Flow Irrigation, Lift Irrigation — ②
Each of Types of flow Irrigation — (i) Perennial Irrigation with sketch — ③
(ii) Inundation Irrigation with sketch — ③

08

(c)(i) Relationship betn Duty, delta and Base period — ①
where, $\Delta = \dfrac{8.64 \times B}{D}$ B→ Base period in days
Δ = delta in cm   D→ Duty in hect/cumecs

Subject Title:

Question Number	Solution	Marks Allocated
	Conti...	
08.	(c)(b) Short Notes on frequency of Irrigation — (1)	(03)
	Module – 5	(16)
09 (a)	Canal Defn — (01) List of classification — (02)	
	(i) Based on purpose of service	
	(ii) Based on Nature of supply ⎱ Any two	
	(iii) " " Discharge ⎰ based	
	(iv) " " Alignment ⎰ classification	(08)
	Based on Alignment — i) Ridge (watershed canal)	
	ii) Contour canal ⎱ Sketch (03)	
	iii) Side Slope canal ⎰ Exp (05)	
(b)	Storage zones of Reservoir	
	Detailed sketch showing max and min pool levels	
	Including different Storage zones — (02)	
	Explanation (i) Valley Storage (ii) Dead Storage	
	(iii) Useful Storage (iv) Surcharge Storage — (06)	(08)
10. (a)	(i) $V = \left[\dfrac{Q+2}{140}\right] = 0.573\ \text{m/sec}$	(16)
	(ii) $Q = C \cdot A$ $A = 8.71\ m^2$ ⎱ (01)	
	(iii) $P = 10.62\ m$	
	(iv) $R = 0.82\ m$ ⎰ (01)	
	(v) $V = \sqrt{\dfrac{2}{5} f R} = 0.82\ \text{m/sec}$ — (01)	(08)
	(vi) $B = (10.62 - 2.60 D)$	
	$D = 1.03\ m$ ⎱ (03)	
	$B = 6.41\ m$ ⎰	
	(vii) Bed Slope $S = \dfrac{1}{4367.5}$ — (02)	

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Question Number	Solution	Marks Allocated
10. (b)	**Hydrological Investigations**	
	(i) Study of Runoff pattern	
	(ii) Determination of hydrograph (for worst flood)] Explain (04)	
	Site selection pts – (i) Percolation losses are min	
	(ii) quantity of leakage must be min	
	(iii) must found on sound water tight rock base.	(08)
	(iv) should have narrow opening	
	(v) cost of real estate is as less as possible	
	(vi) deep reservoir is found	
	(vii) topograph should have adequate capacity	
	(viii) Site should avoid tributary carrying high silt %ge — (04)	
		(16)

The End

Approved

Dr. C.Ramakrishnegowda
BOE Chairman in Civil Engineering
and
Professor and Head
Department of Civil Engineering
MIT-Mysore, Belwadi, SR-Patna-571438

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6 . Course Information

6 . 3 Other Assessment

ASSIGNMENT

: HYDROLOGY AND IRRIGATION ENGINEERING   : 15CV73

# : 1	: 5
: 2019-08-15	: 2019-08-20
: 1	: Apply
:	1.In which regions the Cyclonic, convective, orographic precipitation occurs. 2.Name the Topographic countries. 3.List out the rain gauge station of your district and create a location map using QGIS. 4. What are the possible source of error in measurement of rainfall. 5.How Hydrology is useful in proposing mitigation measures for natural disaster like flood and drought. 6. Explain How satellite can measure the precipitation 7. Suggest a major water resource project and find out a specific hydrological investigation were involved in its design. 8.Discuss the piratical application of hydrology in fish and wide life preservation, recreational use of water and coastal work

# : 2	: 5
: 2019-10-18	: 2019-10-22
: 3 , 4	: Understand
:	1Evaporation is indirectly a cooling process justify the statement? 2.Define unit hydrograph write the uses and application? 3.Explain with sketches what do you understand by principle of linearity and principle of time variance in unit hydrograph theory? 4.Discuss various infiltration equations and explain how the constant fc,fo and k in the Horton's equation can be obtained from experiment data? 5.Define phi index and w index and bring out the difference between them. How is phi index determined from rainfall hydrograph? 6.Explain the procedure of deriving unit hydrograph?

# : 3	: 5
: 2019-11-11	: 2019-11-19
: 5 , 6	: Understand
:	1.What are the benefits or yojanas or scheme given by the new government for formers? 2.How government educating the former regarding irrigation? 3.Explain briefly the selection of site for reservoir? 4.Design procedure for Kennedys' theory? 5.Describe the method of designing the canal based on lacey's theory? 6.Explain with neat sketch storage zones of reservoirs?

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Mijar, Moodbidri - 574 225

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ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY, Moodbidri
DEPARTMENT OF CIVIL ENGINEERING
I - INTERNAL ASSESSMENT

Semester: 7-CBCS   Section: B

Subject: HYDROLOGY AND IRRIGATION ENGINEERING (15CV73)

Faculty: Mr Sanjay S

Date: 20 Sep 2019
Time: 09:30 AM - 11:00 AM
Max Marks: 30

Answer any 2 question(s)

Q.No			Marks	CO	BT/CL
1	a	Explain the Engineering representation of Hydrologic Cycle with a neat sketch	7	CO1	L2
	b	Briefly explain the different types of Precipitation	8	CO1	L1
		OR			
2	a	With a neat sketch explain the tiping bucket raingauge	8	CO1	L1
	b	Explain the factors governing selection of site for rain gauge stations.	7	CO1	L1
3	a	A catchment has six rain gauge stations. In a year, the annual rainfall recorded by the gauges are as follows:	8	CO2	L3

Station	A	B	C	D	E	F
Rainfall (cm)	82.6	102.9	180.3	110.3	98.8	136.7

For a 10% error in the estimation of mean rainfall, Calculate the optimum number of stations in the catchment.

			Marks	CO	BT/CL
	b	Explain the factors affecting Evaporation	7	CO2	L1
		OR			
4	a	The following meteorological data pertain to a large reservoir with a water spread area of 15 sq. km. The data represents the average value for the day.	8	CO2	L3

Water temperature : 24 degree celsius

Air temperature : 26 degree celsius

Atmospheric pressure : 752 mm of mercury

Wind speed at 0.5 m above ground level : 25.3 km/h

Relative humidity : 46%.

Estimate the average daily evaporation from the reservoir using Meyer's equation and Rowher's equation.

			Marks	CO	BT/CL
	b	Explain the Pan Evaporation measurement with a neat sketch.	7	CO2	L1

CO1 : Understand the importance of hydrology and its components.

CO2 : Measure precipitation and analyze the data and analyze the losses in precipitation.

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· IA SCHEME

Sem: 7th sem   Sub: Hydrology & Irrigation Engg.   Sub Code: 15CV73

Date: 20/09/19   Time: 9:30 AM to 11:00 AM   Max Marks:

Module Covered: 1 & 2   CO's Covered: CO1 & CO2

(1)(a) Engg. representation of Hydrologic cycle – sketch — 3 marks

Explanation of all the components — 4 marks

7 marks

(b). Types of precipitation ⎤
    Sketch   ⎦ — 2 marks.

Explanation ⎡ Cyclonic
            ⎢ Convective   — 6 marks
            ⎣ Orographic

8 marks

2(a) Tipping bucket raingauge – sketch   3 marks

Explanation   5 marks

8 marks

(b) Factors governing the selection of site for raingauge stations (7 points)   7 marks.

3(a). $m = 6$ 01

        $\bar{P} = 118.60$ cm.   02

       std. deviation, $\sigma_{m-1} = 35.04$ cm   02

       coeff. of variation, $C_v = 29.54$ 02

$$N = \left(\frac{C_v}{\varepsilon}\right)^2 = \left(\frac{29.54}{10}\right)^2 = 8.73 \approx \underline{\underline{9}}$$

                                         $\underline{08}$

(b).   Factor affecting evaporation : 7 factors
               with Explanation   07

4(a).   (i) Meyer's equation:

           $E = C(e_s - e_a)(1 + 0.06215V)$ 01

           $E = 13.7$ mm/day   03.

       (ii) Rohwer's equation :

   $E = 0.771(1.465 - 0.000732 p_a)(0.44 + 0.07334V)(e_s - e_a)$ 01

          $E = 17.5$ mm/day   03

                                       08

   (b).   ISI Evaporation measurement - sketch
               Explanation   03

                                       04

                                       $\underline{07}$

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			Q1 a	Q1 b	Q2 a	Q2 b	Q3 a	Q3 b	Q4 a	Q4 b		
4AL16CV002	ABHISHEK	P	6	6	0	0	0	0	8	5	25	Apply
4AL16CV004	AKSHAY PRAVEENKUMAR KALMATH	P	6	7	0	0	0	0	5	6	24	Apply
4AL16CV005	AMITH R	P	4	2	0	0	0	5	0	3	11	Understand
4AL16CV006	ANILDA S FERNANDES	P	0	7	0	0	0	0	5	6	18	Apply
4AL16CV007	ANILKUMAR AMBARAYA HAVANI	P	0	0	0	0	0	0	5	6	11	Apply
4AL16CV008	ANOOP G SHIRANI	P	6	6	0	2	0	0	8	6	26	Apply
4AL16CV009	ANUSHA K P	P	0	1	0	4	8	7	0	0	19	Apply
4AL16CV011	ASHWIN Y N	P	6	6	0	0	0	0	8	6	26	Apply
4AL15CV017	Arpitha B Shetty	P	6	0	1	0	0	0	5	6	17	Apply
4AL16CV016	BHAGAYSHREE AKKALAKOT	P	0	0	4	0	2	7	0	0	13	Remember
4AL16CV017	BHARATH A C	P	3	4	0	0	0	0	8	4	19	Apply
4AL16CV019	BHOOMIKA T C	P	6	4	0	0	0	0	8	6	24	Apply
4AL16CV021	BRUNDA Y M	P	6	6	0	0	1	6	5	3	20	Apply
4AL15CV022	Basavaraj	P	5	5	0	0	0	6	0	0	16	Understand
4AL16CV023	CHAITHRA S G	P	6	7	0	0	1	7	2	0	21	Understand
4AL16CV024	CHANDANA V	P	6	6	0	0	0	2	2	6	20	Understand
4AL16CV026	DHARSHINI T R	P	6	7	0	0	0	0	5	3	21	Apply
4AL16CV028	GANESH L	P	6	6	0	0	0	0	8	6	26	Apply
4AL16CV031	GAUTHAM	P	6	7	0	0	0	0	0	6	19	Understand
4AL16CV029	GAUTHAM DAYANAND BANGERA	P	1	3	0	0	3	5	0	0	12	Remember
4AL16CV032	GURURAJ	P	5	3	0	0	0	0	5	2	15	Apply
4AL16CV036	KEDAR KAMATH M	P	0	6	0	0	0	0	3	5	14	Remember
4AL16CV037	KEERTHANA K C	P	6	7	0	0	0	0	5	5	23	Apply
4AL16CV039	LAISHRAM LINTHOINGANBI	P	6	7	0	0	0	0	5	6	24	Apply
4AL16CV040	LAXMIDEVI AMARESH KARADAKALL	P	6	7	0	0	0	0	5	7	25	Apply
4AL16CV042	M SURAJ ACHARYA	P	6	7	0	0	0	0	3	6	22	Understand
4AL16CV044	MAHESH B	P	6	6	0	0	0	5	0	0	17	Understand
4AL16CV046	MANOJ J D	P	6	6	0	0	0	0	6	6	24	Apply
4AL16CV052	MATHURABASIMAYUM KRISHNAKUMARI DEVI	P	6	6	0	0	0	0	3	6	21	Understand
4AL15CV061	MUHAMMED NIHAL	P	5	5	0	0	0	1	8	1	19	Apply

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			Q1		Q2		Q3		Q4			
			a	b	a	b	a	b	a	b		
4AL16CV051	MUSHAHID ALY YUSUF	P	0	0	4	6	0	0	5	6	21	Apply
4AL16CV053	N H SHARATH	P	6	5	0	0	0	0	5	6	22	Apply
4AL16CV054	NAGALAKSHMI A	P	6	6	0	0	4	4	5	1	20	Apply
4AL16CV057	NEHA C	P	6	6	0	0	0	0	3	6	21	Understand
4AL16CV061	NONGMAITHEM ROSHAN	P	6	7	0	0	0	7	0	0	20	Understand
4AL16CV062	PRABHULING	P	6	4	0	0	8	6	0	0	24	Apply
4AL16CV063	PRAJWAL D BORE	P	4	0	0	0	0	0	5	6	15	Apply
4AL16CV065	PRANAV YADAV K V	P	7	6	0	0	0	7	0	0	20	Understand
4AL16CV066	PRAVEEN TIRUPATI KHURADE	P	3	1	0	0	2	5	2	0	11	Remember
4AL14CV062	Prajwal Matapathi	P	0	6	0	0	0	0	3	3	12	Remember
4AL16CV071	RAMESH	P	0	6	0	0	0	0	8	6	20	Apply
4AL15CV073	Raghavendra V	P	6	4	0	0	0	0	8	3	21	Apply
4AL15CV080	Ravikeerthi K C	P	6	6	0	0	0	2	8	5	25	Apply
4AL15CV099	SOIBAM PRITAMJIT SINGH	Ab	0	0	0	0	0	0	0	0	0	No Level

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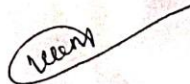**DEPARTMENT OF CIVIL ENGINEERING**
II - INTERNAL ASSESSMENT

Semester: 7-CBCS   Section: A
Subject: HYDROLOGY AND IRRIGATION ENGINEERING (15CV73)
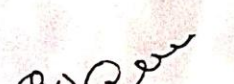Faculty: Ms Veena D Savanth

Date: 24 Oct 2019
Time: 03:00 PM - 04:30 PM
Max Marks: 30

Answer any 2 question(s)

Q.No			Marks	CO	BT/CL
1	a	What is Evapotranspiration? What are the factors affecting Evapotranspiration	6	CO2	L2
	b	Describe the method of determining infiltration capacity using a double ring infiltrometer.	6	CO2	L2
	c	Explain briefly I) Infiltration Capacity II) Φ index	3	CO2	L1
		OR			
2	a	A 6 hr storm produce rainfall intensity of 7,18,25,12,10 and 3 mm/hr in successive 1 hr interval over a basin of 600 sq km. The resulting runoff is assumed to be 2500 hectare meters. Determine the Φ index for the basin	6	CO2	L4
	b	Explain briefly AET and PET.	6	CO2	L2
	c	What are the factors affecting infiltration.	3	CO2	L2
3	a	Define Hydrograph. Draw a single peaked hydrograph indicating various components and explain	6	CO3	L1
	b	The ordinates of 4 hr UH are given below. Obtain the ordinates of 2 hr UH hence obtain the ordinates of 2 hr storm hydrograph if rainfall excess 25mm	6	CO3	L2
	c	Define Runoff. What are the factors affecting Runoff.	3	CO3	L2
		OR			
4	a	Explain various methods of Base flow separation	6	CO3	L1
	b	The ordinates of 4 hr UH of a basin area 630 Km2 measured at 2 hour interval are given below. Obtain the ordinates of 6 hr UH for the basin using S- curve technique.	6	CO3	L4
	c	Explain the assumptions made in deriving the Unit Hydrograph.	3	CO3	L2

Question 3b table:

TIME	0	2	4	6	8	10	12	14	16	18	20	22
4hr UH	0	12.5	62.5	130	175	180	140	90	50	25	13	0

Question 4b table:

TIME	0	2	4	6	8	10	12	14	16	18	20	22	24
4hr UH	0	25	100	160	190	170	110	70	30	20	6	1.5	0

CO2 :   Measure precipitation and analyze the data and analyze the losses in precipitation
CO3 :   Estimate runoff and develop unit hydrographs

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- IIA SCHEME

Sem: 7th A & B   Sub: Hydrology & Irrigation Engg.   Sub Code: 15cv73

Date: 24/10/19   Time: 3.00 to 4.30   Max Marks: 30

Module Covered: 2 & 3   CO's Covered: 02, 03

1. a) Evapotranspiration Define 1M

   Factors : Temperature, Sunshine, humidity soil & plant factors, Density of Vegetation.   Explain (5) - 5M

   (6M).

   b) Double ring infiltrometer   — 2M

      fig   — 2M

      construction   — 2M

      working   (6M)

   c) Infiltration capacity → max rate at which it is
      capable of absorbing water. (f)   —1½

      φ index : avg rainfall intensity above which   —1½
      the rainfall volume equal to runoff volume   (3).

2. a)   Volume = 2500 ×10⁴ m³

        Area = 600 ×10⁶ m²   — 2M

        depth = 0.0416 m = 41.6 mm ≃ 42mm

   0 + (18−x) + (25−x) + (12−x) + (10−x) + 0 = 42

   By trial & Error   — 2M

        65 − 4x = 42   — 2M

        ∴ x = 5.75

   ∴ φ = 6 mm/hr.   (6M).

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V017   Arpitha B Shetty   Ab

2. b) Actual Evapotranspiration AET
→ soil & plant factor
→ influenced by density of vegetation   — 3M

Potential Evapotranspiration PET
adequate water supply to fully vegetated   — 3M
surface   (6M)

c) Factors - infiltration
soil moisture, compaction, surface cover condition
Temperature & other   — (3M)

3 a) Hydrograph   Define   — 1M
Fig   — 2M
Explain components   — 3M   (6M)

b) 2h ordinates for UH

0	2	4	6	8	10	12	14	16	18	20	22
0	25	100	160	190	170	110	70	30	20	06	06

— (6M)
— 1M

c) Define runoff
factors any 4   — 2M
                                 (3M)

4 a) Explain 3 methods of Base flow separation
                          Each 2M — (6M)

b) 2h ordinates for UH

0	2	4	6	8	10	12	14	16	18	20	22	24
0	16.5	66	122	175	168	142	89	49.5	30	7.26	11	-6+

— (6M)

c) Assumption of UH.
Effective rainfall uniformly distributed w.r.to area &
duration
DH ∝ total volume of direct runoff.   any (3) — (3M)

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Department of Civil Engineering (CV)

			Q1			Q2			Q3			Q4				
			a	b	c	a	b	c	a	b	c	a	b	c		
4AL16CV002	ABHISHEK	P	3	4	0	0	0	0	1	2	2	4	4	3	18	Analyze
4AL16CV004	AKSHAY PRAVEENKUMAR KALMATH	P	5	6	1	0	0	0	0	2	2	5	2	3	22	Understand
4AL16CV005	AMITH R	P	2	3	0	2	0	0	1	2	1	0	0	0	9	Understand
4AL16CV006	ANILDA S FERNANDES	P	6	6	2	0	0	0	5	2	3	0	0	0	24	Understand
4AL16CV007	ANILKUMAR AMBARAYA HAVANI	P	0	0	0	0	0	0	0	2	0	0	0	0	2	No Level
4AL16CV008	ANOOP G SHIRANI	P	3	5	1	0	0	0	0	0	0	5	6	3	23	Analyze
4AL16CV009	ANUSHA K P	P	5	6	1	0	0	0	0	0	0	6	6	3	27	Analyze
4AL16CV011	ASHWIN Y N	P	5	5	1	0	0	0	0	0	0	5	6	3	25	Analyze
4AL15CV017	Arpitha B Shetty	Ab	0	0	0	0	0	0	0	0	0	0	0	0	0	No Level
4AL16CV016	BHAGAYSHREE AKKALAKOT	P	3	3	1	0	0	0	4	1	2	3	0	3	14	Understand
4AL16CV017	BHARATH A C	P	3	4	1	0	0	0	3	2	3	0	0	0	16	Understand
4AL16CV019	BHOOMIKA T C	P	5	5	0	0	0	0	6	2	2	5	0	3	20	Understand
4AL16CV021	BRUNDA Y M	Ab	0	0	0	0	0	0	0	0	0	0	0	0	0	No Level
4AL15CV022	Basavaraj	P	3	4	1	0	0	0	0	0	0	0	2	0	10	Understand
4AL16CV023	CHAITHRA S G	P	3	4	0	0	0	0	3	2	3	5	6	3	21	Analyze
4AL16CV024	CHANDANA V	P	5	5	2	0	0	0	5	2	3	5	0	2	22	Understand
4AL16CV026	DHARSHINI T R	P	5	6	1	0	0	0	6	6	3	0	0	0	27	Understand
4AL16CV028	GANESH L	P	6	5	2	0	0	0	0	0	0	5	6	3	27	Analyze
4AL16CV031	GAUTHAM	P	5	5	1	0	0	0	0	0	0	5	6	3	25	Analyze
4AL16CV029	GAUTHAM DAYANAND BANGERA	P	3	4	0	0	0	2	0	0	0	0	6	3	16	Analyze
4AL16CV032	GURURAJ	P	2	4	0	0	0	0	0	0	0	4	6	0	16	Analyze
4AL16CV036	KEDAR KAMATH M	P	3	5	0	0	0	0	0	0	0	3	6	2	19	Analyze
4AL16CV037	KEERTHANA K C	Ab	0	0	0	0	0	0	0	0	0	0	0	0	0	No Level
4AL16CV039	LAISHRAM LINTHOINGANBI	P	6	4	1	0	0	0	0	0	0	5	6	3	25	Analyze
4AL16CV040	LAXMIDEVI AMARESH KARADAKALL	P	3	5	0	0	2	3	0	0	0	5	6	3	22	Analyze
4AL16CV042	M SURAJ ACHARYA	P	3	3	1	0	0	0	0	0	0	1	6	3	17	Analyze
4AL16CV044	MAHESH B	P	5	0	0	0	2	1	0	0	0	0	6	3	14	Analyze
4AL16CV046	MANOJ J D	P	3	3	2	0	0	0	3	2	3	2	6	3	19	Analyze
4AL16CV052	MATHURABASIMAYUM KRISHNAKUMARI DEVI	P	5	4	1	0	0	0	5	6	2	0	0	0	23	Understand
4AL15CV061	MUHAMMED NIHAL	P	5	4	1	0	0	0	4	2	1	0	2	1	17	Understand

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ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Civil Engineering (CV)

			Q1			Q2			Q3			Q4				
			a	b	c	a	b	c	a	b	c	a	b	c		
4AL16CV051	MUSHAHID ALY YUSUF	P	4	5	1	2	2	2	0	0	0	4	3	3	20	Analyze
4AL16CV053	N H SHARATH	P	3	5	1	0	0	0	0	0	0	6	3	0	18	Analyze
4AL16CV054	NAGALAKSHMI A	P	4	5	0	0	0	0	5	2	2	5	2	3	19	Understand
4AL16CV057	NEHA C	P	5	6	1	0	0	0	0	0	0	5	6	3	26	Analyze
4AL16CV061	NONGMAITHEM ROSHAN	P	6	1	1	0	0	0	4	2	3	0	0	0	17	Understand
4AL16CV062	PRABHULING	P	3	3	1	0	0	0	0	0	0	3	2	3	15	Understand
4AL16CV063	PRAJWAL D BORE	P	4	3	1	0	0	2	0	0	3	0	2	3	13	Understand
4AL16CV065	PRANAV YADAV K V	P	1	6	2	0	0	0	6	2	3	0	0	0	20	Understand
4AL16CV066	PRAVEEN TIRUPATI KHURADE	P	6	5	2	0	0	0	0	0	0	4	2	0	19	Understand
4AL14CV062	Prajwal Matapathi	P	3	2	1	0	0	0	0	0	0	0	2	1	9	Understand
4AL16CV071	RAMESH	P	3	5	1	0	0	0	0	0	0	5	6	3	23	Analyze
4AL15CV073	Raghavendra V	P	5	5	1	0	0	0	4	2	2	0	0	0	19	Understand
4AL15CV080	Ravikeerthi K C	P	6	5	1	0	0	0	5	2	3	0	0	0	22	Understand
4AL15CV099	SOIBAM PRITAMJIT SINGH	P	6	4	0	0	0	0	4	2	2	0	0	0	18	Understand

~1/25/2019

USN : 4-AL16(V0 S)

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY, Moodbidri
DEPARTMENT OF CIVIL ENGINEERING
III - INTERNAL ASSESSMENT

Semester: 7-CBCS   Section: B
Subject: HYDROLOGY AND IRRIGATION ENGINEERING (15CV73)
Faculty: Mr Sanjay S

Date: 27 Nov 2019
Time: 09:30 AM - 11:00 AM
Max Marks: 30

Answer any 2 question(s)

Q.No			Marks	CO
1	a	Discuss the factors affecting the Duty	7	CO4
	b	A water course has a culturable command area of 1200 hectares. The intensity of irrigation for crop A is 40% and for B is 35%, both the crops being rabi crops. Crop A has a base period of 20 days and Crop B has a base period of 15 days. Calculate the discharge of water course if the Delta for crop A is 10 cm amd for crop B is 16 cm.	8	CO4
		OR		
2	a	Derive the relationship between Duty, Delta and Base period.	7	CO4
	b	The base period, intensity of irrigation and Duty of various crops under a canal system are given in the table below. Find the reservoir capacity if the canal losses are 20% and reservoir losses are 12%.	8	CO4,CO6
3	a	Explain the general considerations for the alignment of a canal	7	CO5
	b	Design a channel section for the following data: Discharge: 30 cumecs, Silt factor: 1, Side slope : ½:1. Also find the longitudinal slope	8	CO5
		OR		
4	a	Explain the different classifications of canals	7	CO5
	b	Design an irrigation channel on Kennedy's theory, to carry a discharge of 45 cumecs. Take N=0.0225 and m=1.05. The channel has a bed slope of 1 in 5000.	8	CO5

Table for Q2 b:

Crop	Base period (Days)	Duty at the field (ha/cu)	Area under the crop (ha)
Wheat	120	1800	4800
Sugar cane	360	800	5600
Cotton	200	1400	2400
Rice	120	900	3200
Vegetables	120	700	1400

CO4 :   Identify the system of irrigation and evaluate the water requirements for the crop.
CO5 :   Explain the types, alignment and Design of canals
CO6 :   Determine the reservoir capacity.

HOD

FACULTY

DEPT_ADMIN

- IIIA SCHEME

Sem: 7th Sub: Hydrology & Irrigation Engg. Sub Code: 15CV73

Date: 27-11-2019   Time: 9.30 to 11.00AM.   Max Marks: 30

Module Covered: 04, 05   CO's Covered: 04, 05, 06

1. a) Factors affecting duty:
   ① Method & System of irrigation.
   ② Application of water, cultivation
   ③ Base period, Climate, Canal Condition.
   ④ Time & frequency etc

   any seven. Each 1 × 7   (7M)

1. b) **Crop A:**   Duty = 1728 hec/cum.

   Discharge = 0.278 cum ———— 4M

   Crop B: Duty = 810 hec/cum

   Discharge = 0.8 cum ———— 4M   (8M)

2. a) <u>Relation b/w Duty, Delta & Base period</u>

   water Supplied for D hectares = D×Δ ×10^4 cub-m. — 2M

   ∴ for 1 cumec   = B × 24 × 60 × 60 — 2M

   ∴ $\Delta = \dfrac{8.64 B}{D}$ — 3M   (7M)

2. b) delta : 0.576, 3.888, 1.234, 1.152, 1.48   —2M

   volume : 2764.8, 21772.8, 2961.6, 3686.4, 2072 —2M

   ΣV = 33260 hec-m. — 2M

   capacity = 47245 hec-m. — 2M   (8M)

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3.a) considerations for alignment of canal
- → high Command area, Economical, Reduce c/s drainage
- → Avoid Roads, Railway, Village
- → balanced depth of cutting
- → curve min   any 7 1×7 (7M)

3 b)

$V = 0.773$ m/sec   — 1M

$A = 38.8$ sq.m   — 1M

$r = 26$ m   — 1M

$D = 1.67$ m $B = 22.26$ m   — 3M

$R = 1.49$ — 1M

$S = \dfrac{1}{5880}$ — 1M

                                     (8M)

4. a) classification of canals
- → source of supply $\left\{ \begin{array}{l} \text{permanent} \\ \text{inundation} \end{array} \right.$
- → financial output $\left\{ \begin{array}{l} \text{Productive} \\ \text{Protective} \end{array} \right.$
- → function $\left\{ \begin{array}{l} \text{Irrigation} \\ \text{Feeder} \\ \text{Power, Navigation} \end{array} \right.$
- → Boundary surface $\left\{ \begin{array}{l} \text{Alluvial} \\ \text{Non-Alluvial} \end{array} \right.$
- → Discharge → main → Branch $\left\{ \begin{array}{l} \text{Major} \\ \text{Minor} \end{array} \right.$ (7M)

4. b) $Y = 10$ & 9.7

$b = 2.16$ m   — 2M

$B = 21$ m   — 2M

$V = 0.946$ m/s   — 2M

$V_0 = 0.945$ m/s   — 2M

                    (8M)

HOD

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1	a	Discuss the factors affecting the Duty	7	4	L2
1	b	A water course has a culturable command area of 1200 hectares. The intensity of irrigation for crop A is 40% and for B is 35%, both the crops being rabi crops. Crop A has a base period of 20 days and Crop B has a base period of 15 days. Calculate the discharge of water course if the Delta for crop A is 10 cm amd for crop B is 16 cm.	8	4	L2
		OR			
2	a	Derive the relationship between Duty, Delta and Base period.	7	4	L2
2	b	The base period, intensity of irrigation and Duty of various crops under a canal system are given in the table below. Find the reservoir capacity if the canal losses are 20% and reservoir losses are 12%. Crop Base period (Days) Duty at the field (ha/cu) Area under the crop (ha) Wheat 120 1800 4800 Sugar cane 360 800 5600 Cotton 200 1400 2400 Rice 120 900 3200 Vegetables 120 700 1400	8	46	L3
3	a	Explain the general considerations for the alignment of a canal	7	5	L1
3	b	Design a channel section for the following data: Discharge: 30 cumecs, Silt factor: 1, Side slope : ½:1. Also find the longitudinal slope	8	5	L3
		OR			
4	a	Explain the different classifications of canals	7	5	L1
4	b	Design an irrigation channel on Kennedy's theory, to carry a discharge of 45 cumecs. Take N=0.0225 and m=1.05. The channel has a bed slope of 1 in 5000.	8	5	L3

		Q1		Q2		Q3		Q4			
		a	b	a	b	a	b	a	b		
4AL16CV002	ABHISHEK	P	0	8	5	8	5	0	0	4	18	Apply
4AL16CV004	AKSHAY PRAVEENKUMAR KALMATH	P	3	6	0	0	4	8	0	0	21	Apply
4AL16CV005	AMITH R	P	3	5	5	0	2	4	3	6	17	Apply
4AL16CV006	ANILDA S FERNANDES	P	0	0	7	8	4	8	0	0	27	Apply
4AL16CV007	ANILKUMAR AMBARAYA HAVANI	P	0	0	6	8	0	0	4	6	24	Apply
4AL16CV008	ANOOP G SHIRANI	P	0	0	7	8	0	0	0	0	15	Apply
4AL16CV009	ANUSHA K P	P	0	0	7	8	6	7	0	0	28	Apply

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			Q1		Q2		Q3		Q4			
			a	b	a	b	a	b	a	b		
4AL16CV011	ASHWIN Y N	P	0	0	5	8	0	3	0	0	16	Apply
4AL15CV017	Arpitha B Shetty	P	0	3	0	2	0	0	7	6	22	Apply
4AL16CV018	BHAGAYSHREE AKKALAKOT	P	3	8	0	8	0	0	4	7	25	Apply
4AL16CV017	BHARATH A C	P	0	0	7	7	0	0	6	5	25	Apply
4AL16CV019	BHOOMIKA T C	P	3	8	0	0	0	0	3	7	21	Apply
4AL16CV021	BRUNDA Y M	P	2	3	6	8	5	8	0	3	27	Apply
4AL15CV022	Basavaraj	P	4	8	0	0	3	6	0	0	21	Apply
4AL16CV023	CHAITHRA S G	P	3	8	0	8	0	0	4	6	24	Apply
4AL16CV024	CHANDANA V	P	6	3	7	7	6	3	5	0	23	Apply
4AL16CV026	DHARSHINI T R	P	2	5	1	8	3	8	0	4	20	Apply
4AL16CV028	GANESH L	P	0	8	6	8	6	8	0	0	28	Apply
4AL16CV031	GAUTHAM	P	0	3	0	0	0	2	0	2	6	No Level
4AL16CV029	GAUTHAM DAYANAND BANGERA	P	0	0	4	0	4	0	0	0	8	Understand
4AL16CV032	GURURAJ	P	0	0	7	8	0	0	0	0	15	Apply
4AL16CV036	KEDAR KAMATH M	P	0	0	6	7	0	8	0	0	21	Apply
4AL16CV037	KEERTHANA K C	P	7	4	7	8	3	0	6	5	26	Apply
4AL16CV039	LAISHRAM LINTHOINGANBI	P	0	0	1	8	0	0	0	8	17	Apply
4AL16CV040	LAXMIDEVI AMARESH KARADAKALL	P	0	0	8	8	0	0	6	6	26	Apply
4AL16CV042	M SURAJ ACHARYA	P	1	0	1	6	2	0	2	4	13	Apply
4AL16CV044	MAHESH B	P	4	8	0	0	0	0	5	8	25	Apply
4AL16CV046	MANOJ J D	P	4	3	0	0	0	0	0	0	7	Understand
4AL16CV052	MATHURABASIMAYUM KRISHNAKUMARI DEVI	P	0	0	6	6	0	0	0	6	18	Apply
4AL15CV061	MUHAMMED NIHAL	P	0	0	3	8	0	0	6	6	23	Apply
4AL16CV051	MUSHAHID ALY YUSUF	P	0	0	6	8	6	6	0	0	28	Apply
4AL16CV053	N H SHARATH	P	0	0	7	8	0	0	0	0	15	Apply
4AL16CV054	NAGALAKSHMI A	P	5	3	6	6	6	0	0	0	17	Apply
4AL16CV057	NEHA C	P	1	0	6	4	0	0	0	0	10	Apply
4AL16CV061	NONGMAITHEM ROSHAN	P	0	0	6	8	0	0	3	0	17	Apply
4AL16CV062	PRABHULING	P	2	8	0	8	0	0	0	6	16	Apply
4AL16CV063	PRAJWAL D BORE	P	6	2	0	0	4	8	0	0	20	Apply
4AL16CV065	PRANAV YADAV K V	P	6	4	0	0	0	0	0	8	18	Apply
4AL16CV066	PRAVEEN TIRUPATI KHURADE	P	6	2	6	0	0	0	0	0	7	Understand

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Phone: 08258-262725, Fax: 08258-262726

DEPARTMENT OF CIVIL ENGINEERING

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Department of Civil Engineering (CV)

			Q1		Q2		Q3		Q4			
			a	b	a	b	a	b	a	b		
4AL14CV062	Prajwal Matapathi	P	1	5	0	0	0	0	5	4	15	Apply
4AL16CV071	RAMESH	P	0	0	0	8	0	8	0	0	16	Apply
4AL15CV073	Raghavendra V	P	3	8	0	0	3	0	0	0	14	Understand
4AL15CV080	Ravikeerthi K C	P	0	0	0	8	0	8	0	0	16	Apply
4AL15CV099	SOIBAM PRITAMJIT SINGH	P	0	0	7	8	0	0	5	1	21	Apply

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HYDROLOGY AND IRRIGATION ENGINEERING 15CV73 7TH SEM A SEC(2019-20)

Roll. No.	USN	NAME	I IA (15 M)	II IA (15 M)	III IA (15 M)	AVG IA (15 M)	ASSIG (05 M)	AVG IA (30 M)
1	4AL14CV062	PRAJWAL R	06	05	08	07	05	12
2	4AL15CV017	ARPITHA B SHETTY	09	AB	11	10	05	15
3	4AL15CV022	BASAVARAJ	08	05	11	10	05	15
4	4AL15CV061	MUHAMMED NIHAL	10	09	12	11	05	16
5	4AL15CV073	RAGHAVENDRA V	11	10	07	11	05	16
6	4AL15CV080	RAVIKEERTHI K C	13	11	08	12	05	17
7	4AL15CV099	SOIBAM PRITAMJIT SINGH	AB	09	15	12	05	17
8	4AL16CV002	ABHISHEK	13	09	09	11	05	16
9	4AL16CV004	AKSHAY PRAVEENKUMAR KALMATH	12	11	11	12	05	17
10	4AL16CV005	AMITH R	06	05	09	08	05	13
11	4AL16CV006	ANILDA S FERNANDES	09	12	14	13	05	18
12	4AL16CV007	ANILKUMAR AMBARAYA HAVANI	06	01	12	09	05	14
13	4AL16CV008	ANOOP G SHIRANI	13	12	08	13	05	18
14	4AL16CV009	ANUSHA K P	10	14	14	14	05	19
15	4AL16CV011	ASHWIN Y N	13	13	08	13	05	18
16	4AL16CV016	BHAGAYSHREE A	07	07	13	10	05	15
17	4AL16CV017	BHARATH A C	10	08	13	12	05	17
18	4AL16CV019	BHOOMIKA T C	12	10	11	12	05	17
19	4AL16CV021	BRUNDA Y M	10	AB	14	12	05	17
20	4AL16CV023	CHAITHRA S G	11	11	12	12	05	17
21	4AL16CV024	CHANDANA V	10	11	12	12	05	17
22	4AL16CV026	DHARSHINI T R	11	14	10	13	05	18
23	4AL16CV028	GANESH L	13	14	14	14	05	19
24	4AL16CV029	GAUTHAM DAYANAND B	06	08	04	07	05	12
25	4AL16CV031	GAUTHAM	10	13	03	12	05	17
26	4AL16CV032	GURURAJ	08	08	08	08	05	13
27	4AL16CV036	KEDAR KAMATH M	07	10	11	11	05	16
28	4AL16CV037	KEERTHANA K C	12	AB	13	13	05	18
29	4AL16CV039	LAISHRAM LINTHOINGANBI	12	13	09	13	05	18
30	4AL16CV040	LAXMIDEVI AMARESH K	13	11	13	13	05	18
31	4AL16CV042	M SURAJ ACHARYA	11	09	07	10	05	15
32	4AL16CV044	MAHESH B	09	07	13	11	05	16
33	4AL16CV046	MANOJ J D	12	10	04	11	05	16
34	4AL16CV051	MUSHAHID ALY YUSUF	11	10	14	13	05	18

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Phone: 08258-262725, Fax: 08258-262726
DEPARTMENT OF CIVIL ENGINEERING

Roll. No.	USN	NAME	I IA (15 M)	II IA (15 M)	III IA (15 M)	AVG IA (15 M)	ASSIG (05 M)	AVG IA (30 M)
35	4AL16CV052	MUTHURABASIMAYUM KRISHNAKUMARI DEVI	11	12	09	12	05	17
36	4AL16CV053	N H SHARATH	11	09	08	10	05	15
37	4AL16CV054	NAGALAKSHMI A	10	10	09	10	05	15
38	4AL16CV057	NEHA C	11	13	05	12	05	17
39	4AL16CV061	NONGMAITHEM ROSHAN	10	09	09	10	05	15
40	4AL16CV062	PRABHULING K D	12	08	08	10	05	15
41	4AL16CV063	PRAJWAL D BORE	08	07	10	09	05	14
42	4AL16CV065	PRANAV YADAV K V	10	10	09	10	05	15
43	4AL16CV066	PRAVEEN TIRUPATI K	06	10	04	08	05	13
44	4AL16CV071	RAMESH	10	12	08	11	05	16

FACULTY

HOD

H.O.D.
Dept. of Civil Engineering
Alva's Institute of Engg. & Technology
Mijar, Moodbidri - 574 225

Visvesvaraya Technological University

ALVA S INSTITUTE OF ENGINEERING AND TECHNOLOGY, MOODBIDRI

Branch : CV   Scheme : 2015   Semester : 7

SI NO.	USN	15CV71	15CV72	15CV73	15CV743	15CV751	15CVL76	15CVL77	15CVP78	STUDENT SIGNATURE
1	4AL14CV062	15	16	12	18	15	15	20	95	
2	4AL15CV017	20	18	15	20	18	19	20	92	
3	4AL15CV022	17	13	15	16	18	14	20	60	
4	4AL15CV061	17	15	16	19	19	16	20	94	
5	4AL15CV073	15	15	16	17	19	16	20	92	
6	4AL15CV080	16	17	17	18	17	16	20	96	
7	4AL15CV099	18	19	17	20	20	17	20	95	
8	4AL16CV002	19	18	16	19	20	19	20	96	
9	4AL16CV004	19	16	17	19	19	15	20	94	
10	4AL16CV005	16	15	13	17	17	18	20	92	
11	4AL16CV006	20	18	18	20	19	19	20	98	
12	4AL16CV007	16	12	14	14	16	15	20	93	
13	4AL16CV008	20	12	18	17	19	15	20	96	
14	4AL16CV009	20	19	19	17	19	18	20	98	
15	4AL16CV011	19	16	18	18	19	18	20	96	
16	4AL16CV016	18	15	15	18	17	17	20	98	
17	4AL16CV017	15	14	17	17	20	14	20	92	
18	4AL16CV019	16	14	17	17	17	16	20	98	
19	4AL16CV021	17	19	17	18	16	17	20	94	
20	4AL16CV023	20	19	17	20	19	18	20	94	
21	4AL16CV024	18	18	17	19	19	17	20	92	
22	4AL16CV026	20	19	18	20	20	17	20	98	
23	4AL16CV028	20	17	19	19	20	19	20	97	
24	4AL16CV029	19	12	12	18	16	18	20	90	
25	4AL16CV031	18	15	17	18	20	19	20	94	
26	4AL16CV032	17	13	13	18	17	15	20	94	
27	4AL16CV036	18	12	16	19	18	18	20	92	
28	4AL16CV037	18	19	18	19	19	16	20	94	
29	4AL16CV039	20	17	18	20	19	19	20	98	
30	4AL16CV040	19	17	18	19	19	18	20	94	
31	4AL16CV042	18	15	15	19	19	19	20	95	
32	4AL16CV044	17	12	16	18	20	18	20	95	
33	4AL16CV046	17	19	16	18	20	18	20	96	
34	4AL16CV051	20	19	18	20	20	19	20	92	
35	4AL16CV052	17	19	17	20	18	19	20	98	
36	4AL16CV053	19	16	15	18	19	18	20	95	
37	4AL16CV054	16	17	15	17	17	16	20	95	
38	4AL16CV057	17	13	17	17	18	16	20	95	

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ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

Shobhavana Campus, Mijar, Moodabidri, Mangalore Taluk, D.K – 574225
Phone: 08258-262725, Fax: 08258-262726
DEPARTMENT OF CIVIL ENGINEERING

Sl NO.	USN	15CV71	15CV72	15CV73	15CV743	15CV751	15CVL76	15CVL77	15CVP78	STUDENT SIGNATURE
39	4AL16CV061	20	14	15	18	17	18	20	98	
40	4AL16CV062	17	14	15	16	18	18	20	90	
41	4AL16CV063	18	12	14	13	16	16	20	60	
42	4AL16CV065	17	14	15	19	17	18	20	98	
43	4AL16CV066	15	14	13	16	17	18	20	60	
44	4AL16CV071	18	18	16	20	19	18	20	96	
45	4AL16CV074	16	13	15	19	15	17	20	97	
46	4AL16CV076	19	18	16	20	16	18	20	85	
47	4AL16CV077	17	18	16	20	18	18	20	96	
48	4AL16CV078	15	13	14	19	15	16	19	93	
49	4AL16CV080	20	18	19	20	19	19	20	99	
50	4AL16CV084	20	17	15	20	19	18	20	97	
51	4AL16CV085	20	16	16	18	19	17	20	98	
52	4AL16CV086	18	14	16	20	18	17	19	90	
53	4AL16CV087	18	18	19	20	19	18	20	98	
54	4AL16CV088	20	14	17	20	18	16	19	95	
55	4AL16CV089	16	17	14	19	15	16	19	93	
56	4AL16CV090	17	14	16	19	14	17	19	98	
57	4AL16CV093	20	18	19	20	18	17	20	85	
58	4AL16CV094	17	13	14	19	16	18	20	93	
59	4AL16CV095	17	16	19	20	18	18	20	98	
60	4AL16CV096	18	16	19	20	19	20	20	98	
61	4AL16CV099	19	20	14	20	19	16	20	97	
62	4AL16CV101	15	13	14	17	17	16	20	96	
63	4AL16CV103	19	18	20	20	19	19	20	97	
64	4AL16CV104	17	16	15	19	15	17	20	85	
65	4AL16CV106	18	15	16	20	16	17	20	98	
66	4AL16CV107	19	14	18	20	19	18	19	90	
67	4AL16CV108	20	17	19	20	19	19	20	98	
68	4AL16CV109	19	14	17	20	17	17	18	90	
69	4AL16CV110	20	16	18	20	18	17	20	97	
70	4AL16CV111	15	12	16	19	14	13	18	94	
71	4AL17CV400	17	13	14	18	16	18	19	97	
72	4AL17CV401	19	14	16	17	16	17	19	92	
73	4AL17CV403	14	13	13	17	14	16	20	94	
74	4AL17CV404	17	12	17	20	12	17	20	98	
75	4AL17CV405	20	16	18	20	20	17	20	98	
76	4AL17CV407	16	14	15	16	15	15	20	93	
77	4AL17CV408	17	12	16	20	14	16	19	98	
78	4AL17CV409	20	16	17	20	19	19	20	98	
79	4AL17CV410	18	14	15	20	15	18	19	94	
80	4AL17CV411	17	14	14	20	15	18	20	98	
81	4AL17CV412	17	19	17	19	17	16	20	90	
82	4AL17CV413	19	14	14	20	17	15	20	98	
83	4AL17CV414	15	16	15	19	16	14	20	90	
84	4AL17CV415	16	15	15	19	17	19	20	99	

Sl NO.	USN	15CV71	15CV72	15CV73	15CV743	15CV751	15CVL76	15CVL77	15CVP78	STUDENT SIGNATURE
85	4AL17CV416	16	16	14	19	13	17	19	95	
86	4AL17CV417	17	15	15	20	18	17	19	95	
87	4AL17CV418	19	14	16	20	15	17	19	98	
88	4AL17CV419	17	14	15	20	15	14	19	98	
89	4AL17CV420	18	13	15	20	15	17	20	98	
90	4AL17CV421	17	12	16	19	14	18	19	95	
91	4AL17CV422	18	16	17	20	14	17	19	96	
92	4AL17CV423	18	14	15	19	14	17	20	97	
–x–	Faculty Signature									----XXXXXXX----

* - values are either optional subjects or the faculty has not yet entered the marks

HOD
Seal and Signature

PRINCIPAL
Seal and Signature

H.O.D.
Dept. of Civil Engineering
Alva's Institute of Engg. & Technology
Mijar, Moodbidri - 574 225

Roll. No.	USN	NAME	I IA (15 M)	II IA (15 M)	III IA (15 M)	AVG IA(15 M)	ASSIG (05 M)	AVG IA (30 M)
35	4AL16CV052	MUTHURABASIMAYUM KRISHNAKUMARI DEVI	11	12	09	12	05	17
36	4AL16CV053	N H SHARATH	11	09	08	10	05	15
37	4AL16CV054	NAGALAKSHMI A	10	10	09	10	05	15
38	4AL16CV057	NEHA C	11	13	05	12	05	17
39	4AL16CV061	NONGMAITHEM ROSHAN	10	09	09	10	05	15
40	4AL16CV062	PRABHULING K D	12	08	08	10	05	15
41	4AL16CV063	PRAJWAL D BORE	08	07	10	09	05	14
42	4AL16CV065	PRANAV YADAV K V	10	10	09	10	05	15
43	4AL16CV066	PRAVEEN TIRUPATI K	06	10	04	08	05	13
44	4AL16CV071	RAMESH	10	12	08	11	05	16

FACULTY

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H.O.D.
Dept. of Civil Engineering
Alva's Institute of Engg. & Technology
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Result analysis