RV College of Engineering®
Mysore Road, RV Vidyaniketan Post,
Bengaluru - 560059, Karnataka, India

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USN

Academic year 2024-2025 (ODD Sem)

DEPARTMENT OF INDUSTRIAL ENGINEERING & MANAGEMENT

Date	**27th January 2025**	**Maximum Marks**	**10 + 50**
Course Code	**HS251TA**	**Duration**	**120 Min**
Sem	**V**	**Improvement CIE**	

PRINCIPLES OF MANAGEMENT AND ECONOMICS

Note:
1. Answer all the Questions.

Sl. No.	Questions	M	BT	CO
	Part – A			
1	Which theory compares an individual's input-output ratio to others?	01	1	3
2	In Vroom's Expectancy Theory, what does the term *Valence* refer to?	01	1	3
3	Mention any one difference between transactional leadership from transformational leadership?	01	1	3
4	In Blake and Mouton's Managerial Grid, which leadership style balances concern for people and production?	01	1	2
5	According to McGregor's Theory X, what type of behavior is assumed of employees?	01	1	3
6	In the IS-LM model, what does the IS curve represent?	01	1	5
7	Which Keynesian model incorporates both the goods and labor markets to determine output and employment?	01	1	5
8	What is the key assumption of the Keynesian Cross model?	01	1	5
9	What role does fiscal policy play in the Keynesian Cross model?	01	1	4
10	What does the aggregate supply (AS) curve in the AS-AD model represent?	01	1	5
	Part –B			
1	A mid-sized company is facing low productivity and high turnover due to employees feeling undervalued and lacking growth opportunities. Using Herzberg's Two-Factor Theory, analyze the hygiene factors and motivators that could improve employee satisfaction.	10	4	3
2	A project manager notices that employees' performance drops when they do not understand how their efforts contribute to organizational goals. Using Vroom's Expectancy Theory, explain how the manager can enhance motivation.	10	3	
3	A team leader in a tech company has a diverse team with varying skill levels. Some need detailed guidance, while others prefer autonomy. Using Hersey and Blanchard's Situational Leadership Model, suggest leadership styles for different team members based on their maturity levels.	10	3	
4	Describe the Keynesian Cross Model. How does it explain the equilibrium level of national income in an economy? Discuss the impact of changes in government spending and investment on national income in this model.	10	2	
5	Explain the IS-LM model. Discuss the equilibrium in the goods market (IS curve) and money market (LM curve). How do changes in fiscal and monetary policy affect output and interest rates according to this model?	10	2	

BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

	Particulars		CO1	CO2	CO3	CO4	CO5	L1	L2	L3	L4	L5
Marks Distribution	Quiz	Max Marks	-	01	04	01	04	10	-	-	-	-
	Test		-	-	30	10	10	-	20	20	10	-

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	R V College of Engineering Department of Computer Science and Engineering CIE - III(Improvement): Question Paper				
Subject : (Code)	Database Management Systems (CD252IA)		Semester : 5TH BE		
Date :/01/2025	Duration : 120 minutes	Staff :Dr.HR/Dr.CNS/Dr.PD/Dr.SB/Dr.SNM/Dr.PH/Dr.PT/Dr.VJ			
Name :	USN :	Section :	A/B/C/D/CD/CY/ISE/AI/ML		

S.N	PART-A	M	BT	Co
1.	What is the difference between lossless and lossy decomposition in DBMS?	2	L2	3
2.	List the two conditions for checking the Binary decomposition?	2	L1	2
3.	Define the Condition of 3NF?	2	L1	2
4.	Define a Transaction with example.	2	L1	1
5.	Elaborate and Define ACID properties	2	L1	1
	PART-B			
1a	Discuss the condition for two functional dependencies to be equivalent? Check whether relation R(A,B,C,D) having two FD sets FD1 = {A->B, B->C, AB->D} and FD2 = {A->B, B->C, A->C, A->D} are equivalent or not ?	5	L3	2
1b	Explain any 5 reasons for failure of transaction.	5	L2	4
2a	Explain the steps for finding Minimal Cover for Functional Dependencies. For the given set of FDs {A->C, AC->D, E->H, E->AD} find the minimal cover.	6	L3	2
2b	Write the algorithm for Testing whether a schedule is serializable or not.	4	L2	4
3a	Explain the properties of Attribute preservation and dependency preservation?	5	L2	3
3b	Given a relational schema R = { SSN, ENAME, PNUMBER, PNAME, PLOCATION, HOURS } and the decomposed table R1 = { ENAME, PLOCATION } and R2 = { SSN, PNUMBER, HOURS, PNAME, PLOCATION } and FD = { SSN → ENAME, PNUMBER → { PNAME, PLOCATION}, { SSN, PNUMBER } → HOURS }. Identify whether the given decomposition of R, R1 and R2 is lossless or lossy decomposition ?	5	L3	4
4a	Given a relation R(A, B, C, D) and Functional Dependency set FD = { AB → CD, B → C }, determine whether the given R is in 2NF? If not convert it into 2 NF.	5	L3	1
b	With a transition diagram explain the states for transaction execution.	5	L2	2
5.	List and explain with examples the types of problems that can be encountered if two transactions are executing concurrently.	10	L2	1

Course Outcomes: After completing the course, the students will be able to:	
CO1	Understand and explore the needs and concepts of relational, NoSQL database and Distributed Architecture
CO2	Apply the knowledge of logical database design principles to real time issues.
CO3	Analyze and design data base systems using relational, NoSQL and Big Data concepts
CO4	Develop applications using relational and NoSQL database
CO5	Demonstrate database applications using various technologies.

BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

	Particulars	CO1	CO2	CO3	CO4	CO5	L1	L2	L3	L4	L5	L6
Marks Distribution	Test	19	20	7	14		8	31	21	-	-	-

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Academic year 2024-2025 (Odd Sem)
DEPARTMENT OF

COMPUTER SCIENCE & ENGINEERING

Date	28-01-2025	Maximum Marks	10+50
Course Code	CS354TA	Duration	120 Min
Sem-V	Improvement Test	Staff: HKK|ASP|SMS|MRA	

THEORY OF COMPUTATION
(Common to CSE & ISE)

PART-A

		Marks	BT	CO
1.	Design the TM that performs 2's complement.	2	L3	CO3
2.	Mention the Transition function ∂ for TM with stay option.	1	L1	CO1
3.	Difference between recursively enumerable language and recursive language.	2	L2	CO2
4.	Write the TM transition diagram for the given regular expression (0+1)*001(0+1)*.	2	L3	CO3
5.	What language does the following Unrestricted Grammar derive? $S \rightarrow S_1B,\ S_1 \rightarrow As_1b,\ Bb \rightarrow bbbB,\ As_1b \rightarrow aa,\ B \rightarrow \lambda$	2	L3	CO3
6.	Show that every regular languages are also recursively enumerable languages.	1	L1	CO1

PART-B

1.	Define Turing Machine, Language acceptance by Turing Machine. Design Turing Machine to accept L= {WW^R : W ε {a, b,c}*. Using Instantaneous Descriptions show that the string babccbab is accepted by TM.	10	L4	CO4
2a.	Define Linear Bounded Automata, Language acceptance by Linear Bounded Automata. Design Linear Bounded Automata to accept L= { w | w ε {a, b}* and $N_a(w)=N_b(w)$}. Using Instantaneous Descriptions show that the string babaab is accepted by LBA.	6	L4	CO4
2b.	With the help of Chomsky hierarchy explain the relationship among families of languages.	4	L2	CO
3a.	Design a Turing Machines (TM) to compute the function f(x, y)=xy where x, y ϵ {a,b,c}*. Trace the machine for x=bcab and y= abca.	6	L1	CO
3b.	Explain with an example the working of Multitape Turing Machine. Prove that for the given Multitape Turing Machine there exists an equivalent single tape standard Turing Machine.	4	L1	CO

4a.	Define PCP.Solve the PCP given below.	6	L3	CO3

	List A	List B
i	wi	Xi
1	10	101
2	01	100
3	0	10
4	100	0
5	1	010

4b.	Prove (i) If L1 and L2 are both recursively enumerable languages over Σ, then L1 ∪ L2 and L1 ∩ L2 are also recursively enumerable. (ii) If L1 and L2 are both recursive languages over Σ, then L1 ∪ L2 and L1 ∩ L2 are also recursive.	4	L2	CO2
5a.	Define Unrestricted Grammars. Write Unrestricted grammar to generate language $L= \{ w \mid w \varepsilon \{a, b, c\}^*$ and $N_a(w)=N_b(w)=N_c(w)\}$. Give the derivation for the string bacbbcaac.	4	L3	C
5b.	Design a Turing Machines (TM) to compute the function f(x, y) where x, y ∈ {1}*. f(x, y) = x - y if x > y = y-x if x < y =0 if x=y	6	L4	

BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

	Particulars	CO1	CO2	CO3	CO4	CO5	L1	L2	L3	L4
Marks stribution	Max Marks	8	14	16	22	-	12	10	16	22

rse Outcomes:

. Understand the fundamental concepts of theory of computations
. Analyze the tools of finite automata to various fields of computer science.
. Design solution model for complex problems, using the appropriate skills of automata theory for be
. Apply automata skills in situations that describe computation effectively and efficiently.

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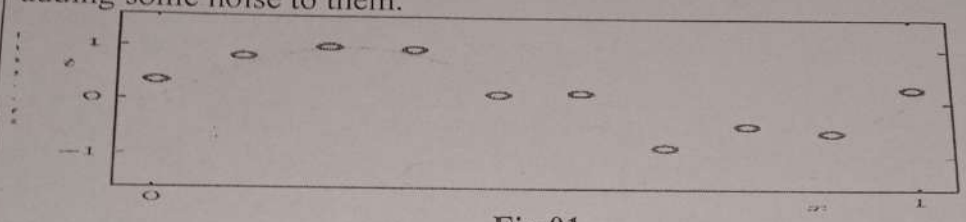
Academic year 2024-2025 (Odd Sem)

Date	27/01/2025	Maximum Marks	50+10
Course Code	IS353IA	Duration	90+30
Sem	V	CIE III	
UG/PG	UG	Faculty: MEM/AS/VH/VG/JS/SHRS/ARA	

Artificial Intelligence and Machine Learning

(Common to AIML/CSE/CD/CY/ISE)

Note: - Students need to add comments to their answers wherever required.

	QUIZ	M	BT	CO
1.	Consider a data given below (Fig 01), points drawn from ***sin*** curve and adding some noise to them.  **Fig 01** Explain the concept of model selection, while emphasizing concepts of ***Under fitting***	2	L3	CO2
2.	For the same figure (Fig 01), Explain the concept of model selection, while emphasizing concepts of **Over fitting**	2	L1	CO1
3.	Define Cohesion and separation of clustering.	2	L1	CO1
4.	In bagging base classifiers need to run in _____, while in boosting base classifiers should run in _____.	2	L2	CO2
5.	How does the presence of a large number (> 80%) of irrelevant features in the input data affect the performance of Random Forests?	2	L3	CO2
Q. No.	**Questions**	**M**	**BT**	**CO**
1. A	What does the utility function of a game represent? Using the concept of the utility function, explain why a game is referred to as a zero-sum game.	**5**	L2	CO1
B	Explain the Alpha-Beta Pruning algorithm with a suitable example. Discuss how it improves the efficiency of the Minimax algorithm.	**5**	L2	CO2
2. A	What is the generalization error of a classification model? How do ensemble methods enhance the classification accuracy of the base model?	**5**	L1	CO5
B	What is Bagging? Explain how it works	**5**	L2	CO2
3. A	Provide an overview of the AdaBoost algorithm, outline its steps (Algorithm), and explain how the weights are adjusted in the AdaBoost mechanism.	**10**	L2	CO2
4. A	A dataset is classified using three different classifiers (C1, C2, and C3) in an ensemble method. The classifiers' predictions and the actual labels are given below:	**05**	L3	CO

		Instance	Actual Label	C1 Prediction	C2 Prediction	C3 Prediction			
		1	1	1	1	0			
		2	0	0	1	0			
		3	1	1	0	1			
		4	0	0	0	0			
		5	1	1	1	1			
		Using a majority voting ensemble method, determine the final predictions for each instance. Calculate the accuracy of the ensemble model and compare it with the accuracy of individual classifiers.							
	B	What is cluster analysis? Explain the different types of clustering techniques.					**05**	L2	CO5
5.	A	Explain the basic K-means algorithm with a step-by-step example.					**05**	L1	CO2
	B	Explain how cohesion and separation are used for unsupervised cluster evaluation.					**05**	L3	CO

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Blooms Taxonomy, CO-Course Outcomes

arks istribution	Particulars		CO1	CO2	CO3	CO4	CO5	L1	L2	L3	L4	L5	L
	Test	Max Marks	9	41	-	-	10	14	32	14	-	-	

Course Outcomes:

CO1:	Explain and apply AI and ML algorithms to address various requirements of real-world problems.
CO2:	Design and develop AI and ML solutions to benefit society, science, and industry.
CO3:	Use modern tools to create AI and ML solutions.
CO4:	Demonstrate effective communication through team presentations and reports to analyze the impa AI and ML solutions on society and nature.
	Conduct performance evaluation, modeling, and validation of AI and ML solutions benefiting lif