	Hall Ticket Number :		_								
	Code: 20AC41T	: <b>0</b>									
	Il B.Tech. II Semester Regular & Supplementary Examinations May/June 2										
	Probability and Statistics										
	(Common to CE, ME, CSE, AI&DS, CSE(DS), CSE(AI) and AI&ML) Max. Marks: 70 Time: 3 Hours										
*****											
<ul> <li>Note: 1. Question Paper consists of two parts (Part-A and Part-B)</li> <li>2. In Part-A, each question carries Two marks.</li> <li>3. Answer ALL the questions in Part-A and Part-B</li> </ul>											
<u>PART-A</u> (Compulsory question)											
1.	Answer ALL the following short answer questions ( $5 \times 2 = 10M$ )	CO	BL								
a)	A sample of five university students responded to the question "How										
	much time, in minutes, did you spend on the social network site										
ይ)	yesterday?" 100, 45, 60, 130, 30. Find the mean and the median.	CO1	L1								
D)	What is the probability that a leap year selected at random will contain 53 Sundays?	CO2	L1								
c) Define Normal distribution.											
d) Explain Type I error and Type II error.											
e) Write $t^2$ statistic for analysis of r × c table.											
	PART-B										
	Answer five questions by choosing one question from each unit ( $5 \times 12 = 60 \text{ Ma}$	-	E.								
	Marks	s CO	BL								
2.	Calculate the mean and median for the following table										
		I CO1	L3								
	Age (in years) 20-30 30-40 40-50 50-60 60-70 70-80 80-9	90									
	No. of members         3         61         132         153         140         51         2										
	OR										
3.											
	Physics are as follows. Two numbers within brackets										
	denote the ranks of the students in Mathematics and Physics: (1,1) (2,10) (3,3) (4,4) (5,5) (6,7) (7,2) (8,6) (9,8)										
	(10,11) $(11,15)$ $(12,9)$ $(13,14)$ $(14,12)$ $(15,16)$ $(16,13).$										
	Calculate the rank correlation coefficient for proficiencies										
	of this group in Mathematics and Physics. 12M	l CO1	L4								

## UNIT-II

4. In a bolt factory machines A,B and C manufacture respectively 25%.35% and 40% of the total. Of their output 5, 4, 2 percent are defective bolts. A bolt is drawn at random from the product and is found to be defective. What are the probabilities that it was manufactured by machines A, B and C?

12M CO2 L2

5. Let X be a continuous random variable with distribution :

 $f(x) = \begin{cases} k \ x^2 & \text{if } 0 \le x \le 1 \\ 0 & \text{elsewhere} \end{cases}$ 

(i) Evaluate k (ii) Find  $p(1/4 \le X \le 3/4)$ . (iii) Find p(X > 2/3). 12M CO2 L5 UNIT–III 6. a) The probability that a patient recovers from a rare blood disease is 0.4. If 15 people are known to have contracted this disease, what is the probability that (i) at least 10 survive, (ii) from 3 to 8 survive, and (iii) exactly 5 survive? 6M CO3 L1 b) A car hires firm has two cars which it fires out day by day. Tile number of demands for a car on each day is distributed as Poisson variate with mean 1.5. Calculate the proportion of days on which (i) neither car is used, and (ii) some demand is refused. 6M CO3 L3 OR 7. a) Out of 800 families with 5 children each, how many would you except to have (i) 3 boys (ii) either 2 or 3 boys? (iii) 5 girls. Assume equal probabilities for boys and girls. 6M CO3 L2 b) In a normal distribution, 7% of the items are under 35 and 89% are under 63. What are the mean and standard deviation of the distribution? 6M CO3 L1 UNIT-IV 8. a) The average zinc concentration recovered from a sample of measurements taken in 36 different locations in a river is found to be 2.6 grams per milliliter. Find the 95% and 99% confidence intervals for the mean zinc concentration in the river. Assume that the population standard deviation is 0.3gram per milliliter. 6M CO4 L2 b) A study showed that 64 of 180 persons who saw a photocopying machine advertised during the telecast of a baseball game and 75 of 180 other persons who saw it advertised on a variety show remembered the brand name 2 hours later. Use the Z- statistic to test at the 0.05 level of significance whether the difference between the corresponding sample proportions is significant. 6M CO4 L3 OR 9. a) If x = 36 of n = 100 persons interviewed are familiar with the tax incentives for installing certain energy-saving devices, construct a 95% confidence interval for the corresponding true proportion. 6M CO4 L3 b) In 64 randomly selected hours of production, the mean and the standard deviation of the number of acceptable pieces produced by a automatic stamping machine are x = 1,038 and s = 146. At the 0.05 level of significance, does this enable us to reject the null hypothesis  $\mu = 1,000$ against the alternative hypothesis  $\mu > 1,000$ ?

6M CO4 L5

## UNIT-V

10. It is desired to determine whether there is less variability in the silver plating done by Company 1 than in that done by Company 2. If independent random samples of size 12 of the two companies' work yield  $s_1 = 0.035$  mil and  $s_2 = 0.062$  mil, test the null hypothesis  ${}^2_1 = {}^2_2$  against the alternative hypothesis  ${}^2_1 < {}^2_2$  at the 0.05 level of significance.

12M CO5 L5

## OR

11. The following is the distribution of the hourly number of trucks arriving at a company's warehouse:

1
Frequency
52
151
130
102
45
12
5
1
2

Find the mean of this distribution, and using it (rounded to one decimal place) as the parameter , fit a Poisson distribution. Test for goodness of fit at the 0.05 level of significance.

\*\*\* End \*\*\*

12M CO5 L6

R-20         Il B.Tech. Il Semester Regular & Supplementary Examinations May / June 2024         Design and Analysis of Algorithms (Common to CSE, Al&DS, CSE(Al), CSE(DS) and Al&ML)         Max. Marks: 70       Time: 3 Hours         Note: 1. Question Paper consists of two parts (Part-A and Part-B)         2. In Part-A, each question carries Two marks.       3. Answer ALL the questions in Part-A and Part-B         PART-A (Compulsory question)       CO       BL         a) Show that 2n+3 = (n).       CO1       L3         b) What is the advantage of binary search over linear search?       CO2       L2         c) Define 0-1 knapsack problem.       CO3       L1         d) Give two examples for optimization problems which have a branch and bound solution.       CO4       L1         PART-B         Marks CO BL         UNIT-I
Design and Analysis of Algorithms (Common to CSE, AI&DS, CSE(AI), CSE(DS) and AI&ML) Max. Marks: 70 Time: 3 Hours ********         Note: 1. Question Paper consists of two parts (Part-A and Part-B) 2. In Part-A, each question carries Two marks. 3. Answer ALL the questions in Part-A and Part-B <u>PART-A</u> (Compulsory question)         1. Answer ALL the following short answer questions ( 5 X 2 = 10M )       CO       BL         a) Show that 2n+3 = (n).       CO1       L3         b) What is the advantage of binary search over linear search?       CO2       L2         c) Define 0-1 knapsack problem.       CO3       L1         d) Give two examples for optimization problems which have a branch and bound solution.       CO4       L1         e) What is halting problem of Turing machine?       C05       L1         Marks CO BL
(Common to CSE, Al&DS, ČSE(Al), CSE(DS) and Al&ML)         Max. Marks: 70         Time: 3 Hours         ********         Note: 1. Question Paper consists of two parts (Part-A and Part-B)         2. In Part-A, each question carries Two marks.         3. Answer ALL the questions in Part-A and Part-B         PART-A         (Compulsory question)         1.Answer ALL the following short answer questions (5 X 2 = 10M)       CO       BL         a) Show that 2n+3 = (n).       CO1       L3         b) What is the advantage of binary search over linear search?       CO2       L2         c) Define 0-1 knapsack problem.       CO3       L1         d) Give two examples for optimization problems which have a branch and bound solution.       CO4       L1         PART-B         Answer five questions by choosing one question from each unit (5 x 12 = 60 Marks )         Marks CO BL
Max. Marks: 70       Time: 3 Hours         ********         Note: 1. Question Paper consists of two parts (Part-A and Part-B)         2. In Part-A, each question carries Two marks.       3. Answer ALL the questions in Part-A and Part-B         PART-A         Compulsory question         1. Answer ALL the following short answer questions ( 5 X 2 = 10M )         CO         BL         a) Show that 2n+3 = (n).         CO1         b) What is the advantage of binary search over linear search?         CO2         c) Define 0-1 knapsack problem.         CO3         d) Give two examples for optimization problems which have a branch and bound solution.         CO4         L1         PART-B         Marks CO 5         Marks CO 8L
2. In Part-A, each question carries <b>Two marks</b> . 3. Answer <b>ALL</b> the questions in <b>Part-A</b> and <b>Part-B</b> <u>PART-A</u> (Compulsory question) 1. Answer ALL the following short answer questions (5 X 2 = 10M) CO BL a) Show that 2n+3 = (n). CO1 L3 b) What is the advantage of binary search over linear search? CO2 L2 c) Define 0-1 knapsack problem. CO3 L1 d) Give two examples for optimization problems which have a branch and bound solution. CO4 L1 e) What is halting problem of Turing machine? CO5 L1 <u>PART-B</u> Answer five questions by choosing one question from each unit (5 x 12 = 60 Marks) Marks CO BL
3. Answer ALL the questions in Part-A and Part-B PART-A (Compulsory question) 1.Answer ALL the following short answer questions (5 X 2 = 10M) CO BL a) Show that 2n+3 = (n). CO1 L3 b) What is the advantage of binary search over linear search? CO2 L2 c) Define 0-1 knapsack problem. CO3 L1 d) Give two examples for optimization problems which have a branch and bound solution. CO4 L1 e) What is halting problem of Turing machine? CO5 L1 PART-B Answer five questions by choosing one question from each unit (5 x 12 = 60 Marks ) Marks CO BL
PART-A (Compulsory question)         1.Answer ALL the following short answer questions (5 X 2 = 10M)       CO       BL         a) Show that 2n+3 = (n).       CO1       L3         b) What is the advantage of binary search over linear search?       CO2       L2         c) Define 0-1 knapsack problem.       CO3       L1         d) Give two examples for optimization problems which have a branch and bound solution.       CO4       L1         e) What is halting problem of Turing machine?       CO5       L1         PART-B         Marks CO BL
(Compulsory question)         1. Answer ALL the following short answer questions ( 5 X 2 = 10M )       CO       BL         a) Show that 2n+3 = (n).       CO1       L3         b) What is the advantage of binary search over linear search?       CO2       L2         c) Define 0-1 knapsack problem.       CO3       L1         d) Give two examples for optimization problems which have a branch and bound solution.       CO4       L1         e) What is halting problem of Turing machine?       CO5       L1         Marks CO BL
<ul> <li>a) Show that 2n+3 = (n).</li> <li>b) What is the advantage of binary search over linear search?</li> <li>c) Define 0-1 knapsack problem.</li> <li>d) Give two examples for optimization problems which have a branch and bound solution.</li> <li>c) What is halting problem of Turing machine?</li> <li>c) L1</li> <li>CO4 L1</li> <li>CO5 L1</li> <li>C05 L1</li> <li>C05 L1</li> <li>C05 L1</li> <li>C05 L1</li> &lt;</ul>
<ul> <li>b) What is the advantage of binary search over linear search?</li> <li>c) Define 0-1 knapsack problem.</li> <li>d) Give two examples for optimization problems which have a branch and bound solution.</li> <li>cO4 L1</li> <li>e) What is halting problem of Turing machine?</li> <li>CO5 L1</li> </ul> PART-B Answer five questions by choosing one question from each unit (5 x 12 = 60 Marks ) Marks CO BL
<ul> <li>c) Define 0-1 knapsack problem.</li> <li>d) Give two examples for optimization problems which have a branch and bound solution.</li> <li>cO4 L1</li> <li>e) What is halting problem of Turing machine?</li> <li>CO5 L1</li> <li><u>PART-B</u></li> <li>Answer five questions by choosing one question from each unit (5 x 12 = 60 Marks )</li> <li>Marks CO BL</li> </ul>
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<ul> <li>d) Give two examples for optimization problems which have a branch and bound solution.</li> <li>e) What is halting problem of Turing machine?</li> <li>CO5 L1</li> <li><u>PART-B</u></li> <li>Answer <i>five</i> questions by choosing one question from each unit (5 x 12 = 60 Marks ) Marks CO BL</li> </ul>
bound solution. CO4 L1 e) What is halting problem of Turing machine? CO5 L1 <u>PART-B</u> Answer five questions by choosing one question from each unit (5 x 12 = 60 Marks ) Marks CO BL
e) What is halting problem of Turing machine? CO5 L1 <u>PART-B</u> Answer five questions by choosing one question from each unit ( 5 x 12 = 60 Marks ) Marks CO BL
PART-B         Answer five questions by choosing one question from each unit ( 5 x 12 = 60 Marks )         Marks       CO         BL
Marks CO BL
<ol> <li>2. a) Define an algorithm. What are the criteria an algorithm must satisfy? Explain briefly.</li> <li>6M CO1 L1</li> </ol>
b) Define theta notation and give an example. Let $T(n)$ be the number of times "Prograstingtion makes easy things hard
number of times " <i>Procrastination makes easy things hard</i> and hard things harder." is printed in the following algorithm
segment. Determine $T(n)$ and represent it using theta
notation.
for (i =1; i n; i= i++) do
for $(j=i+1; j n; j=j++)$ do
print " Procrastination makes easy things hard and
hard things harder."; 6M CO1 L4
OR
3. a) Explain with pseudo code and a suitable example weighted
union operation. 6M CO1 L2
<ul> <li>b) Define big-oh notation and give an example. Let</li> </ul>
$f(n) = a_m n^m + a_{m-1} n^{m-1} + a_{m-2} n^{m-2} + + a_1 n + a_0$ , be a degree
<i>m</i> polynomial in <i>n</i> and $a_m > 0$ . Show that $f(n) = O(n^m)$ . 6M CO1 L3
UNIT-II
4. a) With pseudo code explain merger sort algorithm. Sort the
array 10, 50, 20, 80, 60, 30, 70, 40 using merge sort. Give a
recurrence for the running time of merge sort and represent its running time using theta notation. 9M CO2 L2
b) What is a greedy-choice property? 3M CO2 L1
OR E. c) Otata ish associate with decelling machine. Oshor the
5. a) State job sequencing with deadlines problem. Solve the
instance, n=7, $(p_1, p_2,, p_7) = (3, 5, 20, 18, 1, 6, 30)$ and $(d_1, d_2,, d_7) = \{1, 3, 4, 3, 2, 1, 2\}$ of job scheduling problem by
$(d_1, d_2, \dots, d_7) = \{1, 3, 4, 3, 2, 1, 2\}$ of job scheduling problem by applying a greedy algorithm. 8M CO2 L3
Page 1 of 2

		Cod	de: 20A:	541T	
	b)	Which of the following arrays is efficiently sorted using quick			
		sort? Justify your answer.			
		A: (1000, 150, 8200, 4300, 5200)			
		B: (600, 1000, 1200, 1500, 1800)	4M	CO2	L2
		UNIT–III			
6.	a)	Define matrix chain multiplication problem. Design a dynamic programming algorithm to solve matrix chain multiplication problem. Apply your algorithm and find an optimal way of multiplying the chain of four matrices $A_1 A_2 A_3 A_4$ , where, $A_1 A_2$ , $A_3 A_4$ have dimensions 5X10,			
		10X15, 15X20 and 20X25 respectively. Also analyze the	1014	000	
	<b>៤</b> )	running time of your algorithm.	TON	CO3	L3
	D)	What are two ingredients an optimization problem must have to apply dynamic programming?	2M	CO3	L2
		OR			
7.	a)	Solve the instance $n=4$ , $(a_1,a_2,a_3,a_4)=(do, if, int, while)$ , P(1:4)=(3,3,1,1) and q(0:4)=(2,3,1,1,1) of optimal binary search tree problem by applying a dynamic programming algorithm.	10M	CO3	13
	h)	Define all-pairs shortest paths problem.		CO3	LU
	0)		2101	003	
8.	a)	Define sum of subsets problem. Explain steps in a			
-		backtracking solution to solve the sum of subsets problem.	6M	CO4	L3
	b)	Define the following terms.			
	,	i. Chromatic number of a graph ii. Planar graph			
		iii. m-colorability decision problem, where m is a positive integer	6M	CO4	L2
		OR			
9.	a)	Explain the general method of branch-and-bound.	4M	CO4	L2
	b)	Define Traveling Salesperson Problem (TSP). Explain briefly the main steps in a branch-and-bound solution to the			
		TSP problem.	8M	CO4	L3
		UNIT-V			
10.	a)	Does there exists a problem which is NP-hard but not NP- complete? Justify.	2M	CO5	L2
	b)	Define the complexity classes and give an example for each: P, NP, NP-hard and NP-complete. Draw a Venn diagram of the complexity classes P, NP, NP-hard and NP- complete set of problems under the assumption that P NP.	10M	CO5	12
		OR		200	<u> </u>
11.	a)				
	,	algorithms.	6M	CO5	L2
	b)	Explain COOK's Theorem.		CO5	
	-	*** End ***			

		Il Ticket Number :	R-20		
•		B.Tech. II Semester Regular & Supplementary Examinations May / . Foundations of Artificial Intelligence and Data Scienc (Artificial Intelligence and Data Science)		24	
Ι	Ma		me: 3 H	ours	
ľ	Not	<ul> <li>e: 1. Question Paper consists of two parts (Part-A and Part-B)</li> <li>2. In Part-A, each question carries Two marks.</li> <li>3. Answer ALL the questions in Part-A and Part-B</li> </ul>			
		<u>PART-A</u>			
	1	(Compulsory question) Answer ALL the following short answer questions $(5 \times 2 = 10M)$	со	Blooms	6
			CO1	Level L1	I
	,	Foundations of AI Define the heuristic search	CO2	L1	-
	'	Explain the roles of Data Science.	CO3	L3	-
	í.	How is data exploration done?	CO4	L1	
		Write any two advantages of Data visualization	CO5	L1	l
	,	PART-B			
		Answer <i>five</i> questions by choosing one question from each unit ( $5 \times 12 = 60$ )	Marks )		
			Marks	СО	BL
		UNIT-I	~ • •		
_	,	Explain the various benefits of Al	6M	CO1	L2
ł	b)	Explain about the problem solving agent.	6M	CO1	L2
	、	OR			
_	a)	Explain the types of Agent and its environment	6M	CO1	L2
ľ	b)	Give an example of a problem for which breadth first search would work better than depth first search.	6M	CO1	12
			OIVI	COT	LJ
ć	a)	Explain the algorithm for steepest hill climbing with the help			
	,	of an example.	6M	CO2	L3
ł	b)	Discuss Simulated Annealing in detail	6M	CO2	L3
		OR			
		Write the constraint satisfaction procedure. Trace the			
		execution of the constraint satisfaction procedure in solving	4014		
		crypto-arithmetic problem:	12M	CO2	L4

Code: 20A3041T

		UNIT–III			
6.	a)	Explain in detail about the working with relational databases	6M	CO3	L4
	b)	Explain how populations and samples differ	6M	CO3	L4
		OR			
7.	a)	Write about probability distributions	6M	CO3	L4
	b)	Explain Linear Regression models with example.	6M	CO3	L4
		UNIT–IV			
8.	a)	Explain the k-Means Algorithm with an example.	6M	CO4	L4
	b)	Illustrate with an example K-nearest neighbors	6M	CO4	L2
		OR			
9.	a)	Describe the significance of feature selection algorithms.	6M	CO4	L2
	b)	Explain Naïve Bayes Classifier with an Example	6M	CO4	L4
		UNIT–V			
10.	a)	Write about basic principles of data Presentation	6M	CO5	L2
	b)	Give examples of inspiring (industry) projects.	6M	CO5	L2
		OR			
11.		Explain the applications of data science in Health care and			
		Biotechnology	12M	CO5	L4
		*** End ***			

\*\*\* End \*\*\*

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	Hall Ticket Number :													R-20		
	Code: 20A445T II B.Tech. II Semeste (Comr	N	\i <b>c</b> ro	opro	oce	ssor	an	d In	terf	aci	ng			/June 2	2024	
	Max. Marks: 70			,		****	-	-		(,)			-	Time: 3 I	Hours	
	Note: 1. Question Pape 2. In Part-A, eac 3. Answer <b>ALL</b>	h que	estio	n car	ries	Two	ma	rks.		Part	-B)					
				((	omi	<u>PAI</u> pulso		<u>.</u> uestio	n)							
	<ol> <li>Answer ALL the fo</li> <li>a) What is the maximum</li> <li>b) Differences between</li> <li>c) List the modes of on</li> <li>d) What is the necessive</li> <li>e) Features of 80386</li> </ol>	um m en mi epera sity of	nemo nimu tion s	hort ry siz m & supp ART	ans ze th max ortec (825	wer o at ca imum I by 8 1)	n be m mo 3255	addr de of	s esse	ed by	/ 808		,	CO CO2 CO2 CO2 CO4 CO4	I L1 2 L2 3 L1 4 L2	
		than	0020	ю рі	0000		<u> </u>	<u>1</u>						000		
	Answer <i>five</i> questio	ns b	y cho	oosi	ng o	ne q	uest	ion fr	om	eacl	n uni	it ( 5	x 12 =		ks) CO	
						UN	IT–I							Marks	CO	
	What do you mean b modes supported by 8	•		•		ampl		are	the	differ	ent a	addre	ssing	12M	CO1	
	With a neat architectu EU.	ral di	agra	m of	808		l exp IT–II		he fi	uncti	ons (	of BIL	J and	12M	CO1	
	Briefly explain the ma the purpose and function					xplai		config	urat	ion c	of 808	36.W	hat is	12M	CO2	
	What is need of DMA of with 8086.	contro	oller a	and d	liscu		e arc <b>T–II</b> I		ure o	of 82	57 &	interf	acing	12M	CO2	
	How many interrupts interrupts available in 8					ction							tware	12M	CO3	
	Describe that how D/ generate 50% duty cyc			•			ith 8 <b>T–IV</b>		and	write	e a p	orogra	am to	12M	CO3	
	With the help of neat c for serial Communicati	•	ım ex	plain	i how		1 is i DR	nterfa	ced	with	8086	3 and	used	12M	CO4	
	Describe the various m	nodes	s of o	perat	ion i	า 825		-	nmat	ole in	terna	al time	ers.	12M	CO4	
	Give introduction, mair	n feat	ures	and a	appli	catior			um p	oroce	essor	in de	tail.	12M	CO5	
	Write a brief summary Microprocessors with a			•	mple	•		ion &	pag	jing	mecł	nanisi	ms in	12M	CO5	

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Code: 20A\$437       R-20         II B.Tech. II Semester Regular & Supplementary Examinations May/June 2024 Operating Systems (Common to CSE, AI&DS, CSE(AI) and AI&ML) Max. Marks: 70       Time: 3 Hours         Note: 1. Question Paper consists of two parts (Part-A and Part-B) 2. In Part-A, each question carries Two marks. 3. Answer ALL the questions in Part-A and Part-B PART-A (Compulsory question)       The System Call.         1. Answer ALL the following short answer questions (5 X 2 = 10M)       CO       BL         a) Define System call.       CO1       L1         b) Define Thread scheduling.       CO2       L1         c) Describe Deadlock.       CO3       L2         d) Define RAID.       CO4       L1         e) List out the Goals of Protection.       CO5       L1         Marks       CO       BL         u) What are the services of Operating system? Explain.       6M       CO1         b) List and explain various types of System calls.       6M       CO1       L2         OR       Immontol CO2       L       L       L       L       L       L       L       L       CO1       L2         b) List and explain Multiprocessor scheduling in detail.       12M       CO1       L2       CO2       L2         OR       Immontol Explain the following.       OR       CO2		На	II Ticket Number :									
Il B.Tech. II Semester Regular & Supplementary Examinations May/June 2024 Operating Systems (Common to CSE, AI&DS, CSE(DS), CSE(AI) and AI&ML) Max. Marks: 70 Time: 3 Hours Note: 1. Question Paper consists of two parts (Part-A and Part-B) 2. In Part-A, each question carries Two marks. 3. Answer ALL the questions in Part-A and Part-B 2. In Part-A, each question carries Two marks. 3. Answer ALL the following short answer questions (5 X 2 = 10M) CO BL a) Define System call. b) Define Thread scheduling. core L1 c) Describe Deadlock. core L1 e) List out the Goals of Protection. CO L1 b) List out the Goals of Protection. CO BL Marks CO BL UNIT-H 2. a) What are the services of Operating system? Explain. b) List and explain various types of System calls. COR 3. What is processes scheduling? Explain operations on process. COR 5. a) Explain thread libraries in detail. COR 5. a) Explain Multiprocessor scheduling in detail. c) Describe Peterson's Solution in detail. c) Describe Peterson's Solution in detail. c) Describe Peterson's Solution in detail. c) Describe Of Deadlock b) Describe Of Deadlock c) Deadlock characterization c) Deadlock characterization c) Deadlock detection and avoidance c) Deadlock detection and avoidance		~~~	He: 201 5/3T	R-20								
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detail. 6M CO3 L4	7 :	a)	-									
		~)		6M	CO3	L4						
	ł	b)	Write short notes on contiguous memory allocation.			L1						

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## UNIT–IV

8.		Define Mass-storage structure. Illustrate Disk scheduling in detail.	12M	CO4	L4				
		OR							
9.	a)	Explain stable-storage implementation.	6M	CO4	L2				
	b)	List out the objectives of file management systems? Illustrate the file system architecture.	6M	CO4	L4				
		UNIT–V							
10.	a)	Write short notes on Implementation of Access Matrix.	6M	CO5	L1				
	b)	Explain computer –security classifications.	6M	CO5	L2				
OR									
11.	a)	Explain firewalls used to protect systems and networks.	8M	CO5	L2				
	b)	Describe user authentication.	4M	CO5	L2				
*** End ***									