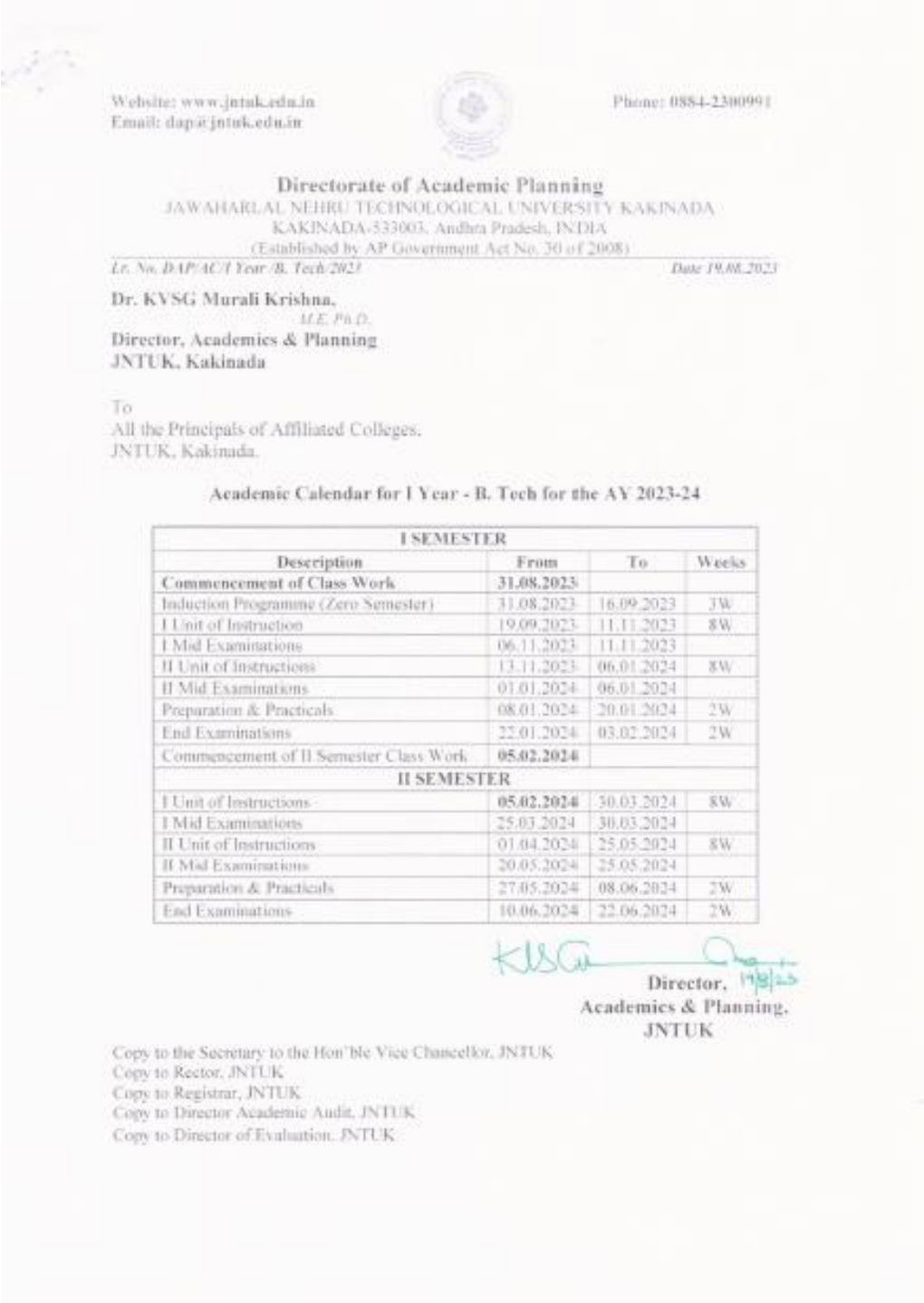
2.5 - Evaluation Process and Reforms

2.5.1 - Mechanism of internal assessment is transparent and robust in terms of frequency and mode.



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KAKINADA-533003, Andhra Pradesh, INDIA
(Established by AP Government Act No. 30 of 2008)

Lr. No. DAP/ACT Year /B. Tech/2023 *Date 19.08.2023*

Dr. KVSG Murali Krishna,
M.E. Ph.D.
Director, Academics & Planning
JNTUK, Kakinada

To
All the Principals of Affiliated Colleges,
JNTUK, Kakinada.

Academic Calendar for I Year - B. Tech for the AY 2023-24

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**31.08.2023**		
Induction Programme (Zero Semester)	31.08.2023	16.09.2023	3W
I Unit of Instruction	19.09.2023	11.11.2023	8W
I Mid Examinations	06.11.2023	11.11.2023	
II Unit of Instructions	13.11.2023	06.01.2024	8W
II Mid Examinations	01.01.2024	06.01.2024	
Preparation & Practicals	08.01.2024	20.01.2024	2W
End Examinations	22.01.2024	03.02.2024	2W
Commencement of II Semester Class Work	**05.02.2024**		
II SEMESTER			
I Unit of Instructions	**05.02.2024**	30.03.2024	8W
I Mid Examinations	25.03.2024	30.03.2024	
II Unit of Instructions	01.04.2024	25.05.2024	8W
II Mid Examinations	20.05.2024	25.05.2024	
Preparation & Practicals	27.05.2024	08.06.2024	2W
End Examinations	10.06.2024	22.06.2024	2W

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(Established by AP Government Act No. 30 of 2008)

Lr. No. DAP/ IC/II Year /B. Tech/2023 *Date 01.08.2023*

Dr. KVSG Murali Krishna,
M.E, Ph.D.,
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JNTUK, Kakinada

To
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Academic Calendar for II Year - B. Tech for the AY 2023-24

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**07.08.2023**		
I Unit of Instruction	07.08.2023	30.09.2023	8W
I Mid Examinations	25.09.2023	30.09.2023	
II Unit of Instructions	02.10.2023	25.11.2023	8W
II Mid Examinations	20.11.2023	25.11.2023	
Preparation & Practicals	27.11.2023	09.12.2023	2W
End Examinations	11.12.2023	23.12.2023	2W
Commencement of II Semester Class Work	**27.12.2023**		
II SEMESTER			
I Unit of Instructions	**27.12.2023**	17.02.2024	8W
I Mid Examinations	12.02.2024	17.02.2024	
II Unit of Instructions	19.02.2024	13.04.2024	8W
II Mid Examinations	08.04.2024	13.04.2024	
Preparation & Practicals	15.04.2024	27.04.2024	2W
End Examinations	29.04.2024	11.05.2024	2W
Summer Internship	13.05.2024	06.07.2024	8W
Commencement of III- I Class Work	08.07.2024		

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Lr. No. DAP/AC/III Year /B. Tech/2023 *Date 14.07.2023*

Dr. KVSG Murali Krishna,
M.E., Ph.D.
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JNTUK, Kakinada

To
All the Principals of Affiliated Colleges,
JNTUK, Kakinada.

Academic Calendar for III Year - B. Tech. for the AY 2023-24

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**17.07.2023**		
I Unit of Instruction	17.07.2023	09.09.2023	8W
I Mid Examinations	11.09.2023	16.09.2023	1W
II Unit of Instructions	18.09.2023	11.11.2023	8W
II Mid Examinations	13.11.2023	18.11.2023	1W
Preparation & Practicals	20.11.2023	25.11.2023	1W
End Examinations	27.11.2023	09.12.2023	2W
Commencement of II Semester Class Work	**11.12.2023**		
II SEMESTER			
I Unit of Instructions	**11.12.2023**	03.02.2024	8W
I Mid Examinations	05.02.2024	10.02.2024	1W
II Unit of Instructions	12.02.2024	06.04.2024	8W
II Mid Examinations	08.04.2024	13.04.2024	1W
Preparation & Practicals	15.04.2024	20.04.2024	1W
End Examinations	22.04.2024	04.05.2024	2W
Summer Internship	06.05.2024	13.07.2024	10W
Commencement of IV- I Class Work	15.07.2024		

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA-533003, Andhra Pradesh, INDIA
(Established by AP Government Act No. 30 of 2008)

Lr. No. DAP/AC/IV Year /B. Tech/2023 *Date 12.07.2023*

Dr. KVSG Murali Krishna,
M.E, Ph.D.,
Director, Academics & Planning
JNTUK, Kakinada

To
All the Principals of Affiliated Colleges,
JNTUK, Kakinada.

Academic Calendar for IV Year - B.Tech. for the AY 2023-24

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**17.07.2023**		
I Unit of Instruction	17.07.2023	09.09.2023	8W
I Mid Examinations	11.09.2023	16.09.2023	1W
II Unit of Instructions	18.09.2023	11.11.2023	8W
II Mid Examinations	13.11.2023	18.11.2023	1W
Preparation & Practicals	20.11.2023	25.11.2023	1W
End Examinations	27.11.2023	09.12.2023	2W
Commencement of II Semester Class Work	**11.12.2023**		

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(Established by AP Government Act No. 30 of 2008)

Lr. No. JNTUK/DAP/AC/I Year/M. Tech/M.Pharmacy/2023-24 *Date: 25-09-2023*

Dr. K. VENKATA REDDY,
M.Tech, Ph.D.,
Director i/c, Academic Planning

To
All the Principals of Affiliated Colleges,
JNTUK, Kakinada.

Academic Calendar of
I Year M.Tech/M.Pharmacy for the Academic Year 2023-24

Description	From	To	Weeks
I SEMESTER			
Commencement of Class Work	**04.10.2023**		
I Unit of Instruction	04.10.2023	02.12.2023	9W
I Mid Examinations	27.11.2023	02.12.2023	
II Unit of Instructions	04.12.2023	27.01.2024	8W
II Mid Examinations	22.01.2024	27.01.2024	
Preparation & Practicals	29.01.2024	03.02.2024	1W
End Examinations	05.02.2024	17.02.2024	2W
Commencement of II Semester Class Work	**19.02.2024**		
II SEMESTER			
I Unit of Instructions	**19.02.2024**	20.04.2024	9W
I Mid Examinations	15.04.2024	20.04.2024	
II Unit of Instructions	22.04.2024	04.05.2024	2W
Summer Holidays	06.05.2024	01.06.2024	4W
II Unit of Instructions	03.06.2024	13.07.2024	6W
II Mid Examinations	08.07.2024	13.07.2024	
Preparation & Practicals	15.07.2024	20.07.2024	1W
End Examinations	22.07.2024	03.08.2024	2W

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

ACADEMIC CALENDAR 2023-24

MBA/MCA II YEAR I & II SEMESTERS

I SEM

S. No	Description	Duration	
		From	To
1	Commencement of I Semester classwork	**16.09.2023**	
2	1st Spell of Instructions (including Dussehra Recess	16.09.2023	18.11.2023 (9 Weeks)
3	**Dussehra Recess**	23.10.2023	28.10.2023 (1 Week)
4	First Mid Term Examinations	20.11.2023	25.11.2023 (1 Week)
5	Submission of First Mid Term Exam Marks to the University on or before	02.12.2023	
6	2nd Spell of Instructions	28.11.2023	29.01.2024 (8 Weeks)
7	Second Mid Term Examinations	30.01.2024	03.02.2024 (1 Week)
8	Preparation Holidays and Practical Examinations	05.02.2024	09.02.2024 (1 Week)
9	Submission of Second Mid Term Exam Marks to the University on or before	07.02.2024	
10	End Semester Examinations	**12.02.2024**	**24.02.2024 (2 Weeks)**

Note: No. of Working / Instructional Days: 90

II SEM

S. No	Description	Duration	
		From	To
1	Commencement of II Semester classwork	***26.02.2024***	
2	1st Spell of Instructions	26.02.2024	29.04.2024 (9 Weeks)
3	First Mid Term Examinations	30.04.2024	04.05.2024 (1 Week)
4	Submission of First Mid Term Exam Marks to the University on or before	10.05.2024	
5	2nd Spell of Instructions (including Summer Vacation)	06.05.2024	12.07.2024 (10 Weeks)
6	**Summer Vacation**	13.05.2024	25.05.2024(2 Weeks)
7	Second Mid Term Examinations	15.07.2024	20.07.2024 (1 Week)
8	Preparation Holidays and Practical Examinations	22.07.2024	27.07.2024 (1 Week)
9	Submission of Second Mid Term Exam Marks to the University on or before	24.07.2024	
10	End Semester Examinations	**29.07.2024**	**09.08.2024 (2 Weeks)**

Note: No. of Working / Instructional Days: 90

11/9/23

REGISTRAR

2.5.1 Quality of internal semester Question papers, Assignments and Evaluation.

Internal Assessment (Mid Examination) Question Paper Template

UNIVERSAL COLLEGE OF ENGINEERING & TECHNOLOGY

III B.Tech I Sem (R20) MID - 1 EXAMINATION

Subject: MACHINE LEARNING Time: 03:00 pm to 04:30 pm Date: **13-03-2024**

Section: CSE

Answer the following questions Max. Marks: 30

1.a)

b)

2.a)

b)

3.a)

b)

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Sample internal question paper analysis:

Regulation: R20 Year: III—I **Academic Year-2023-2024**

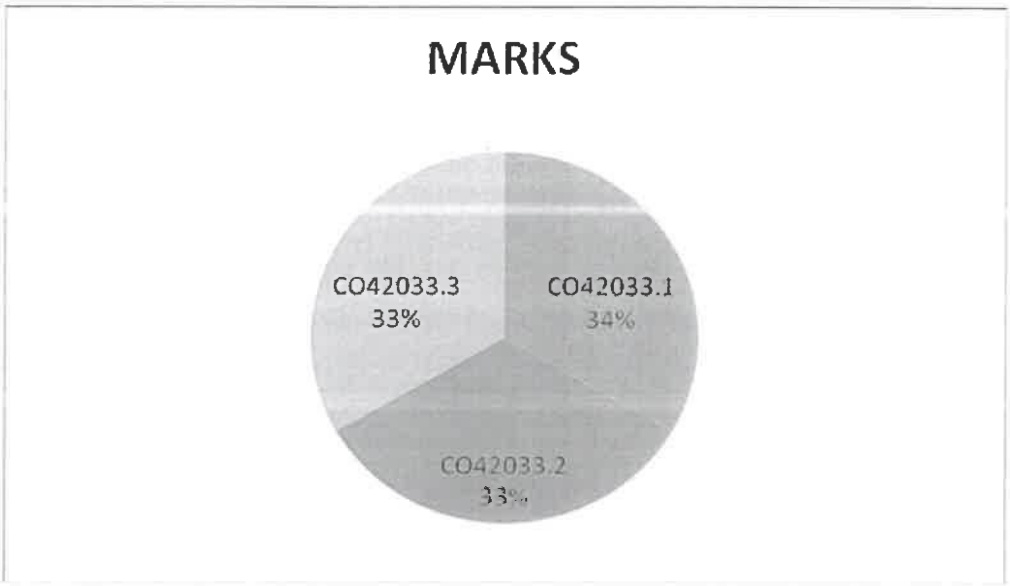
Subject name: Machine learning

Internal (Mid)-1

Q.No	Question	Marks	CO	TL
1	a) Explain about machine learning b).Explain the types of learning.	10	CO42033.1	Analyzing
2	a).Explain K-ns algorithm b).Explain clustering in machine learning.	10	CO42033.2	Understanding
3	a).Explain neural network b).Implementing MLP's with kera's.	10	CO42033.3	Remember

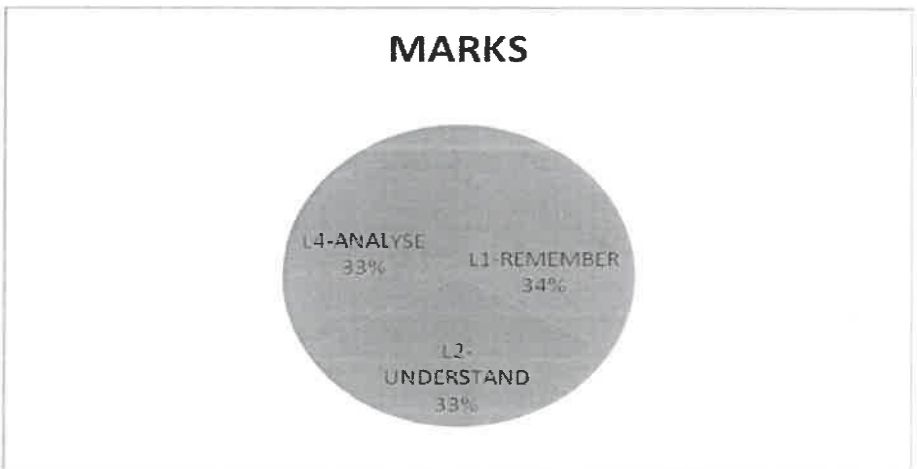
TL: Taxonomy Level

CO	MARKS	PERCENTAGE
CO42033.1	10	33%
CO42033.2	10	33%
CO42033.3	10	33%



Course Outcome wise marks distribution

BTL	MARKS	PERCENTAGE
L1-REMEMBER	**10**	**33.30%**
L2-UNDERSTAND	**10**	**33.30%**
L3-APPLY		
L4-ANALYSE	**10**	**33.30%**
L5-EVALUATE		
L6-CREATE		



BLOOMS LEVEL WISE MARKS DISTRIBUTION

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Sample internal question paper analysis:

Regulation: R20 Year :III-I Academic Year: **2023-2024**

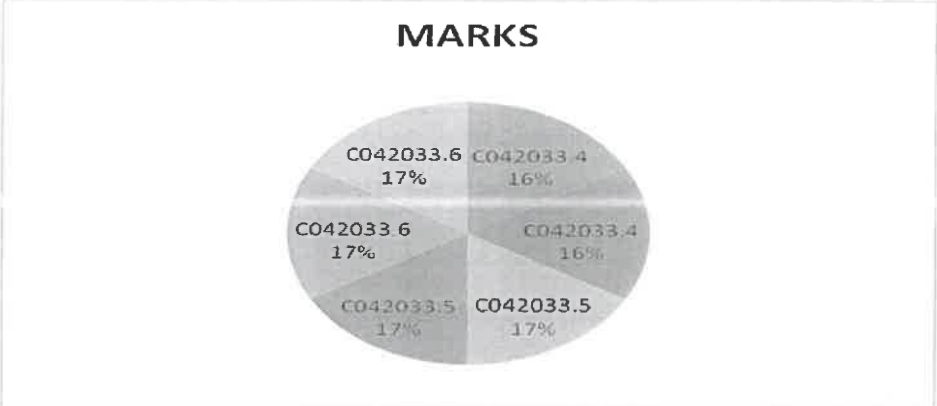
Subject name: Machine learning

Internal (Mid)-11

Q.No	Question's	Marks	CO	TL
1	a).Explain Ensemble learning	5	C042033.4	Understand
	b). Explain voting classifiers	5	C042033.4	analyze
2	a).Explain bagging and pasting	5	C042033.5	Understand
	b).Explain random forests	5	C042033.5	Remember
3	a).Explain linear SVM Classification	5	C042033.6	Understand
	b).Explain naïve bayes Classification	5	C042033.6	Apply

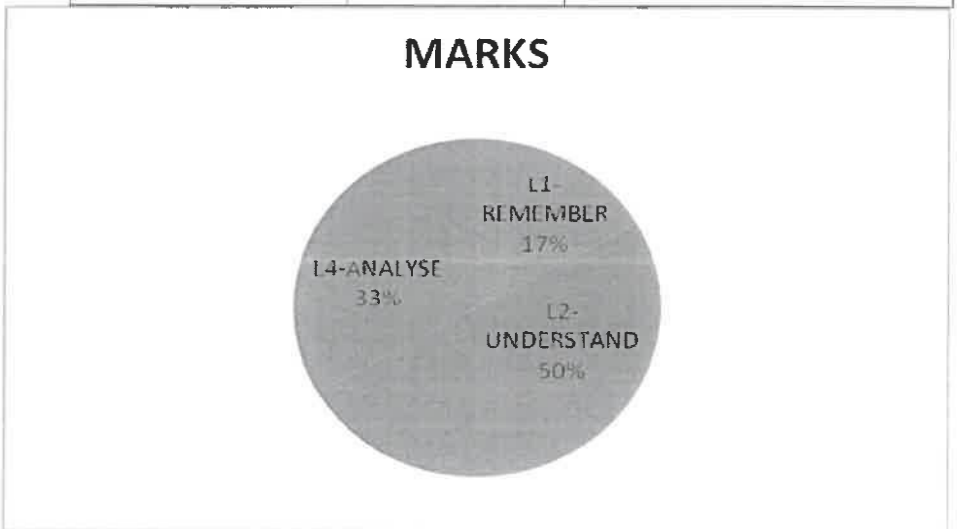
TL: Taxonomy Level

CO	MARKS	PERCENTAGE
C042033.4	5	16.66
C042033.4	5	16.66
C042033.5	5	16.66
C042033.5	5	16.66
C042033.6	5	16.66
C042033.6	5	16.66



Course Outcome wise marks distribution

BTL	MARKS	PERCENTAGE
L1-REMEMBER	5	16.66%
L2-UNDERSTAND	15	50.00%
L3-APPLY		
L4-ANALYSE	10	33.32%
L5-EVALUATE		
L6-CREATE		



BLOOMS LEVEL WISE MARKS DISTRIBUTION

Sample End Semester question paper analysis:

Regulation: R20 Year: III-I Academic Year: **2023-2024**

Subject name: Machine learning

Code No: **R2031051** **R20** SET-- 4

III B. Tech I Semester Regular Examinations, July -2023

MACHINE LEARNING

(Com. to CSE & IT)

Time: 3hours Max.Marks:70

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

*****

UNIT-I

1. a) Compare and contrast Instance-Based and Model-Based Learning [7M]
   b).Explain the process of Machine Learning step by step. [7M]

(OR)

2. a) What is Empirical Risk Minimization? Explain Regularized and Structural risk minimizations? [7M]
   b) Write about Sampling distribution of an estimator. [7M]

UNIT-II

3. a) Write and explain linear regression with an example. [7M]
   b) What is the Sigma id function? Where it can be used? Explain. [7M]

(OR)

4. a) What is Over fitting? Explain about SVM algorithm to overcome it? [7M]
   b) Discuss about Linear regression with an example. [7M]

UNIT-III

5. a) Illustrate the stacking mechanism in ensemble techniques. [7M]
   b) What is bagging technique? Explain about Random Forest Algorithm. [7M]

(OR)

6. a) What is Linear classifier? Explain SVM linear classification. [7M]
   b) What is Kernel trick? Describe polynomial kernel function. [7M]

UNIT-IV

7.a).What are the main applications of clustering algorithms? Illustrate. [7M]
   b) How can we use clustering for semi-supervised learning? Explain [7M]

(OR)

8.a) Explain the concept of PCA for Compression. [7M]
   b) How can you evaluate the performance of a dimensionality reduction algorithm on your dataset? Explain. [7M]

UNIT-V

9.a) Explain about Multi Layer Perceptron (MLP)ANN architecture. [7M]
   b) How is data loaded with Tensor Flow? Illustrate the steps. [7M]

(OR)

10.a) What types of neural network layers does Keras support? Explain them. [7M]
   b) Discuss about shuffle()method in Keras. [7M]

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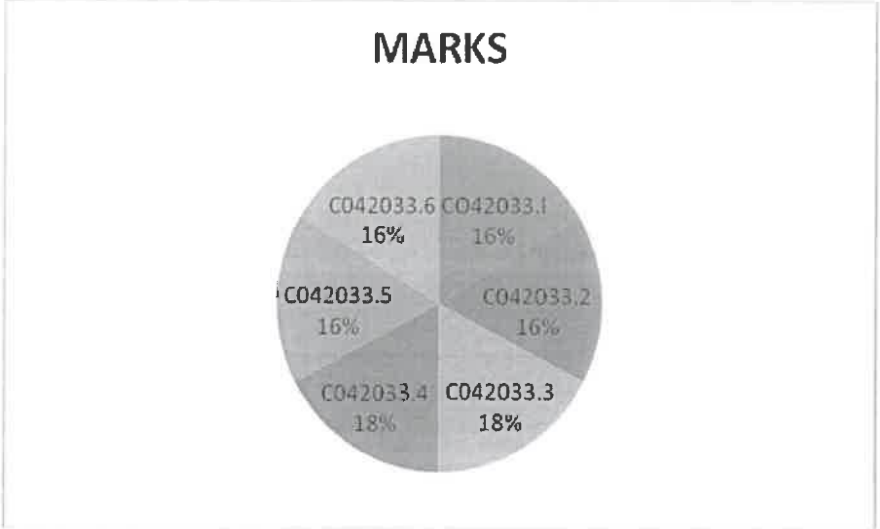
III B.Tech I Semester Regular/Supplyentory examinations July 2024

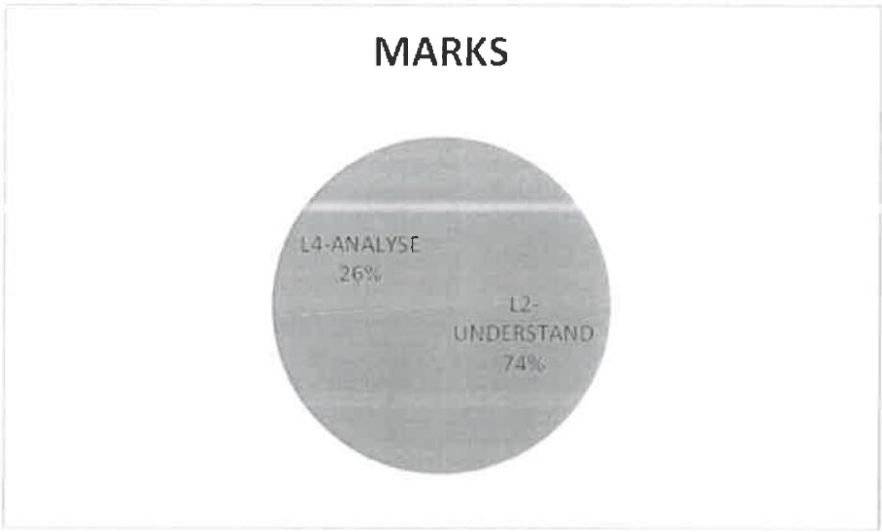
Q.No	Question	marks	CO'S	TL
1.a	Compare and contrast Instance-Based and Model-Based Learning	7	cO42033.2	Understand
1.b	Explain the process of Machine Learning step by step	7	CO42033.4	Analyze
2.a	What is Empirical Risk Minimization? Explain Regularized and Structural risk minimizations	7	cO42033.2	Understand
2.b	Write about Sampling distribution of an estimator	7	CO42033.4	Analyze
3.a	Write and explain linear regression with an example	7	cO42033.2	Understand
3.b	What is the Sigma id function? Where it can be used? Explain.	7	CO42033.4	Analyze
4.a	What is Over fitting? Explain about SVM algorithm to overcome it	7	cO42033.2	Understand
4.b	Discuss about Linear regression with an example	7	CO42033.4	Analyze
5.a	Illustrate the stacking mechanism in ensemble techniques	7	cO42033.2	Understand
5.b	What is bagging technique? Explain about Random Forest Algorithm.	7	CO42033.4	Analyze
6.a	What is Linear classifier? Explain SVM linear classification	7	cO42033.2	Understand
6.b	What is Kernel trick? Describe polynomial kernel function	7	cO42033.2	Understand
7.a	What are the main applications of clustering algorithms? Illustrate.	7	CO42033.4	Analyze
7.b	How can we use clustering for semi-supervised learning? Explain	7	cO42033.2	Understand
8.a	Explain the concept of PCA for Compression	7	CO42033.S	Understand
8.b	How can you evaluate the performance of a dimensionality reduction algorithm on your dataset? Explain	7	cO42033.2	Understand
9.a	Explain about Multi Layer Perceptron (MLP)ANN architecture	7	CO42033.6	Understand
9.b	How is data loaded with Tensor Flow? Illustrate the steps	7	CO42033.4	Analyze
10.a	What types of neural network layers does Keras support? Explain them.	7	CO42033.4	Analyze
10.b	Discuss about shuffle()method in Keras	7	CO42033.6	Understand

CO'S	MARKS	PERCENTAGE
CO42033.I	16	16.32
C042033.2	16	16.32
C042033.3	17	17.34
C042033.4	17	17.34
C042033.5	16	16.32
C042033.6	16	16.32



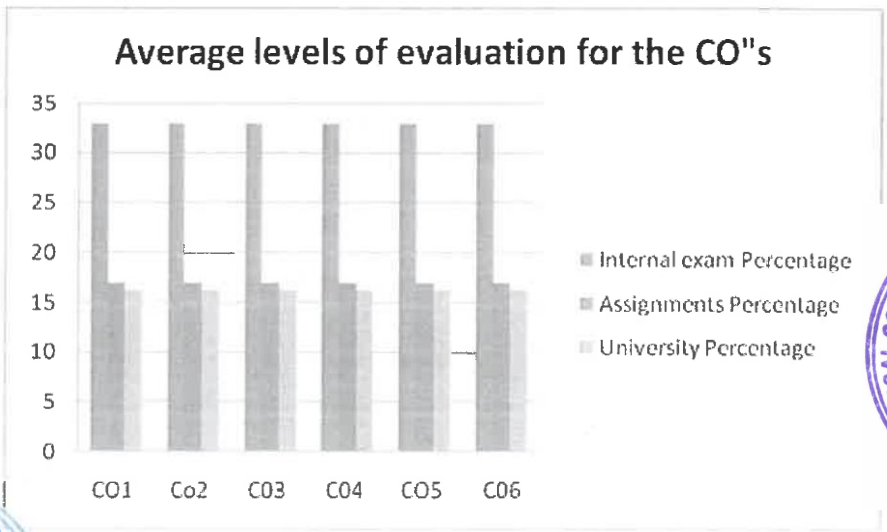
Course Outcome wise marks distribution

BTL	MARKS	PERCENTAGE
L1-REMEMBER		
L2-UNDERSTAND	74	74
L3-APPLY		
L4-ANALYSE	26	26
LS-EVALUATE		
L6-CREATE		

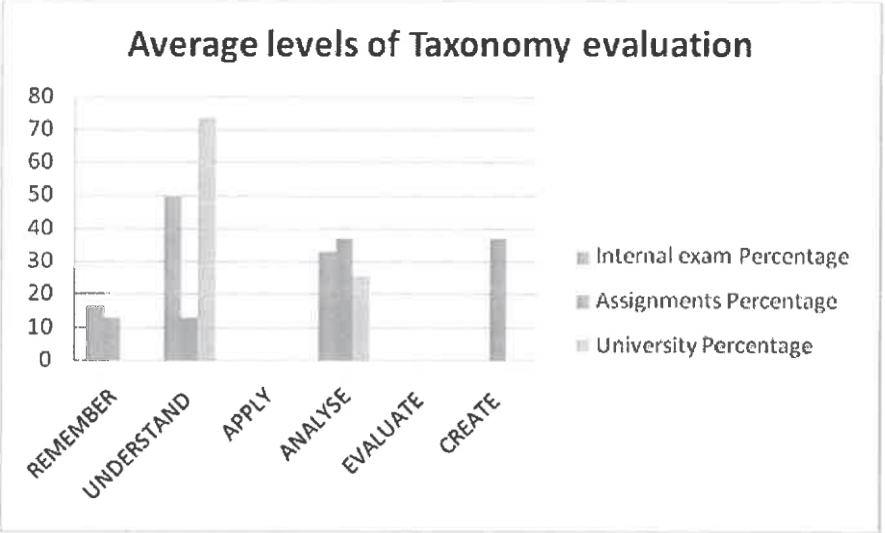


BLOOMS LEVEL WISE MARKS DISTRIBUTION

Average levels of evaluation for the CO'S						
COURSE OUTCOME	CO1	Co2	C03	C04	CO5	C06
Internal exam Percentage	33	33	33	33	33	33
Assignments Percentage	17	17	17	17	17	17
University Percentage	16.32	16.32	16.32	16.32	16.32	16.32



Average levels of Taxonomy evaluation						
COURSE OUTCOME	REMEMBER	UNDERSTAND	APPLY	ANALYSE	EVALUATE	CREATE
Internal exam Percentage	16.66	50		33.32		
Assignments Percentage	13	13		37		37
University Percentage		74		26		



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2.5.1 Quality of internal semester Question papers, Assignments and Evaluation.

Internal Assessment (Mid Examination) Question Paper Template

UNIVERSAL COLLEGE OF ENGINEERING & TECHNOLOGY

III B.Tech I Sem (R20) MID - 1 EXAMINATION

Subject Design and Analysis of Algorithms Time: 03:00 pm to 04:30 pm Date: **13-08-2024**

Section: CSE

Answer the following questions Max. Marks: 30

1.a)

b)

2.a)

b)

3.a)

b)

III B.Tech I Sem (R20) MID – 2 EXAMINATION

Subject Design and Analysis of Algorithms Time: 03:00 pm to 04:30 pm Date: **20-10-2024**

Section: CSE

Answer the following questions Max. Marks: 30

1.a)

b)

2.a)

b)

3.a)

b)

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Sample internal question paper analysis:

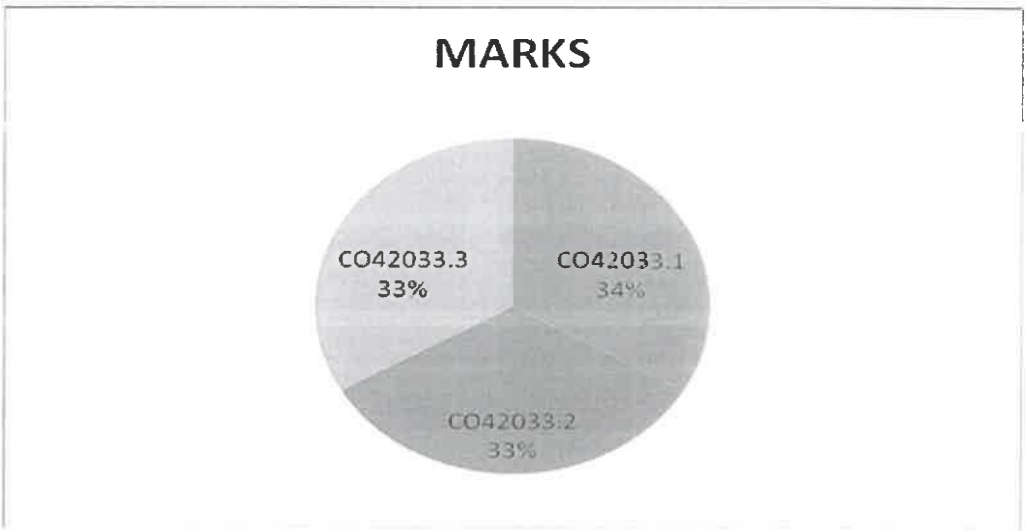
Regulation: R20 Year: III—I Academic Year: **2023-2024** . Subject name: Design and Analysis of Algorithms

Internal (Mid)-1

Q.No	Question	Marks	CO	TL
1	**a) Define Algorithm** **b) Explain asymptotic notation**	10	CO42033.1	Analyzing
2	**a)Explain Binary search** **b) Explain general method**	10	CO42033.2	Understanding
3	**a)Explain quick sort** **b)Explain minimum cost spanning tree**	10	CO42033.3	Remember

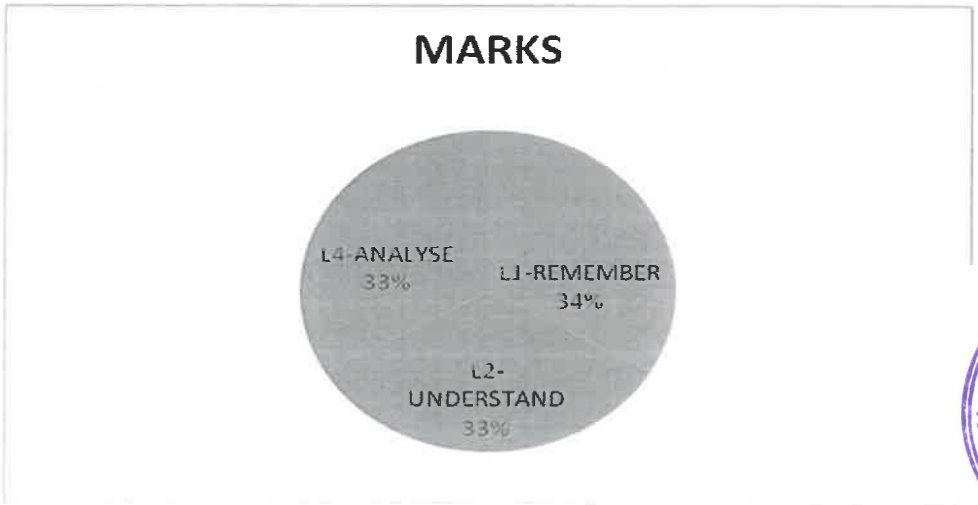
TL: Taxonomy Level

CO	MARKS	PERCENTAGE
CO42033.1	10	33%
CO42033.2	10	33%
CO42033.3	10	33%



Course Outcome wise marks distribution

BTL	MARKS	PERCENTAGE
L1-REMEMBER	**10**	**33.30%**
L2-UNDERSTAND	**10**	**33.30%**
L3-APPLY		
L4-ANALYSE	**10**	**33.30%**
L5-EVALUATE		
L6-CREATE		



BLOOMS LEVEL WISE MARKS DISTRIBUTION

Sample internal question paper analysis:

Regulation: R20 Year: III-I Academic Year: **2023-2024**

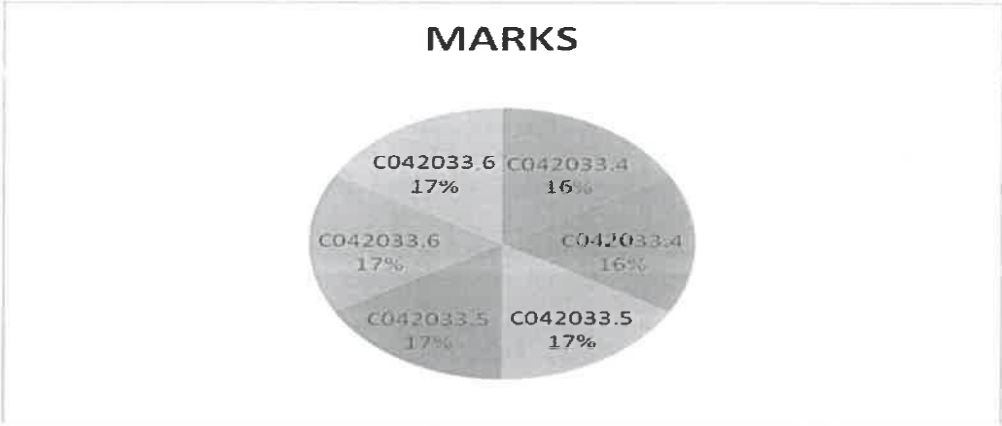
Subject name: Design and Analysis of Algorithms

Internal (Mid)-11

Q.No	Question's	Marks	CO	TL
1	**a).Explain multistage graphs**	5	C042033.4	**Understand**
	b). Explain all pairs shortest paths	5	C042033.4	**analyze**
2	**a).Explain 8 Queen problem**	5	C042033.5	**Understand**
	b).Define Graph coloring	5	C042033.5	**Remember**
3	**a).Explain non-deterministic algorithm**	5	C042033.6	**Understand**
	b).Explain cook's theorem	5	C042033.6	**Apply**

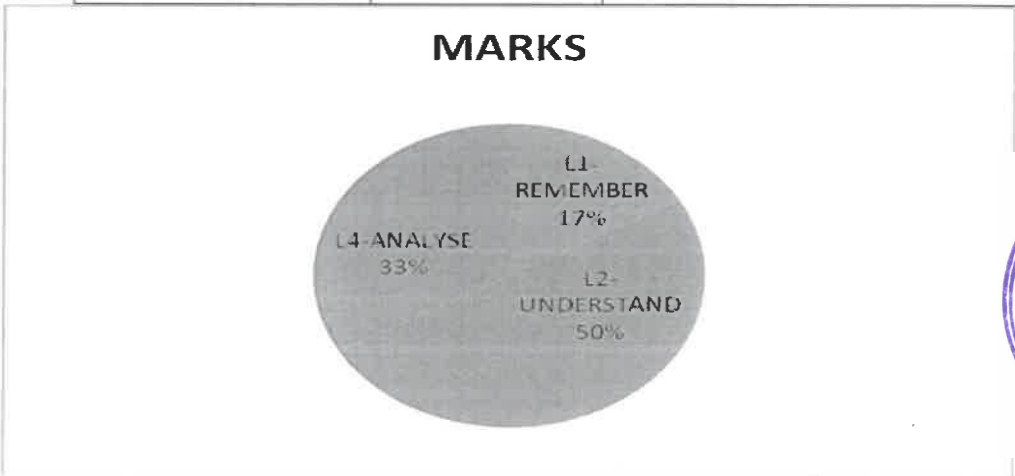
TL: Taxonomy Level

CO	MARKS	PERCENTAGE
C042033.4	5	16.66
C042033.4	5	16.66
C042033.5	5	16.66
C042033.5	5	16.66
C042033.6	5	16.66
C042033.6	5	16.66



Course Outcome wise marks distribution

BTL	MARKS	PERCENTAGE
L1-REMEMBER	5	16.66%
L2-UNDERSTAND	15	50.00%
L3-APPLY		
L4-ANALYSE	10	33.32%
L5-EVALUATE		
L6-CREATE		



BLOOMS LEVEL WISE MARKS DISTRIBUTION

Sample End Semester question paper analysis:

Regulation: R20 Year: III-I Academic Year: **2023-2024**

Subject name: Design and Analysis of Algorithms

Code No: R2031423 **R20** SET -1

III B. Tech I Semester Regular Examinations, July -2023 DESIGN AND ANALYSIS OF ALGORITHMS

(Common to CSE(AIML),CSE(AI),CSE(DS)CSE(AIDS), AIDS,AIML)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

*****

UNIT-I

1. a) Write an algorithm for linear search and analyze the algorithm for its timecomplexity [7M]
   b) Write a short notes on probabilistic analysis. Discuss its role in Algorithmic analysis. [7M]

(OR)

2. a) Write the properties of algorithm and various fields of study in algorithms. [7M]
   b) Differentiate performance measurement and performance estimation ofalgorithms [7M]

UNIT-II

3. a) Design an algorithm to sort the given list of elements using Quick Sort incorporating divide and conquer technique. Sort the following list using thesame and compute its average case time efficiency: 8, 3, 0, 9, 6, 1, 3, 4. [7M]
   b) Consider the following instance of Knapsack problem N=3, M=20, (p1,p2,p3)=(25,24,15), (w1,w2,w3)=(18,15,10) Calculate Maximum profit, Minimum weight and Maximum profit per unit weight. [7M]

(OR)

4. a) Explain the merge sort algorithm 310, 285, 179, 652, 351, 423, 861, 254,450, 520. Derive the time complexity from T(n)=2T(n/2) +cn
   b) Explain single source shortest path Problem with example. [7M]

UNIT-III

5. a) Use the function OBST to compute w(i,j), r(i,j), and c(i,j), $0 \le i < j \le 4$, for the identifier set (a1, a2, a3, a4) = (do, if, int, while) with p(1 : 4) = (3, 3, 1, 1) and q(0:4)=(2,3,1,1,1). Using the r(i,j)'s construct the optimal binary search tree
   b) Write and explain an algorithm to compute the all pairs shortest path using dynamic programming and prove that it is optimal.

(OR)

6. a) Solve the following 0/1 Knapsack problem using dynamic programming P=(11, 21, 31, 33), W= (2, 11, 22, 15), C=40, n=4.[7M]
   b) Discuss the time and space complexity of Dynamic Programming traveling sales person algorithm.[7M]

UNIT-IV

7. a) Write an algorithm for sum of subsets problem. [7M]

   b) Find a solution to the 8-Queens problem using backtracking strategy. Draw thesolution space using necessary bounding function [7M]

(OR)

8. a) Describe the algorithm for Hamiltonian cycles and Determine the order of magnitude of the worst-case computing time for the backtracking procedurethat finds all Hamiltonian cycles. [7M]
   b) Write the algorithm for general iterative backtracking method and explain various factors that define the efficiency of backtracking [7M]

UNIT-V

9. a) State and prove Cook's theorem [7M]
   b) Explain the P, NP, NP-Hard and NP- complete classes with suitable examples [7M]

(OR)

10. a) Write about non deterministic algorithms and choice, failure and successfunctions with search example [7M]
    b) Using an example prove that, satisfiability of boolean formula in 3-Conjunctive Normal form is NP-Complete. [7M]

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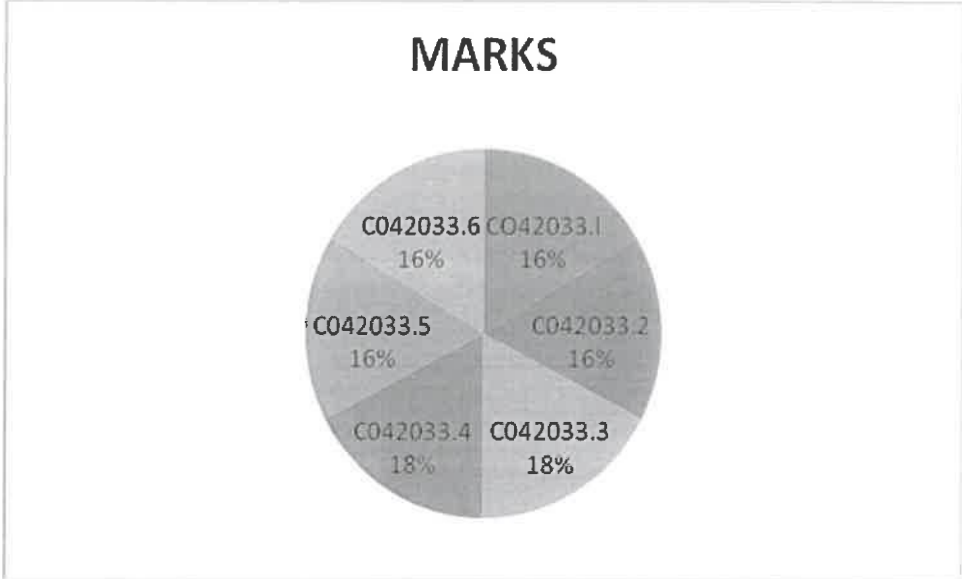
III B.Tech I Semester Regular/Supplymentory examinations July 2024

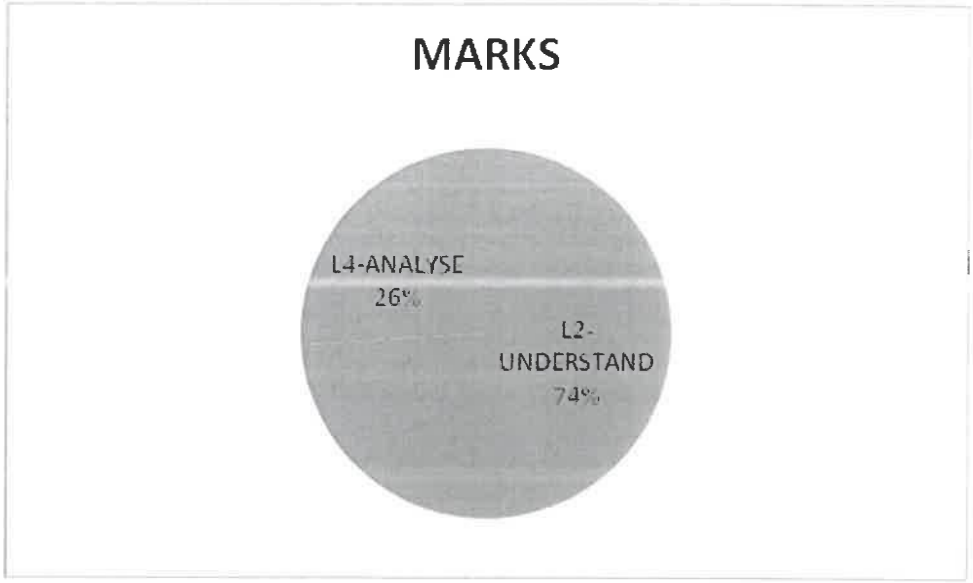
Q.No	Question	marks	CO'S	TL
1.a	Write an algorithm for linear search and analyze the algorithm for its timecomplexity	7	cO42033.2	Understand
1.b	Write a short notes on probabilistic analysis. Discuss its role in Algorithmicanalysis	7	CO42033.4	Analyze
2.a	Write the properties of algorithm and various fields of study in algorithms	7	cO42033.2	Understand
2.b	Differentiate performance measurement and performance estimation ofalgorithms	7	CO42033.4	Analyze
3.a	Design an algorithm to sort the given list of elements using Quick Sort incorporating divide and conquer technique. Sort the following list using thesame and compute its average case time efficiency: 8, 3, 0, 9, 6, 1, 3, 4	7	cO42033.2	Understand
3.b	Consider the following instance of Knapsack problem N=3, M=20, (p1,p2,p3)=(25,24,15), (w1,w2,w3)=(18,15,10) Calculate Maximum profit,Minimum weight and Maximum profit per unit weight..	7	CO42033.4	Analyze
4.a	Explain the merge sort algorithm 310, 285, 179, 652,351, 423, 861, 254,450,520. Derive the time complexity from T(n)=2T(n/2) +cn	7	cO42033.2	Understand
4.b	Explain single source shortest path Problem with example	7	CO42033.4	Analyze
5.a	Use the function OBST to compute w(i,j), r(i,j), and c(i,j), $0 \le i < j \le 4$, for the identifier set (a1, a2, a3, a4) = (do, if, int, while) with p(1 : 4) = (3, 3, 1, 1) and q(0:4)=(2,3,1,1,1). Using the r(i,j)'s construct the optimal binary search tree	7	cO42033.2	Understand
5.b	Write and explain an algorithm to compute the all pairs shortest path using dynamic programming and prove that it is optimal.	7	CO42033.4	Analyze
6.a	Solve the following 0/1 Knapsack problem using dynamic programming P=(11, 21, 31, 33), W= (2, 11, 22, 15), C=40, n=4.	7	cO42033.2	Understand
6.b	Discuss the time and space complexity of Dynamic Programming traveling sales person algorithm.	7	cO42033.2	Understand
7.a	Write an algorithm for sum of subsets problem.	7	CO42033.4	Analyze
7.b	Find a solution to the 8-Queens problem using backtracking strategy. Draw thesolution space using necessary bounding function	7	cO42033.2	Understand
8.a	Describe the algorithm for Hamiltonian cycles and Determine the order of magnitude of the worst-case computing time for the backtracking procedurethat finds all Hamiltonian cycles	7	CO42033.S	Understand
8.b	Write the algorithm for general iterative backtracking method and explainvarious factors that define the efficiency of backtracking	7	cO42033.2	Understand
9.a	State and prove Cook's theorem	7	CO42033.6	Understand
9.b	Explain the P, NP, NP-Hard and NP- complete classes with suitable examples	7	CO42033.4	Analyze
10.a	Write about non deterministic algorithms and choice, failure and successfunctions with search example .	7	CO42033.4	Analyze
10.b	Using an example prove that, satisfiability of boolean formula in 3-ConjunctiveNormal form is NP-Complete	7	CO42033.6	Understand

CO'S	MARKS	PERCENTAGE
CO42033.I	16	16.32
C042033.2	16	16.32
C042033.3	17	17.34
C042033.4	17	17.34
C042033.5	16	16.32
C042033.6	16	16.32



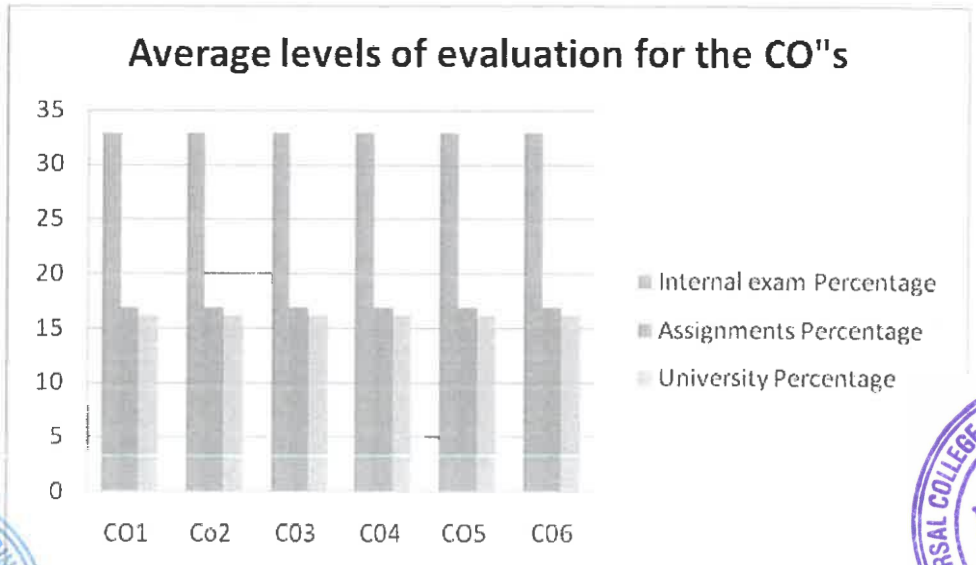
Course Outcome wise marks distribution

BTL	MARKS	PERCENTAGE
L1-REMEMBER		
L2-UNDERSTAND	74	74
L3-APPLY		
L4-ANALYSE	26	26
LS-EVALUATE		
L6-CREATE		



BLOOMS LEVEL WISE MARKS DISTRIBUTION

Average levels of evaluation for the CO'S						
COURSE OUTCOME	CO1	Co2	C03	C04	CO5	C06
Internal exam Percentage	33	33	33	33	33	33
Assignments Percentage	17	17	17	17	17	17
University Percentage	16.32	16.32	16.32	16.32	16.32	16.32



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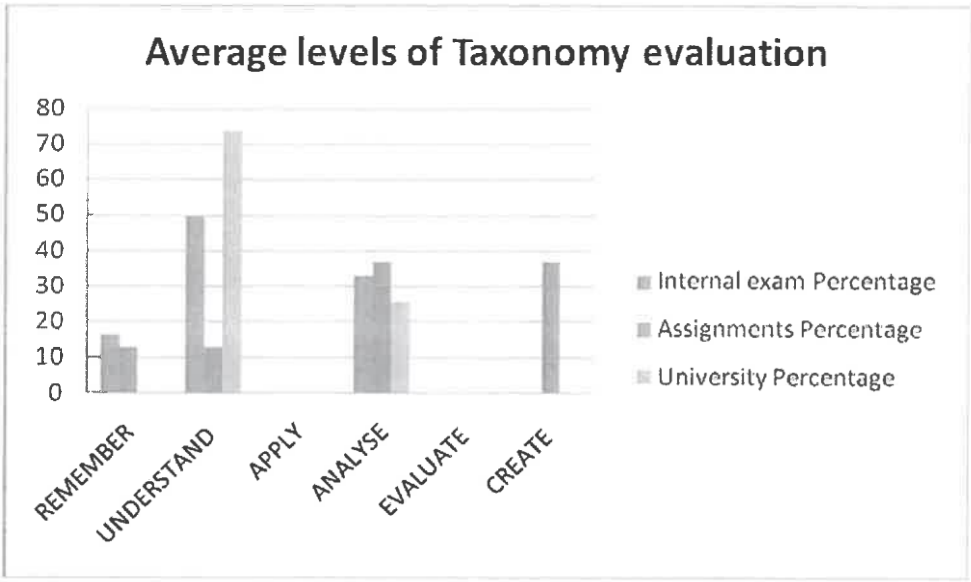
Average levels of Taxonomy evaluation						
COURSE OUTCOME	REMEMBER	UNDERSTAND	APPLY	ANALYSE	EVALUATE	CREATE
Internal exam Percentage	16.66	50		33.32		
Assignments Percentage	13	13		37		37
University Percentage		74		26		



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III B.Tech I Sem (R20) MID - 1 EXAMINATION

Subject:RS&GIS **Time : 10:00 am to 11:30 am** **Date :** **Section : CIVIL**

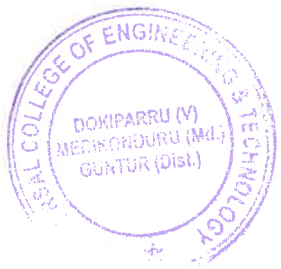
Answer the following questions **Max. Marks : 30**

1.Explain what is electro magnetic spectrum

2. What is visual interpretation and explain it's elements.

3. a) What is GIS and Explain it's terminology.

b) Write about key component's of GIS.



Sample Internal Question Paper Analysis:

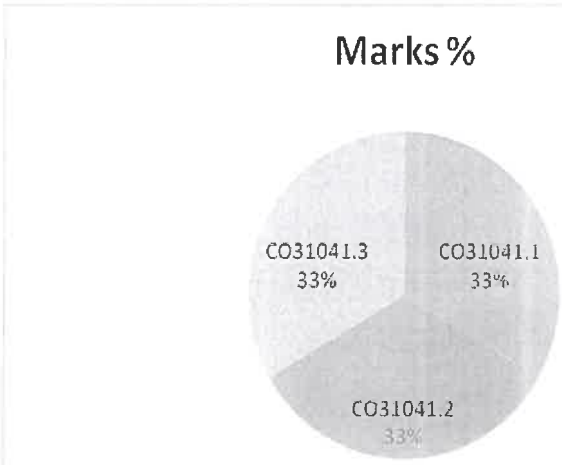
Regulation: R20 **Year: III-I** **Academic Year: 2022-23**

Subject/Laboratory name: RS&GIS

Internal (Mid) - 1

Q.No	Question	Marks	CO	TL
1.	Explain what is electro magnetic spectrum.	10	CO3101B.1	Understand
2.	What is visual interpretation and explain it's elements.	10	CO3101B.2	Remember
3.	a) What is GIS and Explain it's terminology. b) Write about key componenets of GIS.	5+5	CO3101.B3	Remember

CO	Marks	%
CO31041.1	10	33
CO31041.2	10	33
CO31041.3	10	33



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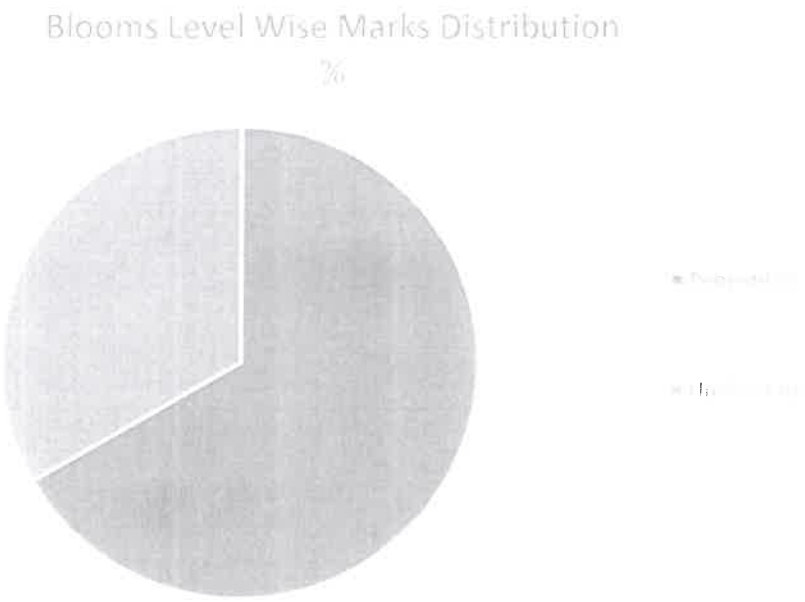
Course Outcome wise marks distribution

TL: Taxonomy Level

BTL	Marks	%
L1-Remember	20	66
L2-Understand	10	33
L3-Apply		
L4-Analyze		
L5-Evaluate		
L6-Create		



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III B.Tech I Sem (R20) MID – 2 EXAMINATION

Subject: RS&GIS **Time: 03:00 pm to 04:30 pm** **Date** **Section : CIVIL**

Answer the following questions **Max. Marks : 30**

1. Explain in detail about Map projections.

2. Explain the application of remote sensing in Land use Land cover mapping

3. Explain the role of Remote Sensing and GIS in urban applications in today's scenario.

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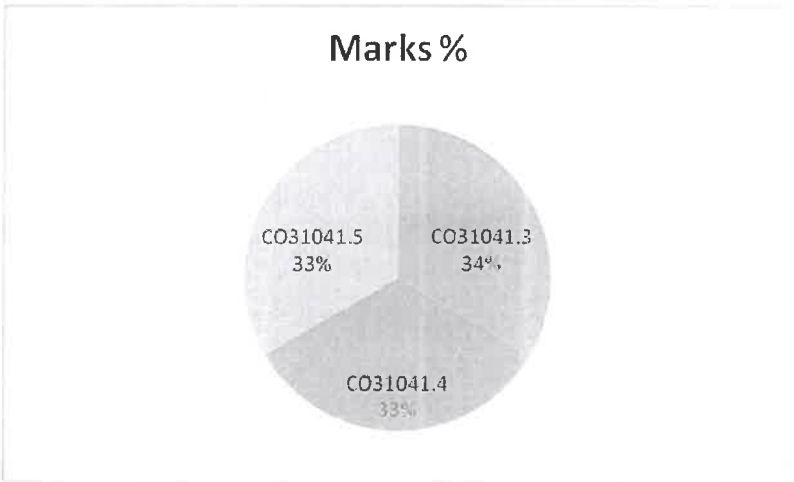
Regulation: R20 **Year: III-I** **Academic Year: 2022-23**

Subject/Laboratory name: RS&GIS

Internal (Mid) - 2

Q.No	Question	Marks	CO	TL
1.	Explain in detail about Map projections.	10	CO3101B.3	Understand
2.	Explain the application of remote sensing in Land use Land cover mapping	10	CO3101B.4	Understand
3.	Explain the role of Remote Sensing and GIS in urban applications in today's scenario.	10	CO3101B.5	Understand

CO	Marks	%
CO31041.3	10	33
CO31041.4	10	33
CO31041.5	10	33



Course Outcome wise marks distribution

UNIVERSAL COLLEGE OF ENGINEERING & TECHNOLOGY
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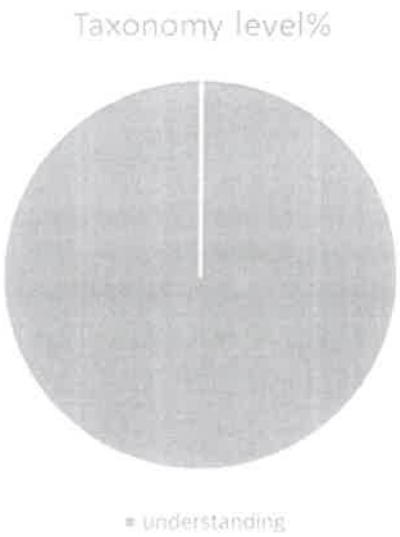
BTL	Marks	%
L1-Remember		
L2-Understand	30	99
L3-Apply		
L4-Analyze		
L5-Evaluate		
L6-Create		

Blooms Level wise Marks Distribution



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NAME OF THE FACULTY: K.SAHITHI **DESIGINATION**: ASSISTANT PROFESSOR.

ACADEMIC YEAR: 2023-24 **YEAR & SEM**: III-I ,CE

MID-I QUESTION PAPER EVALUATION

Q.No	Scheme	Evaluation	Total Marks
1	Explain what is electro magnetic spectrum.	10M	10M
2	What is visual interpretation and explain it's elements.	10M	10M
3	a) What is GIS and Explain it's terminology.	5M	10M
	b) Write about key components of GIS.	5M	

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NAME OF THE FACULTY:K.SAHITHI **DESIGINATION**: ASSISTANT PROFESSOR.

ACADEMIC YEAR: 2023-24 **YEAR & SEM**: III-I CE

MID-2 QUESTION PAPER EVALUATION

Q.No	Scheme	Evaluation	Total Marks
1	Explain in detail about Map projections.	10M	10M
2	Explain the application of remote sensing in Land use Land cover mapping	10M	10M
3	Explain the role of Remote Sensing and GIS in urban applications in today's scenario.	10M	10M

UNIVERSAL COLLEGE OF ENGINEERING & TECHNOLOGY DOKIPARRU (M) MEDIKONDURU (Md.) GUNTUR (Dist.)

Sample Assignment Question Paper Analysis:

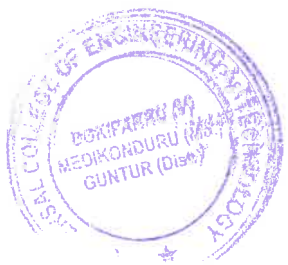
Regulation: R20 **Year: III-I** **Academic Year: 2023-24**

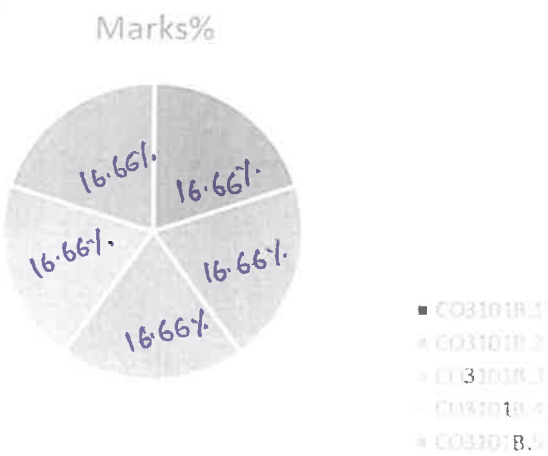
Subject name: RS&GIS

Q NO	Assessment question	Marks	Connected CO	BTL
A1.1	What is sensor and explain the types of sensors.	5	CO3101B.1	Remember
A1.2	What is the definition,concept of remote sensing and explain the elements of remote sensing.	5	CO3101B.1	Remember
A2.1	What is supervised classification and unsupervised classification?	5	CO3101B.2	Remember
A2.2	a) Explain digital image processing. b) What is BSQ , BIP & BIL.	5	CO3101B.2	understand
A3.1	Explain in detail about Raster and Vector data formats.	5	CO3101B.3	understand
A3.2	Explain the application of remote sensing in Hydrology	5	CO3101B.3	understand
A4.1	Explain the application of remote sensing in flood zone mapping.	5	CO3101B.4	understand
A4.2	Explain the importance and application of remote sensing in ground water studies.	5	CO3101B.4	understand
A5.1	Explain the role of Remote Sensing and GIS in urban applications in today's scenario.	5	CO3101B.5	understand
A5.2	Explain in detail about ground water quality and potential recharge zones.	5	CO3101B.5	understand

5

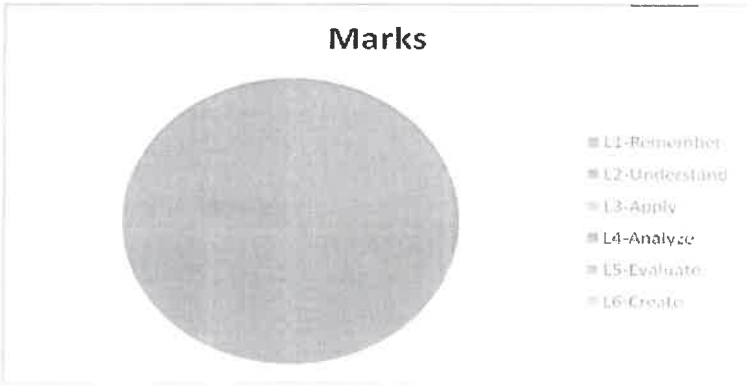
CO	Marks	%
CO3101B.1	5	16.66
CO3101B.2	5	16.66
CO3101B.3	5	16.66
CO3101B.4	5	16.66
CO3101B.5	5	16.66





Course outcome wise marks Distribution Analysis in %

BTL	Marks	%
L1-Remember	15	30
L2-Understand	35	70
L3-Apply		
L4-Analyze		
L5-Evaluate		
L6-Create		



Blooms Level Marks Distribution %

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GUNTUR (Dist.)

Code No: R203101B

R20

SET - 1

III B. Tech I Semester Regular Examinations, Dec/Jan – 2022-23
REMOTE SENSING AND GIS

(Common to CE, MIN)

Time: 3 hours Max. Marks: 70

Answer any FIVE Questions ONE Question from Each unit
All Questions Carry Equal Marks
*****

UNIT-I

1.	a)	Discuss the energy interaction with the surface of earth?	[7M]
	b)	What are the different types of scattering? Explain in detailabout Rayleigh scattering?	[7M]
		(OR)	
2.	a)	What are the current IRS satellite series? Discuss their applications.	[7M]
	b)	What is electromagnetic radiation? Give a neat sketch of its spectrum and wavelength ranges.	[7M]

UNIT-II

3.	a)	Prepare the flow chart for digital image processing sequence by means.	[7M]
	b)	What is supervised classification? What are the basic steps and stages involved in a typical supervised classification?	[7M]
		(OR)	
4.	a)	What is supervised classification? What are the basic steps and stages involved in a typical supervised classification?	[7M]
	b)	Describe the importance of image classification in Remote Sensing.	[7M]

UNIT-III

5.	a)	Explain in detail about map projections.	[7M]
	b)	Define GIS. Briefly explain about spatial and aspatial data types with appropriate examples.	[7M]
		(OR)	
6.	a)	Write about vector data models.	[7M]
	b)	Differentiate between data analysis and data display.	[7M]

UNIT IV

7.	a)	What do you understand about network analysis, explain indetail.	[7M]
	b)	Explain in detail about vector overlay operations.	[7M]
		(OR)	
8.	a)	What does raster overlay? Explain it with suitable examples.	[7M]
	b)	What do you understand about network allocation and network tracing explain it in detail.	[7M]

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Code No: R203101B **R20** SET - 1

UNIT-V

9. a) Discuss the use of RS and GIS techniques in forestry applications. [7M]
   b) Discuss how GIS and RS can be applied for identifying the sites for artificial recharging of water table. [7M]

(OR)

10. a) How remote sensing and GIS is useful in Land resources management? [7M]
    b) Explain with a suitable example how RS and GIS is helpful in land resource management. [

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Sample End Semester Paper Analysis:

Regulation: R20 **Year: III-I** **Academic Year: 2023-24**

Subject/Laboratory name: RS&GIS

III B. Tech I Semester Regular/Supplementary Examinations, Dec/Jan -2022-23 –(SET-1)				
Q.No	**Question**	**Marks**	**CO**	**TL**
1a.	a)Discuss the energy interaction with the surface Of earth?	7	**CO3101B.1**	create
1b.	What are the different types of scattering? Explain in detailabout Rayleigh scattering	7	**CO3101B.1**	Remember
2a.	What are the current IRS satellite series? Discuss theirapplications	7	**CO3101B.1**	Remember
2b	What is electromagnetic radiation? Give a neat sketch of itsspectrum and wavelength ranges	7	**CO3101B.1**	Understand
3a.	Prepare the flow chart for digital image processing sequence bymeans	7	**CO3101B.2**	apply
3b.	What is supervised classification? What are the basic steps andstages involved in a typical supervised classification?	7	**CO3101B.2**	Remember
4a.	What is supervised classification? What are the basic steps andstages involved in a typical supervised classification?	7	**CO3101B.2**	Remember
4b.	Describe the importance of image classification in RemoteSensing	7	**C03101B.2**	Analyze
5a.	Explain in detail about map projections.	7	**C03101B.3**	understand
5b.	Define GIS. Briefly explain about spatial and aspatial data typeswith appropriate examples.	7	**C03101B.3**	Remember
6a.	Write about vector data models.	7	**C03101B.3**	Analyze
6b.	Differentiate between data analysis and data display.	7	**C03101B.3**	Analyze
7a.	What do you understand about network analysis, explain indetail	7	**C03101B.4**	Remember

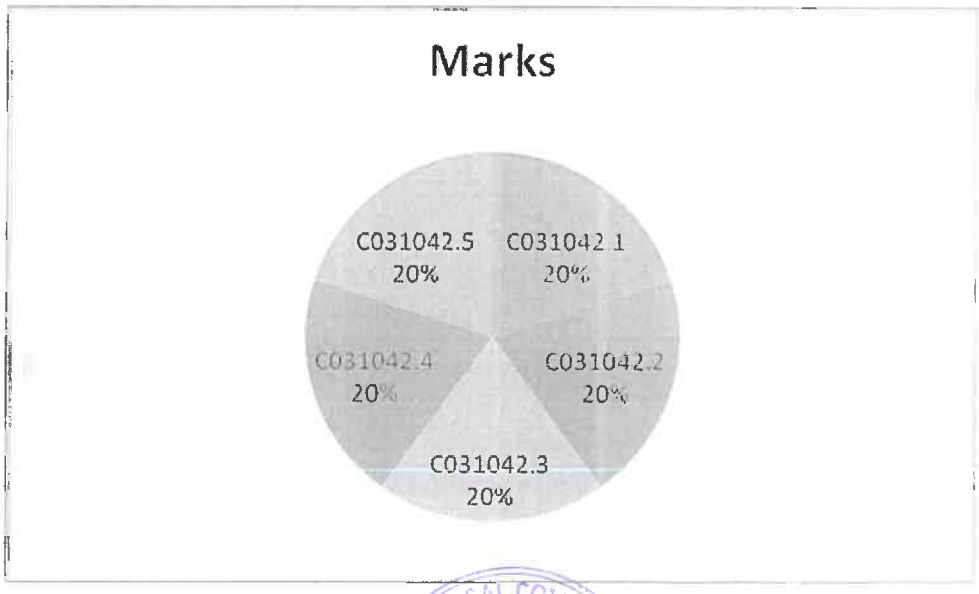
7b.	Explain in detail about vector overlay operations	7	**C03101B.4**	Understand
8a.	What does raster overlay? Explain it with suitable examples.	7	**C03101B.4**	Remember
8b.	What do you understand about network allocation and networktracing explain it in detail.	7	**C03101B.4**	Remember
9a.	Discuss the use of RS & GIS techniques application in forestry	7	**C03101B.5**	Understand
9b.	Discuss how GIS and RS can be applied for identifying the sitesfor artificial recharging of water table.	7	**C03101B.5**	create
10 a.	How remote sensing and GIS is useful in Land resourcesmanagement?	7	**C03101B.5**	Remember
10	Explain with a suitable example how RS and GIS is helpful inland resource management.	7	**C03101B.5**	understand

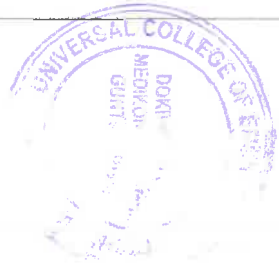
CO	Marks	%
C03101 B.1	14	20
C03101 B.2	14	20
C03101 B.3	14	20
C03101 B.4	14	20
C03101 B.5	14	20

CO wise Marks Distribution

Blooms Level Marks Distribution %

BTL	Marks	%
L1-Remember	63	45
L2-Understand	35	25
L3-Apply	7	5
L4-Analyze	21	15
L5-Create	14	5

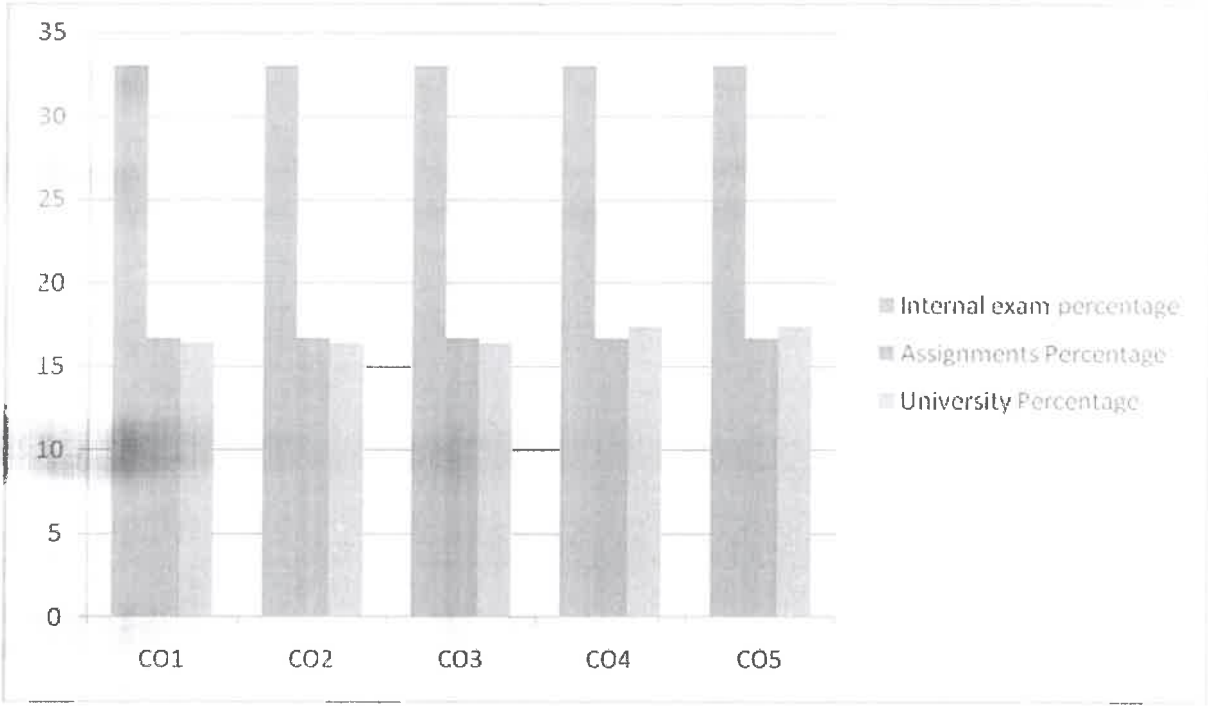




Average levels of evaluation for the COs

COURSE OUTCOME	CO1	CO2	CO3	CO4	CO5
Internal exam Percentage	33	33	33	33	33
Assignments Percentage	16.67	16.67	16.67	16.67	16.67
University Percentage	16.32	16.32	16.32	17.34	17.34

Average levels of evaluation for the COs



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IIIB.TechII Sem (R20) MID - 1 EXAMINATION

Subject:GTE-II Time : 10:00 am to 11:30 am Date : Section : CIVIL

Answer the following questions **Max. Marks : 30**

1. a) Enumerate the various methods of subsoil exploration. Describe the procedure to conduct the standard Penetration Test and corrections to be applied

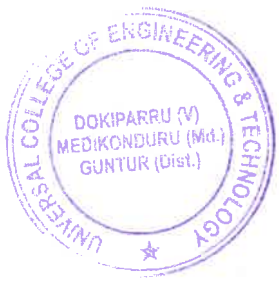
   b) Explain pressure meter test.

2. a) Explain different types of shear failures of soil with neat sketch.

   b) Compute the safe bearing capacity of a continuous footing 1.5 m wide, at a depth of 1.5 m, in a soil with $\gamma = 18$ kN/m3, $c = 18$ kN/m2, and $\varphi = 25°$. Terzaghi's factors of $\varphi = 25°$ are $Nc = 25$, $Nq = 12.5$, and $N\gamma = 10$. What is the safe load per meter run if the factor of safety is 3?

3. a) Describe the procedure to conduct the plate load test with a sketch and state its limitations.

   b) A 1.8 m square column is founded at a depth of 1.8 m in sand, for which the corrected N-value is 24. The water table is at a depth of 2.7 m. Determine the net allowable bearing pressure for a permissibl settlement of 40 mm and a factor of Safety of 3 against shear failure.



Sample Internal Question Paper Analysis:

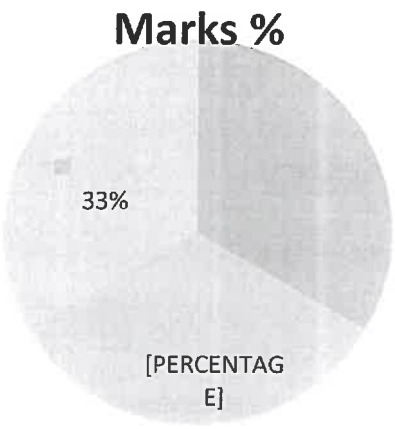
Regulation: R20 **Year: III-II** **Academic Year: 2023-24**

Subject/Laboratory name: GTE-II

Internal (Mid) - 1

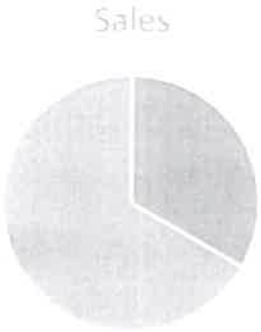
Q.No	Question	Marks	CO	TL
1.	a)Enumerate the various methods of subsoil exploration. Describe the procedure to conduct the standard Penetration Test and corrections to be applied b) Explain pressure meter test.	5+5	CO32013.1	Understand
2.	a) Explain different types of shear failures of soil with neat sketch. b) Compute the safe bearing capacity ofcontinuous footing 1.5 m wide, at a depth of 1.5 m, in a soil with γ = 18 kN/m3, c = 18 kN/m2, and $\varphi = 25°$. Terzaghi's factors of $\varphi = 25°$ are Nc = 25, Nq = 12.5, and Nγ = 10. What is the safe load per meter run if the factor of safety is 3.	5+5	CO32013.2	Understand
3.	a.Describe the procedure to conduct the plate load test with a sketch and state its limitations. b.1.8 m square column is founded at a depth of 1.8 m in sand, for which the corrected N-value is 24. The water table is at a depth of 2.7 m. Determine the net allowable bearing pressure for a permissible settlement of 40 mm and a factor of Safety of 3 against shear failure.	5+5	CO32013.3	Analyze

CO	Marks	%
CO32013.1	10	33
CO32013.2	10	33
CO32013.3	10	33



Course Outcomewise marks distribution

BTL	Marks	%
L1-Remember		
L2-Understand	20	66
L3-Apply		
L4-Analyze	10	33
L5-Evaluate		
L6-Create		



BLOOMS WISE MARKS DISTRIBUTION(TAXANOMY LEVEL)

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IIIB.TechII Sem (R20) MID –2 EXAMINATION Subject:**GTE-II**

Time: 03:00 pm to 04:30 pm Date : Section : CIVIL

Answer the following questions **Max. Marks : 30**

1.a) ExplainSkempton's bearing capacity theory?

b) A rectangular footing of size 2m x 3m has to transmit the load of a column at a depth of 1.50m. Calculate the safe load which the footing can carry for a factor of safety of 3 against shear failure. Use IS code method. The soil has the following properties : n = 40%; G = 2.67; w = 15%, c=10KN/m^2 ;$\Phi = 32^0$. N_c=38, N_q=26, N_γ=35

2. a) Explain any one formula to determine the safe bearing pressure based on N- value?

b) summarize the harmful effects of differential settlement on structures? What are the possible remedial measures?

3. a) Summarise tilts and shifts of wells?

b) A 9-pile group, 10m long is used as the foundation for a column. The piles are 40cm diameter with centre to centre spacing at 1000mm. The subsoil consists of clay with unconfined compressive strength of 250KPa. Estimate the safe load. Assume factor of safety = 4.00.

Regulation: R20 **Year: III-II** **Academic Year: 2023-24**

Subject/Laboratory name: GTE-II

Internal (Mid) - 2

Q.No	Question	Marks	CO	TL
1.	a)Explain Skempton's bearing capacity theory?	5+5	CO32013.3	Understand
	b)A rectangular footing of size 2m x 3m has to transmit the load of a column at a depth of 1.50m. Calculate the safe load which the footing can carry for a factor of safety of 3 against shear failure. Use IS code method. The soil has the following properties : n = 40%; G = 2.67; w = 15%, c=10KN/m^2 ;Φ = 32^0. N_c=38, N_q=26, N_γ=35			
2.	a)Explain any one formula to determine the safe bearing pressure based on N- value?	5+5	CO32013.4	Understand
	b)summarize the harmful effects of differential settlement on structures? What are the possible remedial measures			
3.	a)Summarise tilts and shifts of wells?	5+5	CO32013.5	Understand
	b)A 9-pile group, 10m long is used as the foundation for a column. The piles are 40cm diameter with centre to centre spacing at 1000mm. The subsoil consists of clay with unconfined compressive strength of 250KPa. Estimate the safe load. Assume factor of safety = 4.00.			

CO	Marks	%
CO31041.3	10	33
CO31041.4	10	33
CO31041.5	10	33

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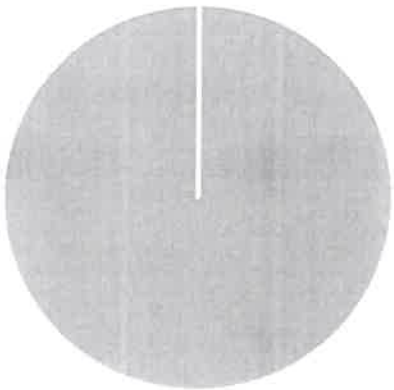
Course Outcome wise marks distribution

BTL	Marks	%
L1-Remember		
L2-Understand	30	100
L3-Apply		
L4-Analyze		
L5-Evaluate		
L6-Create		



Blooms Level wise Marks Distribution

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NAME OF THE FACULTY: K.SAHITHI**DESIGINATION**:ASSISTANTPROFESSOR.

ACADEMIC YEAR: 2023-24 **YEAR & SEM**: III-II,CIVIL

MID-I QUESTION PAPER EVALUATION

Q.No	Scheme	Evaluation	Total Marks
1	a)Enumerate the various methods of subsoil exploration. Describe the procedure to conduct the standard Penetration Test and corrections to be applied	5M	10M
	b) Explain pressure meter test.	5M	
2	a) Explain different types of shear failures of soil with neat sketch.	5M	10M
	b) Compute the safe bearing capacity of continuous footing 1.5 m wide, at a depth of 1.5 m, in a soil with γ = 18 kN/m3, c = 18 kN/m2, and ϕ = 25°. Terzaghi's factors of ϕ = 25° are Nc = 25, Nq = 12.5, and Nγ = 10. What is the safe load per meter run if the factor of safety is 3.	5M	
3	a.Describe the procedure to conduct the plate load test with a sketch and state its limitations.	5M	10M
	b.1.8 m square column is founded at a depth of1.8 m in sand, for which the corrected N-value is 24. The water table is at a depth of 2.7 m. Determine the net allowable bearing pressure for a permissible settlement of 40 mm and a factor of Safety of 3 against shear failure.	5M	

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NAME OF THE FACULTY:K.SAHITHI**DESIGINATION**:ASSISTANTPROFESSOR.

ACADEMIC YEAR: 2023-24 **YEAR & SEM**: III-II ,CIVIL

MID-2 QUESTION PAPER EVALUATION

Q.No	Scheme	Evaluation	Total Marks
1	a)Explain Skempton's bearing capacity theory?	5M	10M
	b)A rectangular footing of size 2m x 3m has to transmit the load of a column at a depth of 1.50m. Calculate the safe load which the footing can carry for a factor of safety of 3 against shear failure. Use IS code method. The soil has the following properties : n = 40%; G = 2.67; w = 15%, $c=10KN/m^2$;$\Phi = 32^0$. N_c=38, N_q=26, N_γ=35	5M	
2	a)Explain any one formula to determine the safe bearing pressure based on N- value?	5M	10M
	b)summarize the harmful effects of differential settlement on structures? What are the possible remedial measures	5M	
3	a)Summarise tilts and shifts of wells?	5M	10M
	b)A 9-pile group, 10m long is used as the foundation for a column. The piles are 40cm diameter with centre to centre spacing at 1000mm. The subsoil consists of clay with unconfined compressive strength of 250KPa. Estimate the safe load. Assume factor of safety = 4.00.	5M	

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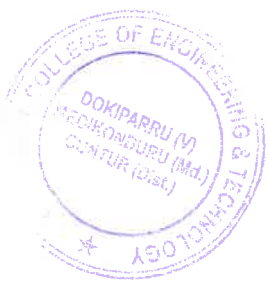
Sample Assignment Question Paper Analysis:

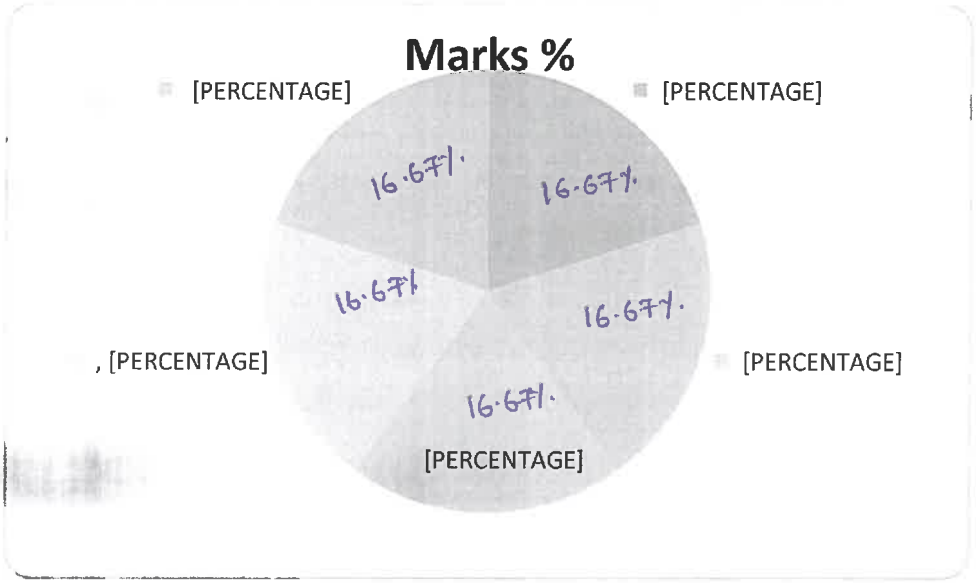
Regulation: R20 **Year: III-II** **Academic Year: 2023-24**

Subject name: GTE-II

Q NO	Assessment question	Marks	Connected CO	BTL
A1.1	Enumerate the types of soil samples and distinguish them.	5	CO32013.1	Understand
A1.2	Write briefly about the dynamic cone penetration test.	5	CO32013.1	
A2.1	Differentiate the terms (i) Gross pressure and net pressure (ii) Ultimate bearing capacity and net ultimate bearing capacity and (iii) Safe bearing pressure and allowable bearing pressure.	5	CO32013.2	analyze
A2.2	Explain different types of shear failures of soil with neat sketch.	5	CO32013.2	Understand
A3.1	Explain the Meyerhof's bearing capacity theory?	5	CO32013.3	Understand
A3.2	What is the ultimate bearing capacity of a rectangular footing, 2m x 2.5m, on the surface of saturated clay of unconfined compression strength of120KN/m^2 ?	5	CO32013.3	Remember
A4.1	Discuss any two methods of computing settlements?	5	CO32013.4	create
A4.2	Critically write about the settlement of foundations.	5	CO32013.4	
A5.1	Explain the procedure to determine the steining thickness?	5	CO32013.5	Understand
A5.2	Draw different shape of wells?	5	CO32013.2	create

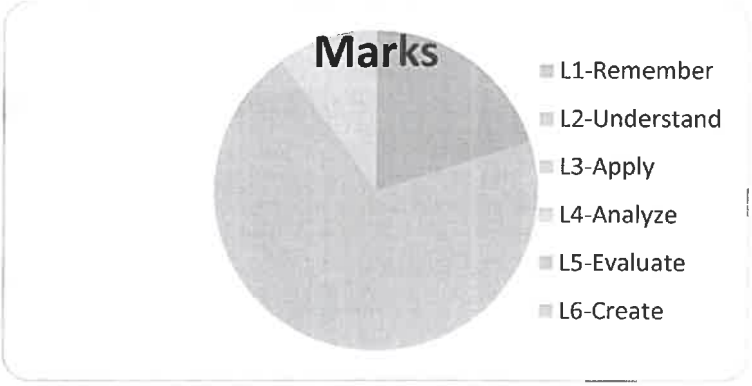
CO	Marks	%
CO31041.1	5	16.67
CO31041.2	5	16.67
CO31041.3	5	16.67
CO31041.4	5	16.67
CO31041.5	5	16.67





Course outcome wise marks Distribution Analysis in %

BTL	Marks	%
L1-Remember	10	20
L2-Understand	35	70
L3-Apply		
L4-Analyze	5	10
L5-Evaluate		
L6-Create		



Blooms Level Marks Distribution %

IIIB.TechIISemesterRegularExaminations,July-2023GEOTECHNICALENGINEERING-II

(CivilEngineering)

Time:3hours Max.Marks:70

AnsweranyFIVEQuestionsONEQuestionfromEachunit

AllQuestionsCarryEqualMarks

*****

UNIT-I

1. a) Explainindetailaboutthemethodsofsoilexploration. [7M]
   b) The cone penetration resistance obtained in a clay soil in a CPT was 50 kg/cm^2.Determine theundrained strength of theclay.Thetotal over burden pressureatthedepthwas100kN/m^2. [7M]

(OR)

2. DefineBoring.Explainindetailthedifferentmethodsofboring. [14M]

UNIT-II

3. a) Discusstheprobabletypesoffailureofaslope. [7M]
   b) Determinethefactor ofsafety withrespecttocohesiononlyfor asubmergedembankment25mhighwhoseupstream face has an inclinationof45^0.Thesoilhasthefollowingproperties:C=40kN/m^2,$\acute{o}$=10^0,γ=18kN/m^3.T herelevantstabilitynumberisequal to0.108. [7M]

(OR)

4. a) Whataretheassumptionsincoulomb'stheory? [7M]
   b) ExplainindetailtheCullman'sgraphicalmethod. [7M]

UNIT-III

5. a) ExplaintheIScodemethodtodeterminethebearingcapacity? [7M]
   b) Afooting2msquareislaidatadepthof1.3mbelowthegroundsurface.Determinethenetulti matebearingcapacityusingIScodemethod.Takeγ=20kN/m^3,$\acute{o}$=30^{0}andC'=0. [7M]

(OR)

6. a) Explaintypesoffoundationsandfactorstobeconsideredintheirlocation. [7M]
   b) Discuss the assumptions made in the derivation of Terzaghi's bearing capacitytheory?Writetheequationfortheultimatebearing capacity.

UNIT-IV

7. a)Discussvariousmethodsofdeterminationoftheallowablebearingpressure.What aretheirlimitations?
   b) Apurelycohesivesoilhasaunitweightof20kN/m^{3}andacohesionof150kN/m^2. Determine the safe bearing capacity for a rectangular footing 8mx2mfounded atadepthof4minclay,F.S=3.0

(OR)

8. a) What are the types of foundation settlements? How is these determining? Discussit.
   b) Estimate the immediate settlement of a concrete footing 1mx2m size founded at adepthof1minasoilwithE=10^{4}kN/m^2,μ=0.3.thefootingissubjectedtoapressureof200kN/m^2.Assu mefootingis toberigid

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UNIT-V

1. a) Explainindetailsinkingofwells. [7M]
   b) Explain with neat sketch different components of wells and their functions. [7M]

(OR)

2.a) Explainthevariousdynamicformulaeofpiles.Whataretheirlimitations?

b)Discusstheusesofpileloadtestsfortheestimationofload-carryingcapacityofpiles

Sample End Semester Paper Analysis:

Regulation: R20 **Year: III-II** **Academic Year: 2022-23**

Subject/Laboratory name: GTE-II

III B. Tech I Semester Regular/Supplementary Examinations, Dec/Jan -2022-23 –(SET-1)				
Q.No	**Question**	**Marks**	**CO**	**TL**
1a.	Explainindetailaboutthemethodsofsoilexploration	7	**CO32013.1**	Understand
1b.	The cone penetration resistance obtained in a clay soil in a CPT was 50 kg/cm^2.Determine theundrained strength of theclay.Thetotal over burden pressureatthedepthwas100kN/m^2.	7	**CO32013.1**	Evaluate
2	DefineBoring.Explainindetailthedifferentmethodsofboring	14	**CO32013.1**	Remember
3a	Discusstheprobabletypesoffailureofaslope.	7	**CO32013.2**	Create
3b	Determinethefactor ofsafety withrespecttocohesiononlyfor asubmergedembankment25mhighwhoseupstream face has an inclinationof45^0.Thesoilhasthefollowingproperties:C=40kN/m^2,ϕ =10^0,γ=18kN/m^3.Therelevantstabilitynumberisequal to0.108	7	**CO32013.2**	Evaluate
4a.	Whataretheassumptionsincoulomb'stheory?	7	**CO32013.2**	Remember
4b.	ExplainindetailtheCullman'sgraphicalmethod.	7	**CO32013.2**	Understand
5a	ExplainthelScodemethodtodeterminethebearingcapacity?	7	**CO32013.3**	Understand
5b.	Afooting2msquareislaidatadepthof1.3mbelowthegroundsurface .Determinethenetultimatebearingcapacityusinglscodemethod.Takeγ=20kN/m^3,ϕ=30^{0}andC'=0.	7	**CO32013.3**	Evaluate
6a.	Explaintypesoffoundationsandfactorstobeconsideredintheirlocation.	7	**CO32013.3**	Understand
7a.	Discussvariousmethodsofdeterminationoftheallowablebearingpressure.What aretheirlimitations?	7	**CO32013.4**	Create
7b	Apurelycohesivesoilhasaunitweightof20kN/m^{3}andacohesionof150kN/m^2. Determine the safe bearing capacity for a rectangular	7	**CO32013.4**	Evaluate

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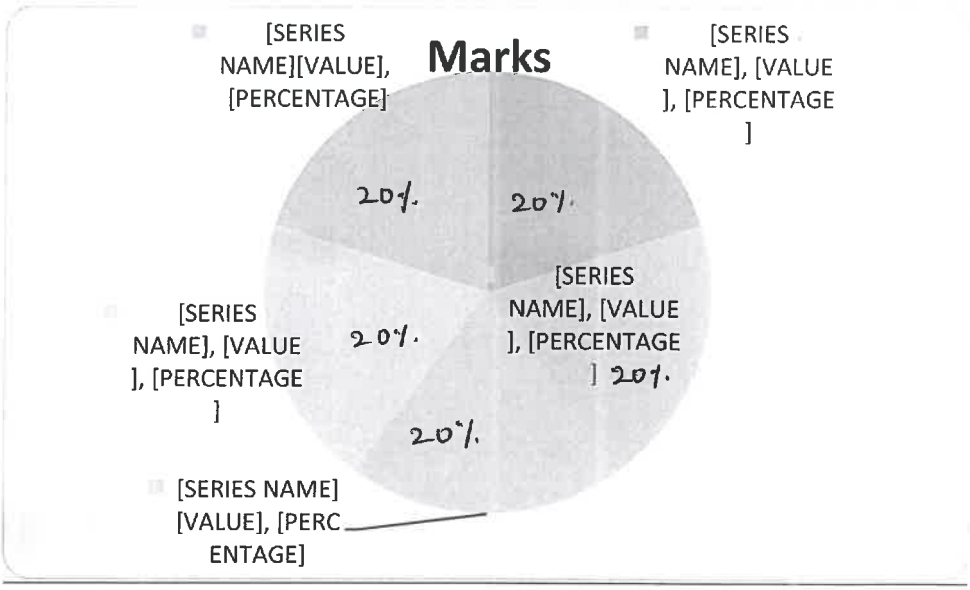
	footing 8mx2mfounded atadepthof4minclay,F.S=3.0			
8a	What are the types of foundation settlements? How is these determining? Discussit.	7	**CO32013.4**	Remember
8b	Estimate the immediate settlement of a concrete footing 1mx2m size founded at adepthof1minasoilwithE=10^4kN/m^2,μ=0.3.thefootingissubjecte dtoapressureof200kN/m^2.Assumefootingis toberigid.	7	**CO32013.4**	Evaluate
9a	Explain indetailsinkingofwells	7	**CO32013.5**	Understand
9b	Explainwithneatsketchdifferentcomponentsofwellsandtheirfunc tions	7	**CO32013.5**	Understand
10 a.	Explain thevariousdynamicformulaeofpiles.Whataretheirlimitations?	7	**CO32013.5**	Understand
10 b.	Discusstheusesofpileloadtestsfortheestimationofload-carryingcapacityofpiles.	7	**CO32013.5**	Create

CO	Marks	%
C031042.1	14	20
C031042.2	14	20
C031042.3	14	20
C031042.4	14	20
C031042.5	14	20



BTL	Marks	%
L1-Remember	28	20
L2-Understand	56	40
L3-Apply		
L4-Analyze		
L5-Evaluate	35	25
L6-Create	21	15

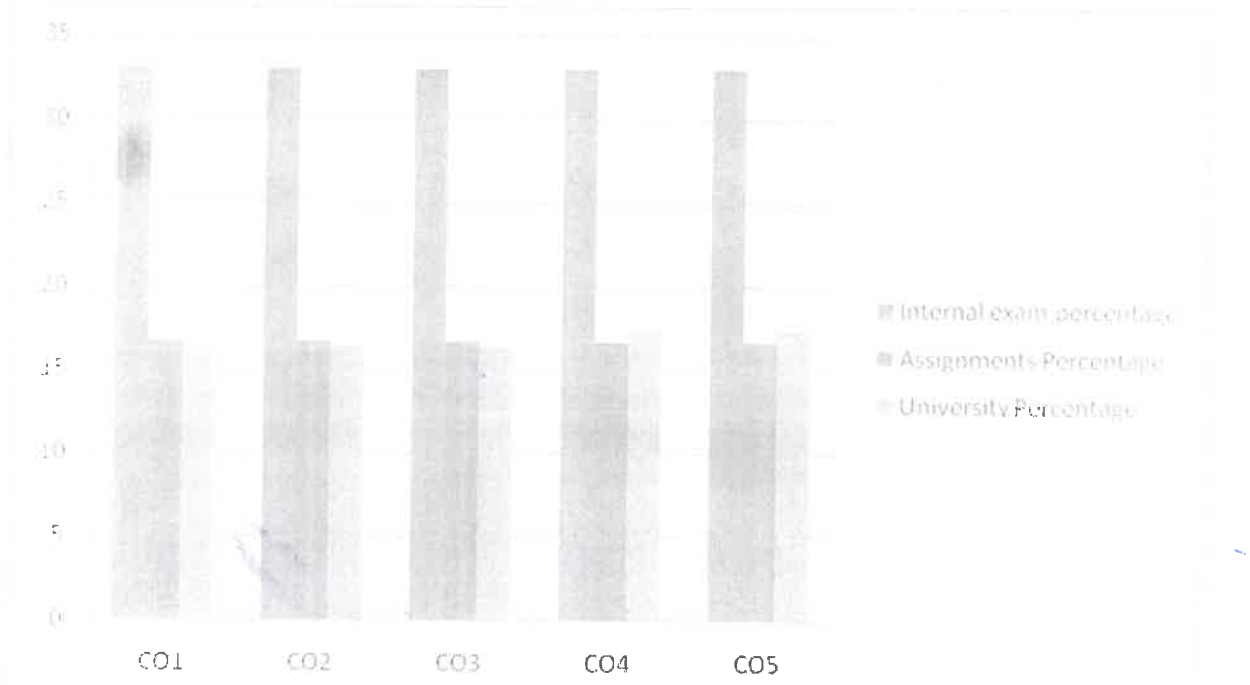
CO wise

Blooms Level Marks Distribution%

Average levels of evaluation for the COs

COURSE OUTCOME	CO1	CO2	CO3	CO4	CO5
Internal exam Percentage	33	33	33	33	33
Assignments Percentage	16.67	16.67	16.67	16.67	16.67
University Percentage	16.32	16.32	16.32	17.34	17.34

Average levels of evaluation for the COs



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IV B.Techl Sem (R20) MID - 1 EXAMINATION

Subject:UTP Time : 10:00 am to 11:30 am Date : Section : CIVIL

Answer the following questions **Max. Marks : 30**

1.a) Describe various urban transportation problems and issues.

b) Distinguish between cordon lines and screen lines.

2. Write a note on the following: (a) BRTS, (b) Metro trains.

3. What is zoning? Discuss the points to be kept in the mind while doing zoning

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Sample Internal Question Paper Analysis:

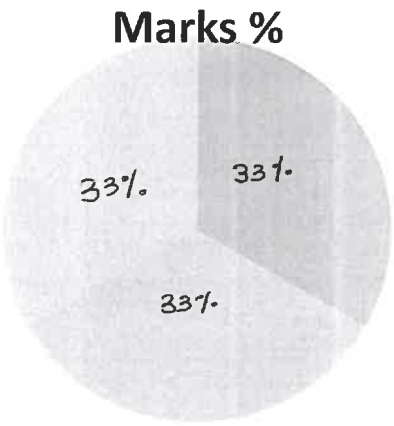
Regulation: R20 **Year:IV-I** **Academic Year: 2023-24**

Subject/Laboratory name: UTP

Internal (Mid) - 1

Q.No	Question	Marks	CO	TL
1.	Describe various urban transportation problems and issues Distinguish between cordon lines and screen lines.	5+5	CO4101D.1	Understanding
2.	Write a note on the following: (a) BRTS, (b) Metro trains.	10	CO4101D.2	Remember
3.	What is zoning? Discuss the points to be kept in the mind while doing zoning	10	CO4101D.3	Remember

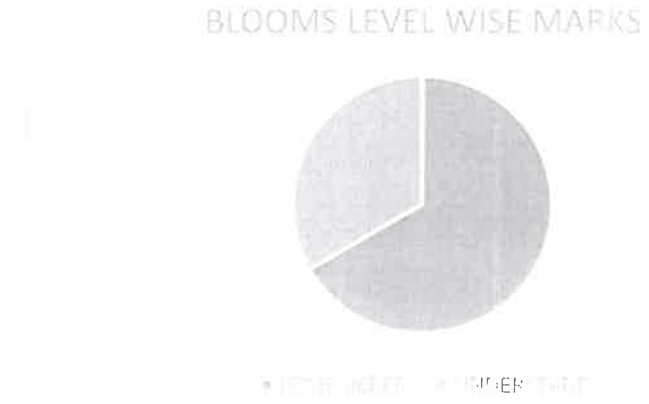
CO	Marks	%
CO31041.1	10	33
CO31041.2	10	33
CO31041.3	10	33



Course Outcomewise marks distribution

TL: Taxonomy Level

BTL	Marks	%
L1-Remember	20	66
L2-Understand	10	33
L3-Apply		
L4-Analyze		
L5-Evaluate		
L6-Create		



Blooms Level wise Marks Distribution

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IVB.Tech Sem (R20) MID –2 EXAMINATION

Subject:UTP Time: 03:00 pm to 04:30 pm Date : Section : civil

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Answer the following questions **Max. Marks : 30**

1. Explain briefly about: (a) Gravity models, (b) Opportunity models.
2. What are the basic elements of transport network?
3. Briefly explain about environmental and energy analysis?

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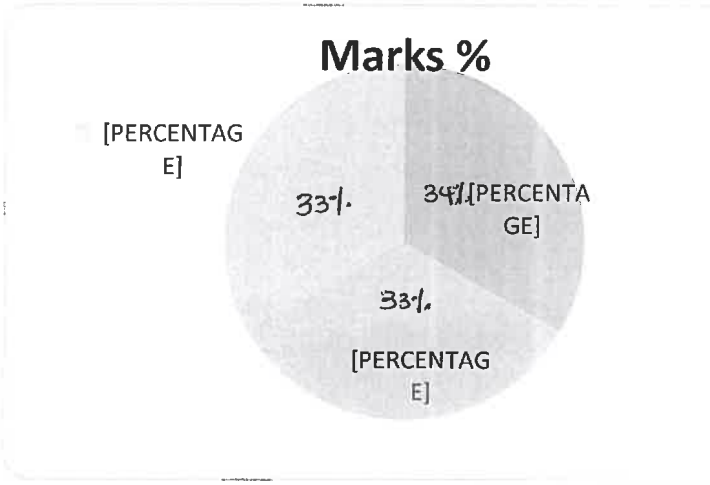
Regulation: R20 **Year:IV-I** **Academic Year: 2023-24**

Subject/Laboratory name: UTP

Internal (Mid) - 2

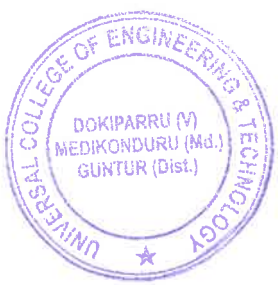
Q.No	Question	Marks	CO	TL
1.	Explain briefly about: (a) Gravity models, (b) Opportunity models	10	CO4101D.3	Understand
2.	What are the basic elements of transport network?	10	CO4101D.4	Remember
3.	Briefly explain about environmental and energy analysis?	10	CO4101D.5	Understand

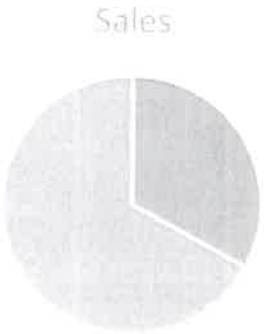
CO	Marks	%
CO4101D.4	10	33
CO4101D.5	10	34
CO4101D.6	10	33



Course Outcome wise marks distribution

BTL	Marks	%
L1-Remember	10	33
L2-Understand	20	67
L3-Apply		
L4-Analyze		
L5-Evaluate		
L6-Create		





Blooms Level wise Marks Distribution

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NAME OF THE FACULTY: K.SAHITH**DESIGINATION**:ASSISTANTPROFESSOR.

ACADEMIC YEAR: 2023-24 **YEAR & SEM**: IV-I,CE

MID-I QUESTION PAPER EVALUATION

Q.No	Scheme	Evaluation	Total Marks
1	Describe various urban transportation problems and issues Distinguish between cordon lines and screen lines.	5M	10M
2	Write a note on the following: (a) BRTS, (b) Metro trains.	5M	10M
3	What is zoning? Discuss the points to be kept in the mind while doing zoning	5M	10M

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NAME OF THE FACULTY: K.SAHITHI**DESIGINATION**:ASSISTANTPROFESSOR.

ACADEMIC YEAR: 2023-24 **YEAR & SEM**: IV-I ,CE

MID-2 QUESTION PAPER EVALUATION

Q.No	Scheme	Evaluation	Total Marks
1	Explain briefly about: (a) Gravity models, (b) Opportunity models	10	10M
2	What are the basic elements of transport network?	10	10M
3	Briefly explain about environmental and energy analysis?	10	10M

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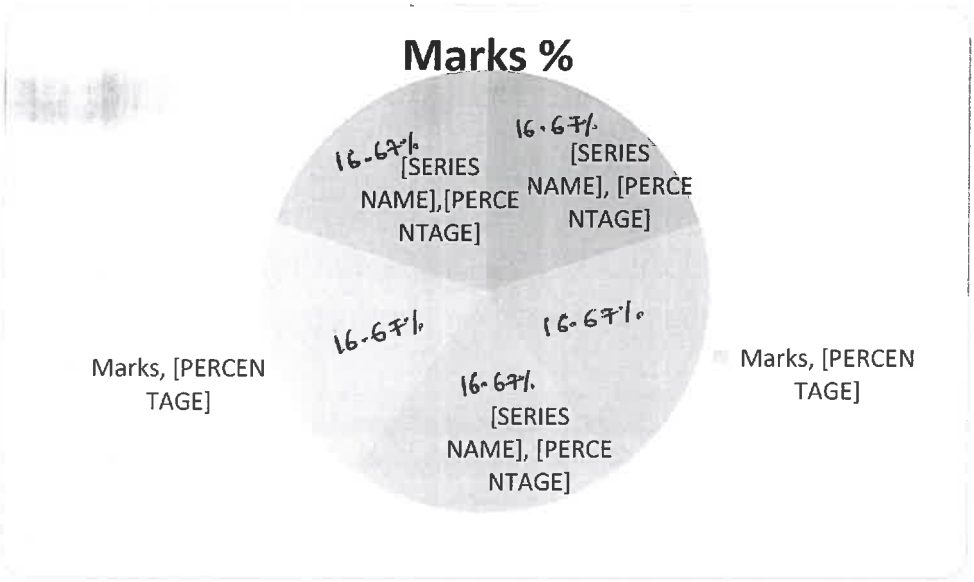
Sample Assignment Question Paper Analysis:

Regulation: R20 **Year: IV-I** **Academic Year: 2023-24**

Subject name: UTP

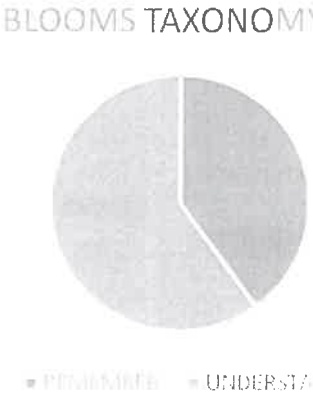
Q NO	Assessment question	Marks	Connected CO	BTL
A1.1	What is Urbanizations? State the causes of urbanization?	5	CO4101D.1	Remember
A1.2	Explain various survey sampling techniques used in data collection process	5	CO4101D.1	understand
A2.1	Explain the classification of transit system with example?	5	CO4101D.2	understand
A2.2	Discuss the characteristics of highway networks	5	CO4101D.2	understand
A3.1	Define external cordon line. What factors should be given due weightage in the selection of external cordon line?	5	CO4101D.3	understand
A3.2	What is zoning? Discuss the points to be kept in the mind while doing zoning	5	CO4101D.3	Remember
A4.1	What are the roles involved in Mode choice analysis? Explain any one mode.	5	CO4101D.4	Remember
A4.2	What are the basic elements of transport network	5	CO4101D.4	understand
A5.1	Explain corridor efficiency analysis?	5	CO4101D.5	understand
A5.2	What are the plans development on transportation faci	5	CO4101D.5	Remember

CO	Marks	%
CO4101D.1	5	16.67
CO4101D.2	5	16.67
CO4101D.3	5	16.67
CO4101D.4	5	16.67
CO4101D.5	5	16.67



Course outcome wise marks Distribution Analysis in %

BTL	Marks	%
L1-Remember	20	40
L2-Understand	30	60
L3-Apply		
L4-Analyze		
L5-Evaluate		
L6-Create		



Blooms Level Marks Distribution %

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Set No.1

IVB.TechISemesterRegularExaminations,January–2024

URBANTRANSPORTATIONPLANNING

(CivilEngineering)

Time:3hours Max.Marks:70

Answer any FIVE Questions ONE Question from Each unit
AllQuestionsCarryEqualMarks

*****

UNIT-I

1 a) Definesystemapproach.Explainwithflowdiagramsystemapproachtotransport planning.[7]
b) Explainhowthelanduseandtraveldemandarerelatedintheurban transportation planning .[7]

(OR)

2 a) Indetaildiscusstheshort-termandlong-termplanningprocessofurbantransportation.[7]
b) IllustrateSequentialandSimultaneousApproacheswithsuitable examples. [7]

UNIT-II

3 a) Writeshort notes onhomeinterviewsurveysandroad sideinterview surveys [7]
b) Describethedetailedprocedureofcollectionofdatarelatedtothe transportationfromthefield (7]

(OR)

4 a) Explainindetailthecommercialvehiclesurveys (7)
b) Explaintheimportanceoforganizationofsurveysandtheiranalysisin effective urban transport planning[7]

UNIT-III

5 Definethetermtripdistributionalongwithvariousfactorsinfluencingthe same.Indetailexplaintheaveragefactormethodalongwithitsmeritsanddemerits.[1 4]

(OR)

6 a) Explainthetermstripgenerationandtripdistributionalongwithsuitable examples.[7]
b) Listoutthetypesofzonalmodels.Explainanythreeofthemwithsuitable examples.[7]

UNIT-IV

7 a) Explainabout All(or)NothingAssignment andEquilibrium assignment. [7]
b) Explainwithsuitableexamples,thevariousfactorsaffectingonthemodelsplit[7]

(OR)

8 a) Explainindetailthemodechoiceanalysisandits behaviour. [7]

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b) Illustratevariousprobabilisticmodelsusedinthetraffic analysis. [7]

UNIT-V

9 a) Explainthepivotpoint analysiswithsuitableexamples. [7]
b) Exemplifythe masterplans used forcorridor identification. [7]

(OR)

10 a) Illustratewithanexampletheenvironmentalandenergyanalysis [7]
b) Explaintheprocessofplanpreparationanditsevaluation. [7]

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Sample End Semester Paper Analysis:

Regulation: R20 **Year: III-I** **Academic Year: 2022-23**

Subject/Laboratory name: AICA

III B. Tech I Semester Regular/Supplementary Examinations, Dec/Jan -2022-23 –(SET-1)				
Q.No	**Question**	**Marks**	**CO**	**TL**
1a.	Definesystemapproach.Explainwithflowdiagramsystemapproachtotransport planning	7	**CO4101D.1**	Remember
1b.	Explainhowthelanduseandtraveldemandarerelatedintheurban transportation planning	7	**CO4101D.1**	Understand
2a.	Indetaildiscusstheshort-termandlong-termplanningprocessofurbantransportation	7	**CO4101D.1**	Remember
2b	IllustrateSequentialandSimultaneousApproacheswithsuitable examples	7	**CO4101D.1**	Understand
3a.	Writeshort notes onhomeinterviewsurveysandroad sideinterview surveys	7	**CO4101D.2**	Remember
3b.	Describethedetailedprocedureofcollectionofdatarelatedtothe transportationfromthefield	7	**CO4101D.2**	Understand
4a.	Explainindetailthecommercialvehiclesurveys	7	**CO4101D.2**	Understand
4b.	Explaintheimportanceoforganizationofsurveysandtheir analysisin effective urban transport planning	7	**CO4101D.2**	Understand
5	Definethetermtripdistributionalongwithvariousfactorsinfluencingthe same.Indetailexplaintheaveragefactormethodalongwithitsmeritsanddemerits	14	**CO4101D.3**	Remember
6a.	Explainthetermstripgenerationandtripdistributionalongwithsuitable examples	7	**CO4101D.3**	Understand
6b.	Listoutthetypesofzonalmodels.Explainanythreeofthemwithsuitable examples	7	**CO4101D.3**	Remember
7a.	Explainabout All(or)NothingAssignment andEquilibrium assignment	7	**CO4101D.4**	Understand
7b.	Explainwithsuitableexamples,thevariousfactorsaffectingonthemodelsplit	7	**CO4101D.4**	Understand

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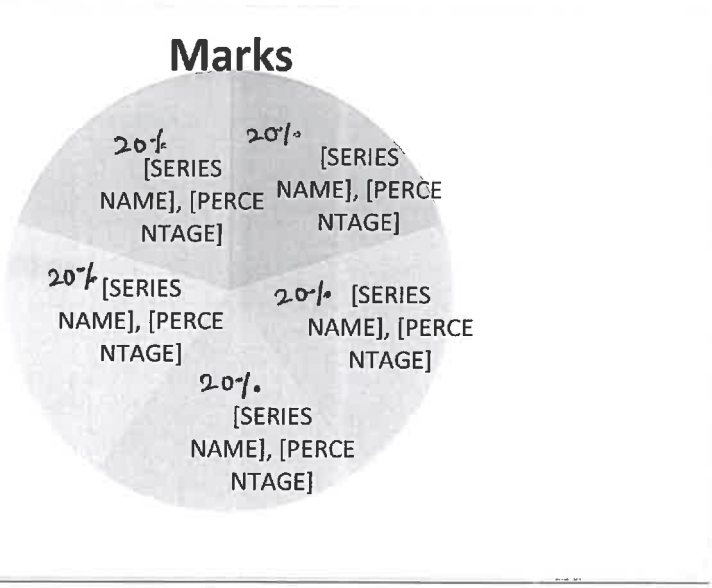
8a.	Explainindetailthemodechoiceanalysisandits behavior	7	**CO4101D.4**	Understand
8b.	Illustratevariousprobabilisticmodelsusedinthetraffic analysis.	7	**CO4101D.4**	Understand
9a.	Explainthepivotpoint analysiswithsuitableexamples	7	**CO4101D.5**	Understand
9b.	Exemplifythe masterplans used forcorridor identification	7	**CO4101D.5**	Understand
10 a.	Illustratewithanexampletheenvironmentalandenergyanalysis	7	**CO4101D.5**	Understand
10 b.	Explaintheprocessofplanpreparationanditsevaluation.	7	**CO4101D.5**	Understand

CO	Marks	%
CO4101D.1	14	20
CO4101D.2	14	20
CO4101D.3	14	20
CO4101D.4	14	20
CO4101D.5	14	20



Cos wise Marks Distribution

BTL	Marks	%
L1-Remember	**42**	**30**
L2-Understand	**98**	**70**
L3-Apply		
L4-Analyze		
L5-Evaluate		
L6-Create		

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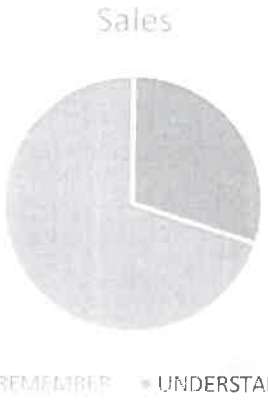
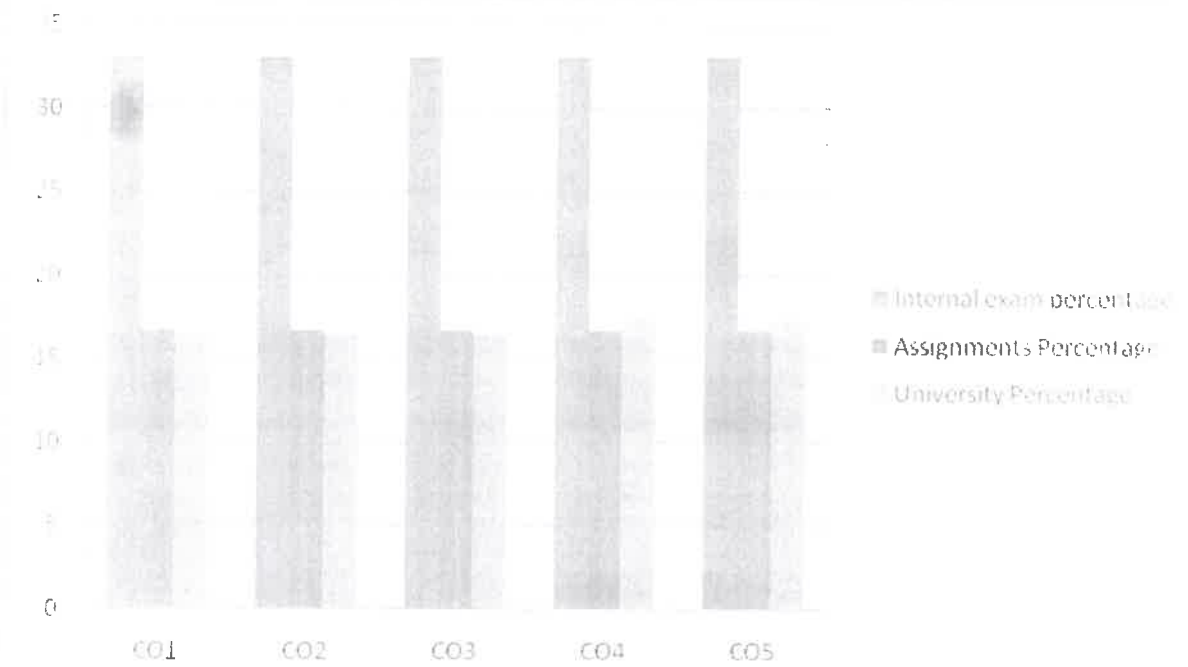


Blooms Level Marks Distribution %

Average levels of evaluation for the COs

COURSE OUTCOME	CO1	CO2	CO3	CO4	CO5
Internal exam Percentage	33	33	33	33	33
Assignments Percentage	16.67	16.67	16.67	16.67	16.67
University Percentage	16.32	16.32	16.32	17.34	17.34

Average levels of evaluation for the COs



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II B.Tech I Sem (R20) MID - 1 EXAMINATION

Subject: RVSP | Time : 2:50 pm to 04:20 pm | Date : 7.10.2023 | Section : ECE

Answer the following questions **Max. Marks : 30**

1.a)State and prove the properties of cumulative distribution function (CDF) of X.
b)If the probability density function of a random variable X is given by fX (x)= x2/3 ;-1≤X≤2 and 0; elsewhere then Find P(0<X<1) and Fx (x)?

2.a)State and prove the Chebychev's inequality theorem.
b)Show that any characteristic function φX(W) satisfies φX(W)≤ φX(0)=1.

3.a)Explain about Transformation of random variable.
b)Write the properties of Joint Distribution function.

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Sample Internal Question Paper Analysis:

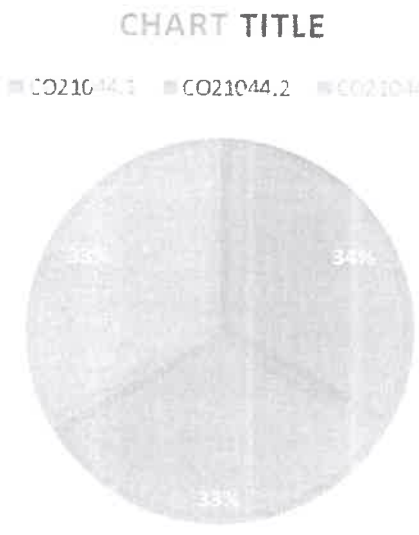
Regulation: R20 **Year: II-I** **Academic Year: 2023-24**

Subject/Laboratory name: RVSP

Internal (Mid) - 1

Q.No	Question	Marks	CO	TL
1.	1.a) State and prove the properties of cumulative distribution function (CDF) of X. b) If the probability density function of a random variable X is given by fX (x)= x2/3 ;-1≤X≤2 and 0; elsewhere then Find P(0<X<1) and Fx (x)?	5+5	CO21044.1	Analyze
2.	2.a)State and prove the Chebychev's inequality theorem. b) Show that any characteristic function ϕX(W) satisfies ϕX(W)≤ ϕX(0)=1.	5+5	CO31044.2	Apply
3.	3. a) Explain about Transformation of random variable. b) Write the properties of Joint Distribution function.	5+5	CO31044.3	Understand

CO	Marks	%
CO21044.1	10	33
CO21044.2	10	33
CO21044.3	10	33



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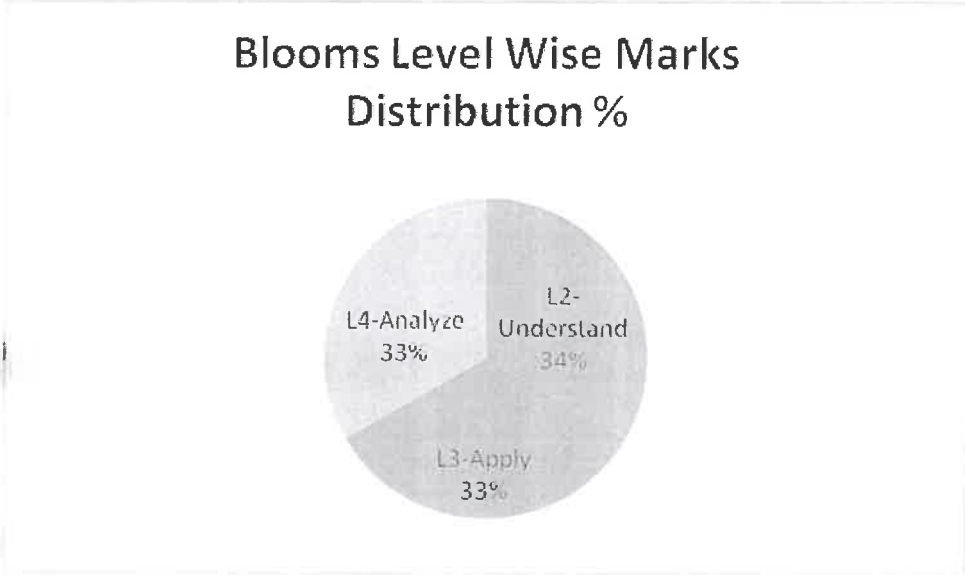
Course Outcome wise marks distribution

TL: Taxonomy Level

BTL	Marks	%
L1-Remember		
L2-Understand	10	33
L3-Apply	10	33
L4-Analyze	10	33
L5-Evaluate		
L6-Create		



Blooms Level wise Marks Distribution

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II B.Tech I Sem (R20) MID – 2 EXAMINATION

Subject: RVSP Time: 02:50 pm to 04:20 pm Date : 05-12-2023 Section : ECE

Answer the following questions **Max. Marks : 30**

1. a) Two statistically independent random variables X and Y have respective densities $f_x(x)=5e^{-5x}u(x)$, $f_y(y)=2e^{-2y}u(y)$. Find the density of the sum W = X+Y.
   b) Gaussian random variables X and Y have first and second order moments m 10 =-1.1, m 20 =1.16, m_{01} =1.5, m_{02} =2.89, R_{XY} =-1.724. Find C_{XY} , ρ.
2. a) The auto correlation function for a stationary ergodic process with no periodic components is $R_{XX}(\tau)=625+(16/1+36\ \tau 2)$.Find mean and variance of the random process.
   b) Explain about Poisson random processes.
3. a) A Random signal X(t) of PSD of $N_0/2$ is applied on an LTI system having impulse response h(t). If y(t) is output, find (i)$E[Y^2]$ (ii)$R_{XY}(\tau)$ (iii) $R_{YY}(\tau)$.
   b) Derive the relationship between Auto-power spectral density and Auto correlation function.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

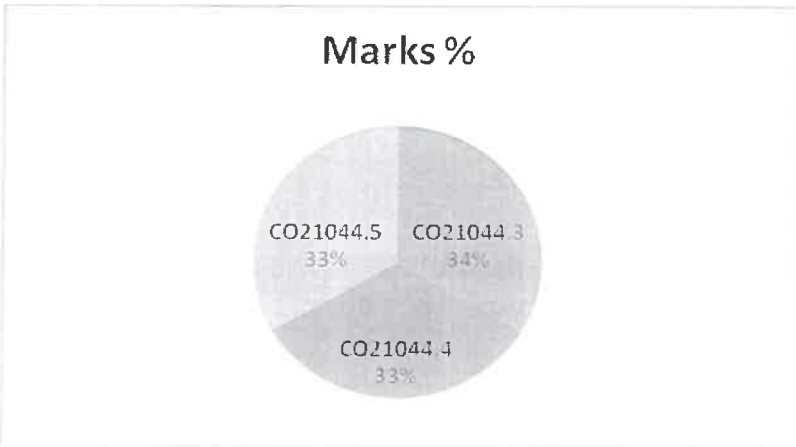
Regulation: R20 **Year: II-I** **Academic Year: 2023-24**

Subject/Laboratory name: RVSP

Internal (Mid) - 2

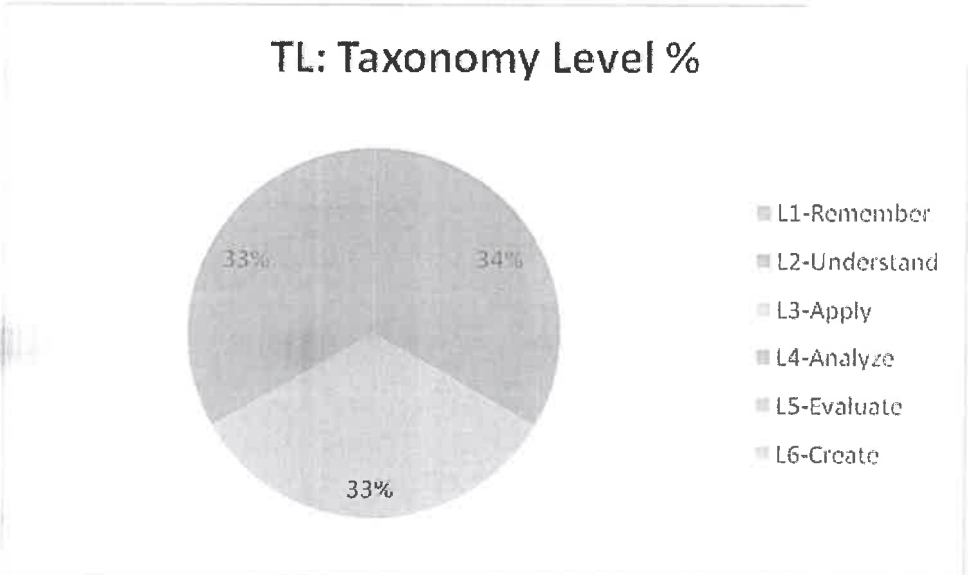
Q.No	Question	Marks	CO	TL
1.	1. a) Two statistically independent random variables X and Y have respective densities $fx(x)=5e^{-5x}\,u(x)$, $fy(y)=2e^{-2y}\,u(y)$. Find the density of the sum W = X+Y. b) Gaussian random variables X and Y have first and second order moments m 10 =-1.1, m 20 =1.16, m_{01} =1.5, m_{02} =2.89, R_{XY} =-1.724. Find C_{XY} , ρ.	5+5	CO21044.3	Analyze
2.	2. a) The auto correlation function for a stationary ergodic process with no periodic components is $R_{XX}(\tau)=625+(16/1+36\,\tau 2)$.Find mean and variance of the random process. b) Explain about Poisson random processes.	5+5	CO21044.4	Understand
3.	3. a) A Random signal X(t) of PSD of $N_0/2$ is applied on an LTI system having impulse response h(t). If y(t) is output, find (i)$E[Y^2]$ (ii)$R_{XY}(\tau)$ (iii) $R_{YY}(\tau)$. b) Derive the relationship between Auto-power spectral density and Auto correlation function.	5+5	CO21044.5	Apply

CO	Marks	%
CO21044.3	10	33
CO21044.4	10	33
CO21044.5	10	33



Course Outcome wise marks distribution

BTL	Marks	%
L1-Remember		
L2-Understand	10	33
L3-Apply	10	33
L4-Analyze	10	33
L5-Evaluate		
L6-Create		



Blooms Level wise Marks Distribution

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NAME OF THE FACULTY: S. RAM KUMAR **DESIGINATION**: ASSISTANT PROFESSOR.

ACADEMIC YEAR: 2023-24 **YEAR & SEM**: II-I ECE

MID-I QUESTION PAPER EVALUATION

Q.No	Scheme	Evaluation	Total Marks
1	a) State and prove the properties of cumulative distribution function (CDF) of X.	5M	10M
	b) If the probability density function of a random variable X is given by fX (x)= x2/3 ;-1≤X≤2 and 0; elsewhere then Find P(0<X<1) and Fx (x)?	5M	
2	a)State and prove the Chebychev's inequality theorem.	5M	10M
	b) Show that any characteristic function φX(W) satisfies φX(W)≤ φX(0)=1.	5M	
3	a) Explain about Transformation of random variable.	5M	10M
	b) Write the properties of Joint Distribution function.	5M	

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NAME OF THE FACULTY: S. RAM KUMAR **DESIGINATION**: ASSISTANT PROFESSOR.

ACADEMIC YEAR: 2023-24 **YEAR & SEM**: II-I ECE

MID-2 QUESTION PAPER EVALUATION

Q.No	Scheme	Evaluation	Total Marks
1	a) Two statistically independent random variables X and Y have respective densities $f_x(x)=5e^{-5x}u(x)$, $f_y(y)=2e^{-2y}u(y)$. Find the density of the sum W = X+Y.	5M	10M
	b) Gaussian random variables X and Y have first and second order moments $m_{10}=-1.1$, $m_{20}=1.16$, $m_{01}=1.5$, $m_{02}=2.89$, $R_{XY}=-1.724$. Find C_{XY}, ρ.	5M	
2	a) The auto correlation function for a stationary ergodic process with no periodic components is $R_{XX}(\tau)=625+(16/1+36\ \tau 2)$.Find mean and variance of the random process.	5M	10M
	b) Explain about Poisson random processes.	5M	
3	a) A Random signal X(t) of PSD of N0/2 is applied on an LTI system having impulse response h(t). If y(t) is output, find (i)E[Y2] (ii)RXY(τ) (iii) RYY(τ).	5M	10M
	b) Derive the relationship between Auto-power spectral density and Auto correlation function.	5M	

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Sample Assignment Question Paper Analysis:

Regulation: R20 **Year: II-I** **Academic Year: 2023-24**

Subject name: RVSP

Q NO	Assessment question	Marks	Connected CO	BTL
A1.1	Define conditional probability distribution function and write the properties.	5	CO21044.1	understand
A1.2	Two boxes are selected randomly. The first box contains 2 white balls and 3 black balls. The second box contains 3 white and 4 black balls. What is the probability of drawing a white ball?	5	CO21044.1	Analyze
A2.1	Define Random variable? List out the properties of Density Function.	5	CO21044.2	understand
A2.2	Explain Gaussian random variable with neat sketches?	5	CO21044.2	understand
A3.1	A random variable X is defined by density function $f_X(x)= 3x^2$ for $0 \leq X \leq 1$ and 0 ; elsewhere Find E[X], E[3X] and $E[X^2]$.	5	CO21044.3	Analyze
A3.2	A random variable X has a probability density fX (x)=½(cos(x); $-\pi/2 < X > \pi/2$ and 0 ;elsewhere. Find the mean value of the function on $g(x)=4X^2$.	5	CO21044.3	Analyze
A4.1	Explain the following with respect to Random processes (i) Strict sense stationarity (ii) Mean Ergodic processes	5	CO21044.4	understand
A4.2	X (t) and Y (t) are real random processes that are jointly WSS. Prove the following (i) RXY(τ)=Square root(RXX(0)RYY(0) ii) RXY(τ)≤1/2[RXX(0)+RYY(0)].	5	CO21044.4	Apply
A5.1	If X(t) is a stationary process, find the power spectrum of $y(t)= A_0 +B_0 X(t)$ in term of the power spectrum of X(t) if A_0 and B_0 are real constants.	5	CO21044.5	Apply
A5.2	A random process Y(t) has the power spectral density $S_{YY}(w)=9/w^2+64$ Find i) The average power of the process ii)	5	CO21044.5	Analyze

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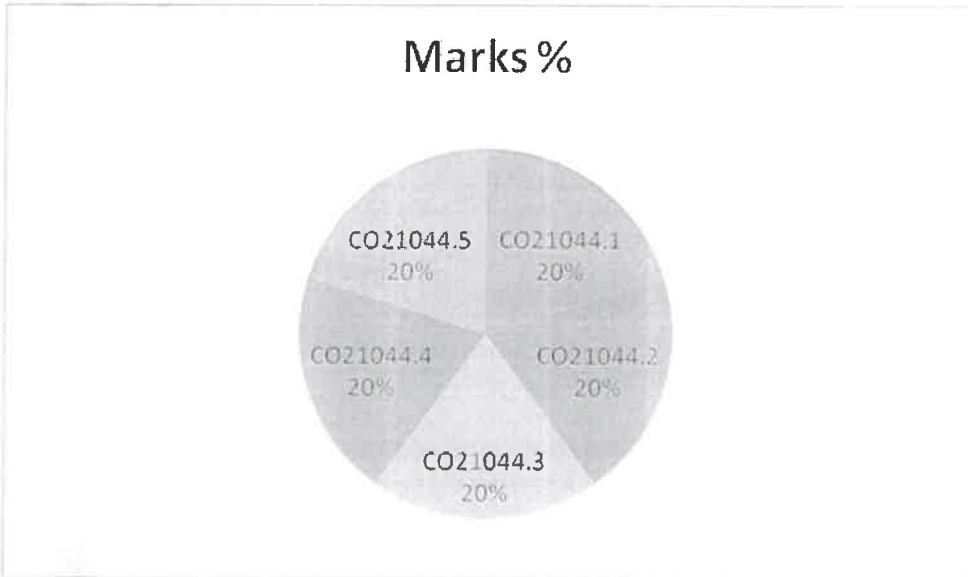
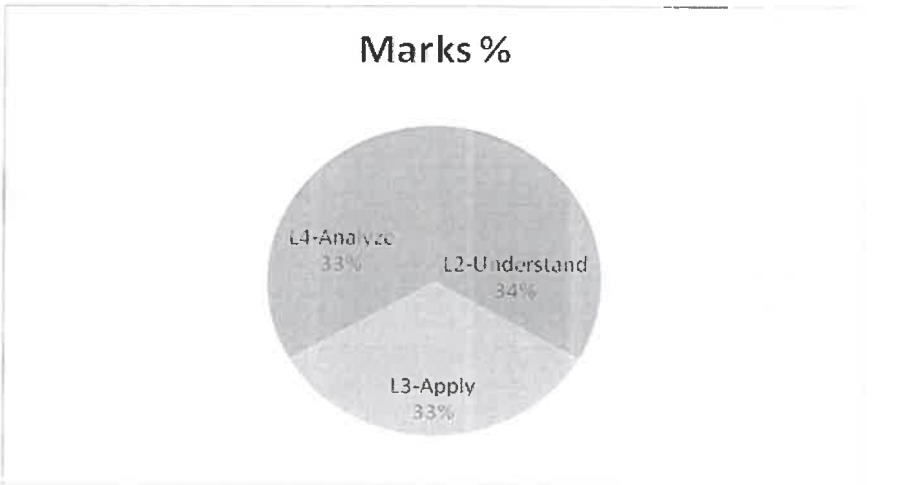
	The Auto correlation function.			

CO	Marks	%
CO21044.1	5	16.67
CO21044.2	5	16.67
CO21044.3	5	16.67
CO21044.4	5	16.67
CO21044.5	5	16.67



Course outcome wise marks Distribution Analysis in %

BTL	Marks	%
L1-Remember		
L2-Understand	20	33
L3-Apply	20	33
L4-Analyze	20	33
L5-Evaluate		
L6-Create		



Blooms Level Marks Distribution %

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II B. Tech I Semester Regular Examinations, Dec -2023-24

RANDOM VARIABLES AND STOCHASTIC PROCESS

(Electronics and Communication Engineering)

Time: 3 hours | Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

*****

UNIT-I

1. a) State and prove the properties of cumulative distribution function (CDF) of X. [7M]

   b) The random variable X has the discrete variable in the set {-1, -0.5, 0.7, 1.5, 3}the corresponding probabilities are assumed to be {0.1, 0.2, 0.1, 0.4, 0.2}. Plot its distribution function and state is it a discrete or continuous distribution function. [7M]

OR

2 a) (i) Define probability density function of a random variable.
(ii) Show that the area under probability density function is unity [7M]

   b) Suppose there is an error probability of 0.05 per word in typing using an electronic type-writer machine. What is the probability that there will be more than one error in a page of 120 words? [7M]

UNIT-II

3 a) Consider the random variable X with probability density function [7M]

$$f_X(x) = \begin{cases} \left(\frac{1}{6}\right)x, & 2 \le x \le 4 \\ 0, & otherwise \end{cases}$$

Find (i) E[X], (ii)E[X^2] and (iii)σ

   b) If $h_1(X)$ and $h_2(X)$ are two functions of a random variable X . Show that [7M]
$E[c_1h_1(X)+ c_2h_2(X)] = c_1E[h_1(X)] + c_2E[h_2(X)]$
Where $c_1$and c_2 are real constants.

OR

4. a) Consider a random variable, X, with the PMF as tabulated below [7M]

x	0	1	2	3
$p(x)$	1/8	1/8	1/4	1/2

Find
(i) mean value of X
(ii) variance of X

   b) Let X be a continuous random variable with density $f_X(x)$, and a new randomvariable is formed by the transformation $Y=X^2$. Show that for $y \ge 0$, $F_Y(y) = F_X(\sqrt{y}) - F_X(-\sqrt{y})$ [7M]

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5.a) State and prove the properties of joint density function [7M]

b)A joint sample space for two random variables X and Y has four elements (1,1), (2,2), (3,3) and (4,4). Probabilities of these elements are 0.1, 0.35, 0.05, and 0.5 respectively.

(i) Determine through logic and sketch the distribution function $F_{XY}(x,y)$

(ii)Find the probability of the event $\{x \leq 2.5, y \leq 6\}$

(ii) Find the probability of the event $\{x \leq 3\}$ [7M]

OR

6.a)Define the bivariate Gaussian random variable. List all the properties of jointly Gaussian random variables. [7M]

b)The joint density of two random variables is given by

$$f_{XY}(x,y) = \begin{cases} \frac{1}{6}; & 0 < x < 2, 0 < y < 3 \\ 0, elsewhere \end{cases}$$

Find the joint density of U and V, when $U = X - Y$ and $V = X + Y$

UNIT-IV

7.a) List all the properties of autocorrelation function. [7M]

b) What is ergodicity? Explain the concept of mean-ergodicity and autocorrelation-ergodicity with an example. [7M]

OR

8.a) Explain about Poisson random processes. [7M]

b) Derive the relation between correlation and covariance of two random variablesX and Y. [7M]

UNIT-V

9.a)Find the mean and mean- square values of output y(t) of an LTI system with input x(t). Assume that x(t) is a WSS process. [7M]

b)Find the power spectral density and average power of X(t) with

$R_{XX}(\tau) = \exp(-|\tau|)$

[7M]

OR

10.a)Define the following systems with applications. [7M]

(i) Band –Limited process

(ii)Band – Limited Band pass process

b)Show that the autocorrelation function and power spectral density form Fouriertransform pair. [7M]

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Sample End Semester Paper Analysis:

Regulation: R20 **Year: II-I** **Academic Year: 2023-24**

Subject/Laboratory name: RVSP

II B. Tech I Semester Regular/Supplementary Examinations, Dec/Jan -2023-24 –(SET-1)				
Q.No	**Question**	**Marks**	**CO**	**TL**
1a.	State and prove the properties of cumulative distribution function (CDF) of X.	7	**CO21044.1**	Understand
1b.	The random variable X has the discrete variable in the set {-1, -0.5, 0.7, 1.5, 3} the corresponding probabilities are assumed to be {0.1, 0.2, 0.1, 0.4, 0.2}. Plot its distribution function and state is it a discrete or continuous distribution function.	7	**CO21044.1**	Apply
2a.	(i) Define probability density function of a random variable. (ii) Show that the area under probability density function is unity	7	**CO21044.1**	Understand
2b	Suppose there is an error probability of 0.05 per word in typing using an electronic type-writer machine. What is the probability that there will be more than one error in a page of 120 words?	7	**CO21044.1**	Understand
3a.	Consider the random variable X with probability density function $f_X(x) = \begin{cases} \left(\frac{1}{6}\right)x, & 2 \le x \le 4 \\ 0, & otherwise \end{cases}$ Find (i) E[X], (ii)E[X2] and (iii)σ	7	**CO21044.2**	Analyze
3b.	If h1(X) and h2(X) are two functions of a random variable X . Show that E[c1h1(X)+ c2h2(X)] = c1E[h1(X)] + c2E[h2(X)] Where c1and c2 are real constants.	7	**CO21044.2**	Analyze
4a.	Consider a random variable, X, with the PMF as tabulated below x | 0 | 1 | 2 | 3 $p(x)$ | 1/8 | 1/8 | 1/4 | 1/2 Find mean value of X variance of X	7	**CO21044.2**	Analyze
4b.	Let X be a continuous random variab le with density fX(x), and a new random variable is formed by the transformation Y=X2 Show that for y≥0, FY(y) =FX(√y)−FX(−√y)	7	**CO21044.2**	Analyze

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5a.	State and prove the properties of joint density function	7	**CO21044.3**	Analyze
5b.	A joint sample space for two random variables X and Y has four elements (1,1), (2,2), (3,3) and (4,4). Probabilities of these elements are 0.1, 0.35, 0.05, and 0.5 respectively. (i)Determine through logic and sketch the distribution function FXY(x,y) (ii)Find the probability of the (iii)Find the probability of the event{x≤3}	7	**CO21044.3**	Analyze
6a.	Define the bivariate Gaussian random variable. List all the properties of jointly Gaussian random variables.	7	**CO21044.3**	Analyze
6b.	The joint density of two random variables is given by	7	**CO21044.3**	Understand
7a.	List all the properties of autocorrelation function.	7	**CO21044.4**	Understand
7b.	What is ergodicity?	7	**CO21044.4**	Apply
8a.	Explain about Poisson random processes.	7	**CO21044.4**	Understand
8b.	Derive the relation between correlation and covariance of two random variables X and Y.	7	**CO21044.4**	Evaluate
9a.	Find the mean and mean- square values of output y(t) of an LTI system with input x(t). Assume that x(t) is a WSS process.	7	**CO21044.5**	Understand
9b.	Find the power spectral density and average power of X(t) with $R_{XX}(\tau) = \exp(-\lvert\tau\rvert)$	7	**CO21044.5**	Understand
10 a.	Define the following systems with applications. (i)Band –Limited process (ii)Band – Limited Band pass process	7	**CO21044.5**	Remember
10 b.	Show that the autocorrelation function and power spectral density form Fourier transform pair.	7	**CO21044.5**	Analyze

CO	Marks	%
C021044.1	14	20
C021044.2	14	20
C021044.3	14	20
C021044.4	14	20
C021044.5	14	20

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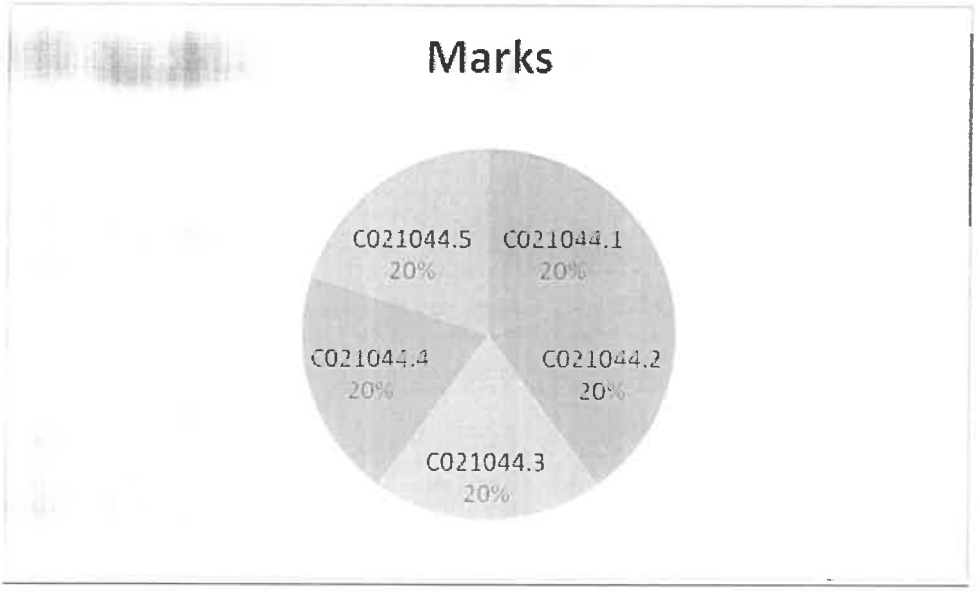
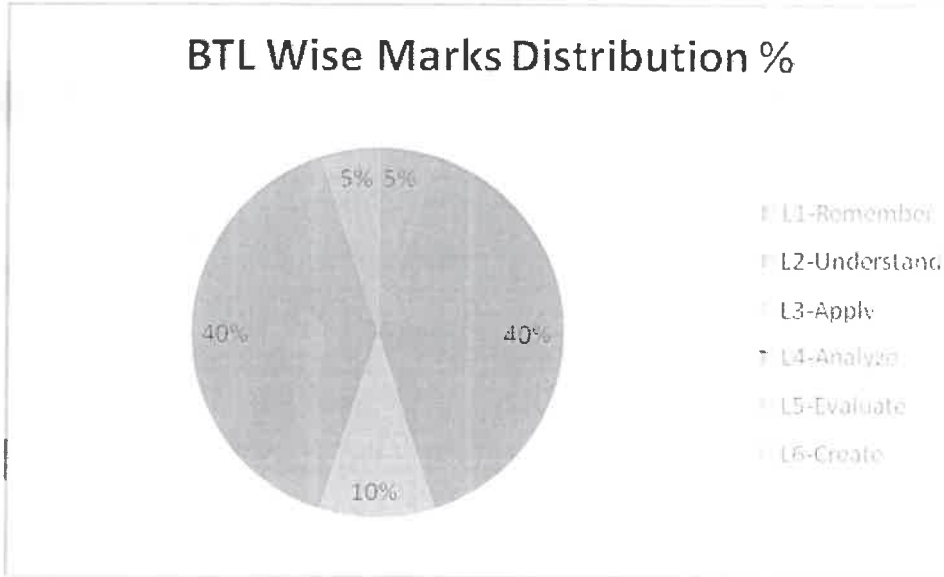


CO wise Marks Distribution

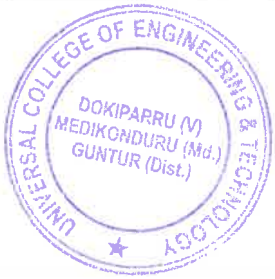
BTL	Marks	%
L1-Remember	7	5
L2-Understand	56	40
L3-Apply	14	10
L4-Analyze	56	40
L5-Evaluate	7	5
L6-Create		



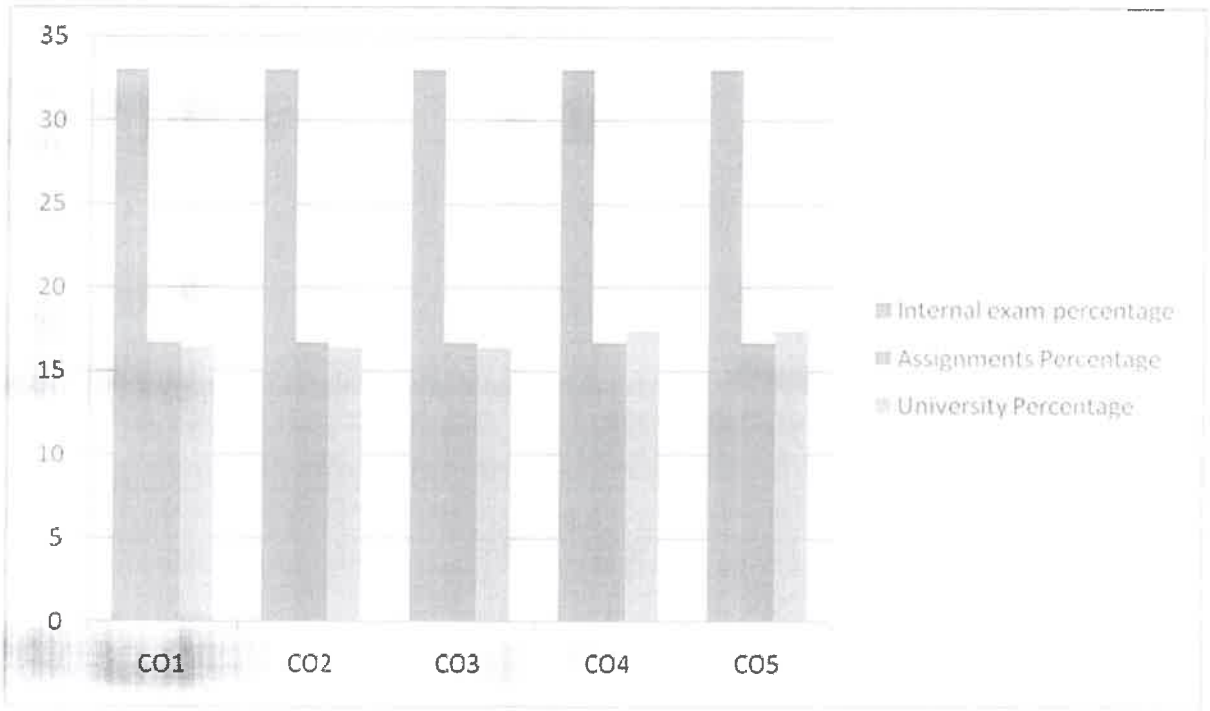
Blooms Level Marks Distribution %

Average levels of evaluation for the COs

COURSE OUTCOME	CO1	CO2	CO3	CO4	CO5
Internal exam Percentage	33	33	33	33	33
Assignments Percentage	16.67	16.67	16.67	16.67	16.67
University Percentage	16.32	16.32	16.32	17.34	17.34



Average levels of evaluation for the COs



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

IV B.Tech I Sem (R20) MID - 1 EXAMINATION

Subject: OC | Time : 02:50 pm to 4:20 pm | Date : 20.09.2023 | Section : ECE A&B

Answer the following questions **Max. Marks : 30**

1. a) Give the block diagram of an optical communication system and explain the function of each block?
   b) Give the advantageous and disadvantage of optical fiber communication?
2. a) List the requirements that be satisfied by materials used to manufacture optical fiber?
   b) Write in detail about glass fiber and detail about plastic optical fiber?
3. a) Explain the need of connecter in optical fiber and list out the types of connectors?
   b) Describe the connector return loss in an optical fiber.

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Sample Internal Question Paper Analysis:

Regulation: R20 **Year: IV-I** **Academic Year: 2023-24**

Subject/Laboratory name: OC

Internal (Mid) - 1

Q.No	Question	Marks	CO	TL
1.	1. a)Give the block diagram of an optical communication system and explain the function of each block? b).Give the advantageous and disadvantage of optical fiber communication?	5+5	CO4104A.1	Remember
2.	2.a). List the requirements that be satisfied by materials used to manufacture optical fiber? b) List the requirements that be satisfied by materials used to manufacture optical fiber?	5+5	CO4104A.2	Understand
3.	3. a List the requirements that be satisfied by materials used to manufacture optical fiber? b) Describe the connector return loss in an optical fiber	5+5	CO4104A.3	Analyze

CO	Marks	%
CO4104A.1	10	33
CO4104A.2	10	33
CO4104A.3	10	33

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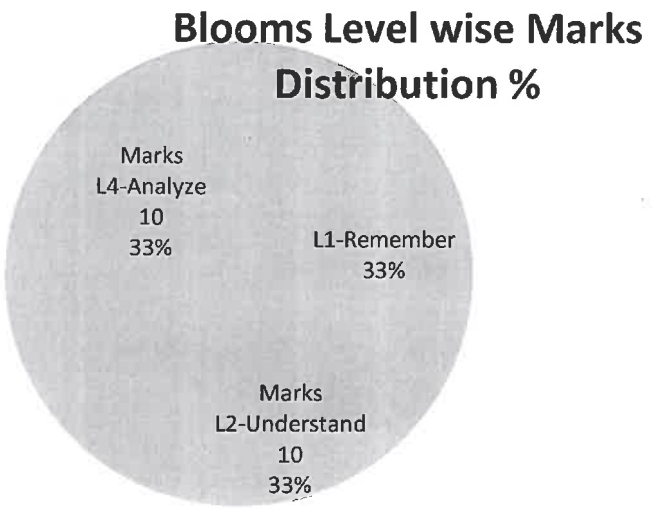
MARKS(%)

Course Outcomewise marks distribution

TL: Taxonomy Level

BTL	Marks	%
L1-Remember	10	33
L2-Understand	10	33
L3-Apply		
L4-Analyze	10	33
L5-Evaluate		
L6-Create		



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

IV B.Tech I Sem (R20) MID –2 EXAMINATION

Subject: OC Time: 02:50 pm to 04:20 pm Date :05.12.2023 Section : ECE A&B

Answer the following questions **Max. Marks : 30**

1. What is meant by 'fiber splicing'? Explain various types of fiber splicing techniques and fiber connectors.
2. a) Explain the working principle of edge emitting and surface emitting double hetero junction LED?
   b) Explain the Physical principles of PIN and APD with neat diagrams?
3. Explain about link power budget and rise time budget in optical communication system.

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Regulation: R20 **Year: IV-I** **Academic Year: 2023-24**

Subject/Laboratory name: OC

Internal (Mid) - 2

Q.No	Question	Marks	CO	TL
1.	1.What is meant by 'fiber splicing'? Explain variou types of fiber splicing techniques and fiber connectors.	5+5	CO4104A.1	Analyze
2.	2(a)Explain the working principle of edge emitting and surface emitting double hetero junction LED? b) Explain the Physical principles of PIN and APD with neat diagrams?	5+5	CO4104A.1	Remember
3.	Explain about link power budget and rise time budget in optical communication system	5+5	CO4104A.1	Understand

CO	Marks	%
CO4104A.3	10	33
CO4104A.4	10	33
CO4104A.5	10	33

MARKS(%)

Course Outcome wise marks distribution

BTL	Marks	%
L1-Remember	10	33
L2-Understand	10	33
L3-Apply		
L4-Analyze	10	33
L5-Evaluate		
L6-Create		

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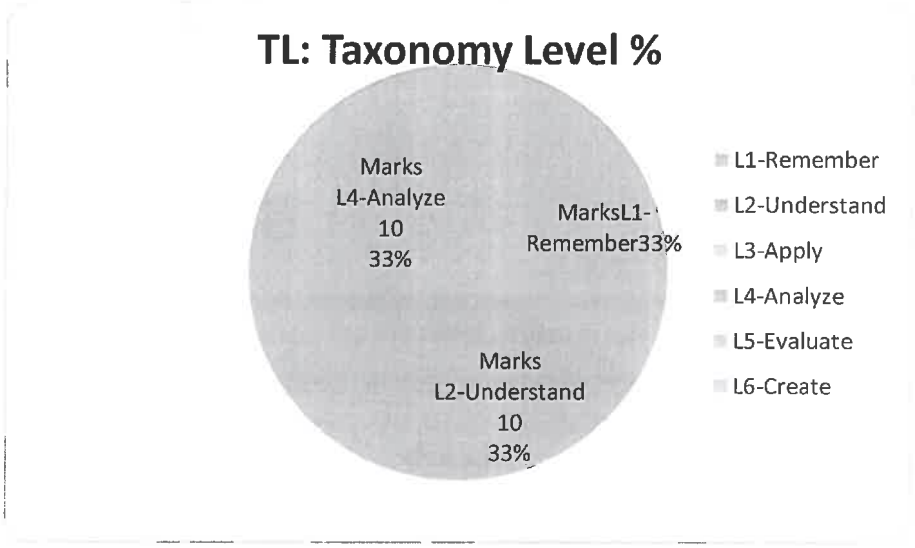

Blooms Level wise Marks Distribution

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

NAME OF THE FACULTY: K.BABU RAO **DESIGINATION**: ASSOCIATE PROFESSOR.

ACADEMIC YEAR: 2023-24 **YEAR & SEM**: IV-I ECE

MID-I QUESTION PAPER EVALUATION

Q.No	Scheme	Evaluation	Total Marks
1	(a) Give the block diagram of an optical communication system and explain the function of each block	5M	10M
	(b) Give the advantageous and disadvantage of optical fiber communication?	5M	
2	a) List the requirements that be satisfied by materials used to manufacture optical fiber?	5M	10M
	b) Write in detail about glass fiber and detail about plastic optical fiber?	5M	
3	a) Explain the need of connecter in optical fiber and list out the types of connectors?	5M	10M
	b)Describe the connector return loss in an optical fiber.	5M	

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ACADEMIC YEAR: 2023-24 **YEAR & SEM**: IV-I ECE

MID-2 QUESTION PAPER EVALUATION

Q.No	Scheme	Evaluation	Total Marks
1	What is meant by 'fiber splicing'? Explain various types of fiber splicing techniques and fiber connectors.	5M 5M	10M
2	a) Explain the working principle of edge emitting and surface emitting double hetero junction LED?	5M	10M
	(b)Explain the Physical principles of PIN and APD with neat diagrams	5M	
3	Explain link power budget and rise time budget in optical communication system	5M 5M	10M

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Sample Assignment Question Paper Analysis:

Regulation: R20 **Year: IV-I** **Academic Year: 2023-24**

Subject Name: OC

Q NO	Assessment question	Marks	Connected CO	BTL
A1.1	DefineGradedIndexfiber(GIF).Explaintheraytransmissnmechanism inGIF.	5	CO4104A.1	Remember
A1.2	DrawthestructureofanOpticalfiber.Explainmodecouplgeffectsduetobendsinfiber	5	CO4104A.1	understand
A2.1	Discussabouttheproperties andapplicationsofActiveglsfibers	5	CO4104A.2	understand
A2.2	Definethetermdispersioninfibe DiscussaboutMaterialdispersion	5	CO4104A.2	understand
A3.1	Discuss about single modefiberjoints	5	CO4104A.3	Analyze
A3.2	xplainany2-losseswithsuitablediagrams.	5	CO4104A.3	understand
A4.1	Design asurfaceemittingLED andexplaintheirradiationproperty	5	CO4104A.4	Remember
A4.2	vrite theTemperature effectsAPDavalanche gain? Explain.	5	CO4104A.4	understand
A5.1	WriteanoteonEquilibriumNumericalApertureanddiscusstheapplications	5	CO4104A.5	understand
A5.2	WhatisWDM? ExplainthebasicprincipleofWDM?	5	CO4104A.5	understand

CO	MarkS	%
CO4104A.1	5	16.67
CO4104A.2	5	16.67
CO4104A.3	5	16.67

CO4104A.4	5	16.67
CO4104A5	5	16.67

Course outcome wise marks Distribution Analysis in %

BTL	Marks	%
L1-Remember	10	20
L2-Understand	35	70
L3-Apply		
L4-Analyze	5	10
L5-Evaluate		
L6-Create		

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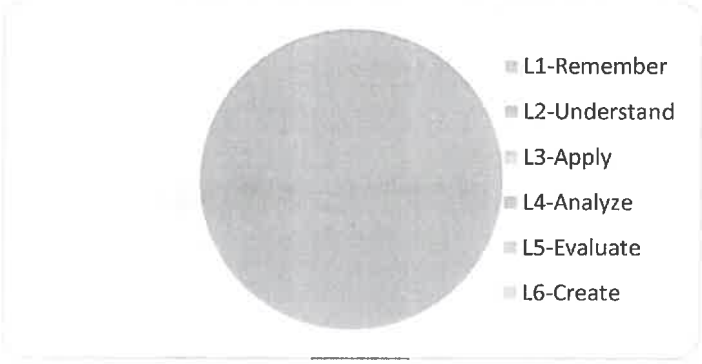

Blooms Level Marks Distribution %

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CodeNo:**R204104AR20**

Set No.1

IVB.TechISemesterRegularExaminations,January23–2024

OPTICALCOMMUNICATION

(ElectronicsandCommunicationEngineering)

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

Answer any FIVE
QuestionsONEQuestionfromEachunit
AllQuestionsCarryEqualMarks

UNIT-I

1a) DefineGradedIndexfiber(GIF).Explaintheraytransmissionmechanism inGIF. [7]

b) A multimode step index fiber with a core diameter of 100μm and relativeindex difference of 1.5% is operating at a wave length of 0.85μm. If the corerefractiveindexis1.50,estimate(i)Thenormalizedfrequencyforthefiber, (ii)Thenumberofguided modes. [7]

(OR)

2 a)DrawthestructureofanOpticalfiber.Explainmodecouplingeffectsdueto bendsinfiber.

(b)AsilicaOFhasacorerefractiveindexof1.45andacladdingrefractiveindex of1.42.D(i) Criticalangleat the core-claddinginterface(ii)NumericalAperture ofthefiber.

UNIT–II

3a) Discussabouttheproperties andapplicationsofActiveglassfibers. [7]

b)Definethetermdispersioninfibers. DiscussaboutMaterialdispersion. [7]

(OR)

4a) Elucidatemicroand macrobendinglosses. [7]

b)ExplainaboutInformationcapacitydetermination. [7]

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UNIT - III

5a) Discussabout single modefiberjoints. [7]

b)Listoutintrinsiccouplinglossesandexplainany2-losseswithsuitablediagrams. [7]

(OR)

6a) Explainaboutselfalignmenttypes existingduringfusionsplicing.[7]

b)What parameters to be considered while selecting good OF connector design? Explain.

UNIT – IV

7a) Design asurfaceemittingLED andexplaintheirradiationproperty. [7]

b) HowtheTemperature effectsAPDavalanche gain? Explain. [7]

(OR)

8a) Howcanbeestimatedresonantfrequencies of a Laserdiode?Explain. [7]

b)Classifydetector response timeandexplain anyoneofthemethod. [7]

UNIT - V

9a) WriteanoteonEquilibriumNumericalApertureanddiscusstheapplications. [7]

b) WhatisWDM? ExplainthebasicprincipleofWDM? [7]

(OR)

10a) Explainthehowthepoweriscouplingfromsourcetofiber.Discussanimportanceof acceptance angleduringpowercoupling. [7]

b)List out thetypes oferror sourcesandexplainaboutanytwosources. [7]

Sample End Semester Paper Analysis:

Regulation: R20 **Year: IV-I** **Academic Year: 2023-24**

Subject/Laboratory name: OC

IV B. Tech I Semester Regular/Supplementary Examinations, Dec/Jan -2023-24 –(SET-1)				
Q. No	**Question**	**Marks**	**CO**	**TL**
1a.	fineGradedIndexfiber(GIF).Explaintheraytransmissionmechanism inGIF.	7	CO4104A.1	Understand
1b.	A multimode step index fiber with a core diameter of 100μm and relativeindex difference of 1.5% is operating at a wave length of 0.85μm. If the corerefractiveindexis1.50,estimate(i)Thenormalizedfrequencyforthefiber, (ii)Thenumberofguided modes	7	CO4104A.1	Remember
2a.	DrawthestructureofanOpticalfiber.Explainmodecouplingeffectsduetobendsinfiber	7	CO4104A.1	Remember
2b	The SilicaOFhasacorerefractiveindexof1.45andacladdingrefractiveindex of1.42.Determine(i) Criticalangleat the core-claddinginterface (ii)Numerical Aperture of the fiber.	7	CO4104A.1	Understand
3a.	DiscussabouttheproperiesandapplicationsofActiveglassfibers	7	CO4104A.2	Analyze
3b.	Definethetermdispersioninfibers. DiscussaboutMaterialdispersion	7	CO4104A.2	Create
4a.	Elucidatemicroand macrobendinglosses	7	CO4104A.2	Understand
4b.	ExplainaboutInformationcapacitydetermination	7	CO4104A.2	Analyze
5a.	Discussabout single modefiberjoints.	7	CO4104A.3	Analyze
5b.	Listoutintrinsiccouplinglossesandexplainany2-losseswithsuitablediagrams.	7	CO4104A.3	Analyze
6a.	Explainaboutselfalignmenttypes existingduringfusionsplicing	7	CO4104A.3	Analyze

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6b.	WhatparameterstobeconsideredwhileselectinggoodO F connectordesign?Explain	7	CO4104A .3	Understand
7a.	Design asurfaceemittingLED andexplaintheirradiationproperty	7	CO4104A .4	Understand
7b.	HowtheTemperature effectsAPDavalanche gain? Explain.	7	CO4104A .4	Apply
8a.	Howcanbeestimatedresonantfrequencies of a Laserdiode?Explain	7	CO4104A .4	Understand
8b.	Classifydetector response timeandexplain anyoneofthemethod	7	CO4104A .4	Evaluate
9a.	WriteanoteonEquilibriumNumericalApertureanddiscu sstheapplications.	7	CO4104A .5	Understand
9b.	WhatisWDM? ExplainthebasicprincipleofWDM?	7	CO4104A .5	Understand
10 a.	Explainthehowthepoweriscouplingfromsourcetofiber .Discussanimportanceof acceptance angleduringpowercoupling.	7	CO4104A .5	Remember
10 b.	List out thetypes oferror sourcesandexplainaboutanytwosources.	7	CO4104A .5	Create

CO	Marks	%
CO4104A. 1	14	20
CO4104A. 2	14	20
CO4104A. 3	14	20
CO4104A. 4	14	20
CO4104A. 5	14	20

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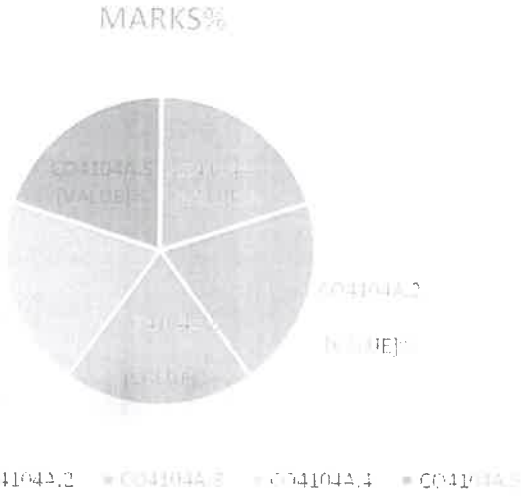
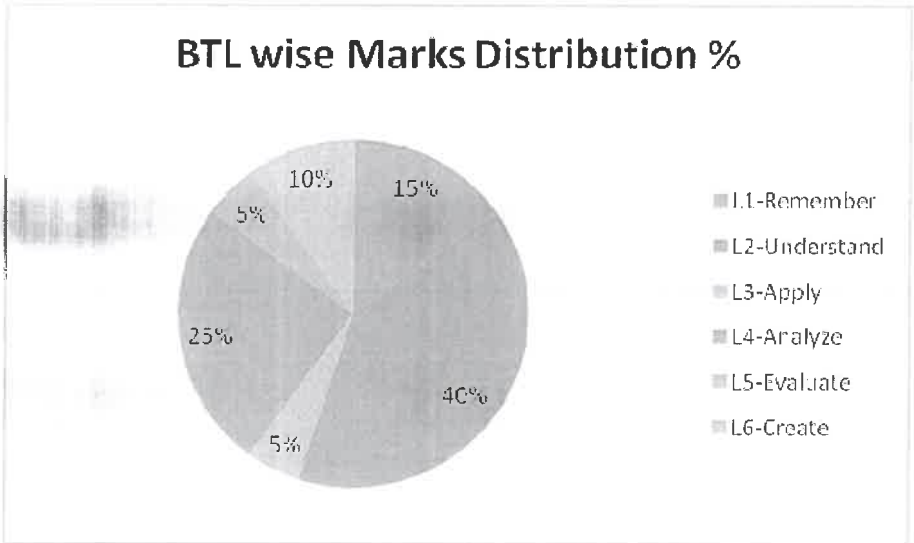


BTL	Marks	%
L1-Remember	21	15
L2-Understand	56	40
L3-Apply	7	5
L4-Analyze	35	25
L5-Evaluate	7	5
L6-Create	14	10



Blooms Level Marks Distribution %

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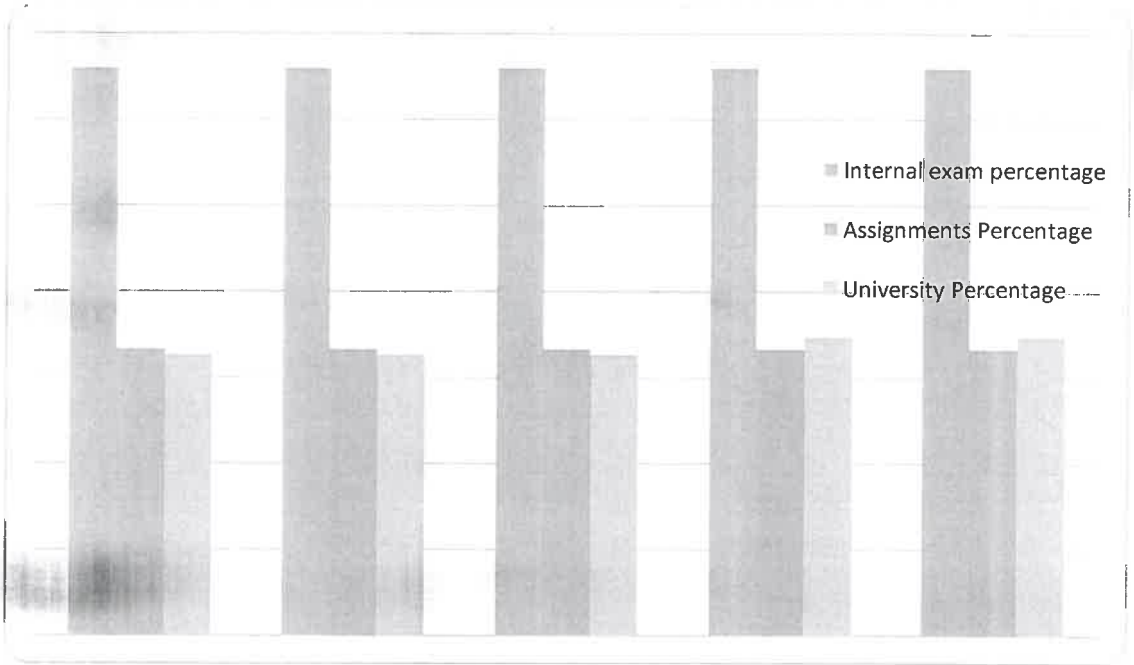
Average levels of evaluation for the COs

COURSE OUTCOME	CO1	CO2	CO3	CO4	CO5
Internal exam Percentage	33	33	33	33	33
Assignments Percentage	16.67	16.67	16.67	16.67	16.67
University Percentage	16.32	16.32	16.32	17.34	17.34

Average levels of evaluation for the COs



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