R-19

Code: 19A545T

II B.Tech. II Semester Supplementary Examinations July/August 2022

Operating Systems

(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	What is an Operating system? List and explain different Operating Systems Operations?	7M	CO1	L2
	b)	Why Operating System is known as Resource Manager. Explain the layered architecture of an Operating System	7M	CO1	L2
		OR			
2.	a)	Why Scheduling is important in Operating System? Differentiate between preemptive and non-preemptive scheduling for example.	7M	CO1	L4
	b)	Is the Priority scheduling algorithm that could result in Starvation? If yes justify your answer with an example?	7M	CO1	L4
		UNIT–II			
3.	a)	What is a thread? Illustrate the differences between single-threaded processes and multi-threaded processes?	8M	CO2	L2
	b)	Differentiate between the thread and process?	6M	CO2	L2
		OR			
4.	a)	What is the Critical-Section problem? Discuss in detail Peterson's solution to the Critical-Section problem?	7M	CO2	L2
	b)	Demonstrate that monitors and semaphores are equivalent insofar as they can be used to implement the same types of synchronization problems?	7M	CO2	L4
		UNIT–III			
5.	a)	Under what circumstances do page faults occur? Describe the actions taken by the operating system when a page fault occurs?	7M	CO3	L4
	b)	What is the cause of thrashing? How does the system detect thrashing? Once it detects thrashing, what can the system do to eliminate this problem?	7M	CO3	L3
		OR			
6.	a)	Describe how demand paging can affect the performance of a computer system?	7M	CO3	L4
	b)	Explain the second chance page replacement algorithm with an example?	7M	CO3	L2
		UNIT–IV			
7.	a)	Discuss in detail different file access methods?	7M	CO4	L4
	b)	Briefly explain single-level, two-level, and Tree-Structured directories?	7M	CO4	L2
		OR			
8.	a)	What is File? List and explain File implementation methods with a neat diagram?	7M	CO4	L2
	b)	Elaborate on different Free-Space management techniques?	7M	CO4	L2
		UNIT–V			
9.	a)	What is protection? Explain goals and principles of protection?	7M	CO5	L1
	b)	Describe the access matrix model used for protection purposes?	7M	CO5	L2
		OR			
10.	a)	How does the principle of least privilege aid in the creation of protection systems?	7M	CO5	L3
	b)	Examine different methods used to solve the problem of security at the operating system level?	7M	CO5	L4

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Hall Ticket Number : [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

R-19

Code: 19AC43T

II B.Tech. II Semester Supplementary Examinations July/August 2022

Probability and Statistics

(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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		Marks	CO	Blooms Level

UNIT–I

1. The following are the number of minutes that a person had to wait for a bus to work on 15 working days. 10, 1, 13, 9, 5, 9, 2, 10, 3, 8, 6, 17, 2, 10, 15. Find (i) mean (ii) median. — 14M CO1 L1

OR

2. Ten people of various heights as under were requested to read the letters on a car at 25 yards distance. The number of letters correctly read is given below:

Height (in feet):	5.1	5.3	5.6	5.7	5.8	5.9	5.10	5.11	6.0	6.1
No. of letters :	11	17	19	14	8	15	20	6	8	12

Is there any correlation between heights and visual power? — 14M CO1 L2

UNIT–II

3. A card is drawn from a well shuffled deck of 52 playing cards. What is the probability of drawing (i)a red king (ii) 3, 4, 5 or 6 (iii) black card — 14M CO2 L2

OR

4. In a bolt factory, machines A, B and C manufactures 20%, 30% and 50% of the total of their output 6%, 3% and 2% 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. — 14M CO2 L3

UNIT–III

5. A die is thrown five times. If getting an odd number is a success, find the probability of getting at least four successes — 14M CO3 L2

OR

6. X is a normal variate with mean 30 and standard deviation 5. Find the probabilities that i) $26 < X < 40$ ii) $X-30 > 5$. — 14M CO3 L3

UNIT–IV

7. A random sample of 400 items is found to have mean 82 and standard deviation of 18. Find the confidence limits for the mean if $x = 82$. — 14M CO4 L4

OR

8. In a big city, 325 men out of 600 men were found to be smokers. Thus this information supports the conclusion that the majority of men in the city are smokers. — 14M CO4 L4

UNIT–V

9. Pumpkins were grown under two experimental conditions. Two random samples of 11 and 9 pumpkins, show the sample standard deviations of their weights as 0.8 and 0.5 respectively. Assuming that the weight distribution are normal. Test the hypothesis that the true variances are equal. — 14M CO4 L4

OR

10. In an investigation on the machine performance, the following results are obtained

	No. of units inspected	No. of defectives
Machine I	375	17
Machine II	450	22

Test whether there is any significant performance of two machines at $= 0.05$ — 14M CO4 L4

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Hall Ticket Number :

R-19

Code: 19A546T

II B.Tech. II Semester Supplementary Examinations July/August 2022

Software Engineering

(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Define Software. Explain about "Software Doesn't wear out", in your own words.	7M	CO1	L1
	b)	List the different type of Myths in software engineering.	7M	CO1	L1
		OR			
2.	a)	Recognize the importance of incremental process model	7M	CO1	L2
	b)	Describe about PSP in-detail.	7M	CO1	L2
		UNIT–II			
3.	a)	Explain about QFD in eliciting Requirements	7M	CO2	L2
	b)	Identify the Questionaries for requirements validation	7M	CO2	L2
		OR			
4.	a)	Sketch a Swimlane diagram for accessing camera surveillance	9M	CO2	L3
	b)	Describe the importance of requirements analysis	5M	CO2	L2
		UNIT–III			
5.		Demonstrate the Dimension model. Explain about Architectural and Component level design elements.	14M	CO3	L3
		OR			
6.	a)	List the basic design principles	8M	CO3	L1
	b)	Define abstraction and functional independence in design concepts	6M	CO3	L2
		UNIT–IV			
7.	a)	Explain about boundary value analysis in Black-Box Testing	7M	CO4	L2
	b)	Describe path coverage in White-Box Testing	7M	CO4	L2
		OR			
8.		Discuss about Statement coverage, Branch coverage and Multiple condition coverage.	14M	CO4	L2
		UNIT–V			
9.	a)	Identify the Reliability Metrics of Software Products	7M	CO5	L2
	b)	Locate the different quality factors in software	7M	CO5	L2
		OR			
10.		Discuss about software maintenance process models in detail	14M	CO5	L2

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Code: 19A541T

II B.Tech. II Semester Supplementary Examinations July/August 2022

Artificial Intelligence
(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level

UNIT–I

			Marks	CO	Blooms Level
1.	a)	Draw a state space representation of Towers of Hanoi problem	7M	CO1	L6
	b)	Discuss the history of AI	7M	CO1	L2

OR

2.	a)	What is Intelligent Agent?	4M	CO1	L1
	b)	Explain in detail about the types of Agent Environments.	10M	CO1	L2

UNIT–II

3.		Describe the following in detail: - a) Hill climbing b) Best first search	14M	CO2	L2

OR

4.		What is map coloring? Explain with an example	14M	CO2	L2

UNIT–III

5.	a)	How categories are useful in knowledge representation	7M	CO3	L1
	b)	Differentiate between forward chaining and backward chaining.	7M	CO3	L2

OR

6.		Give resolution proof for example problem statement : (a) "West is a criminal" (b) Curiosity killed the cat	14M	CO3	L3

UNIT–IV

7.	a)	Describe in detail about planning?	7M	CO4	L2
	b)	What are the components of a planning system?	7M	CO4	L1

OR

8.		Briefly discuss about Conditional Planning.	14M	CO4	L2

UNIT–V

9.	a)	Explain the connection between $\forall$ and $\exists$	7M	CO5	L2
	b)	What are quantifiers? Explain.	7M	CO5	L1

OR

10.		What is Belief Networks, explain Simple Inference in Belief Networks	14M	CO5	L1

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Code: 19A542T

II B.Tech. II Semester Supplementary Examinations July/August 2022
Design and Analysis of Algorithms
(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
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		Marks	CO	Blooms Level
	UNIT–I			
1. a)	Explain properties of an algorithm with an example	7M	CO1	L2
b)	Write the algorithm for matrix multiplication and find the time complexity of matrix multiplication	7M	CO1	L2
	OR			
2. a)	What are Disjoint set operations. Explain	7M	CO1	L2
b)	Explain the basic asymptotic efficiency classes	7M	CO1	L2
	UNIT–II			
3. a)	Explain the control abstraction for divide and conquer method	7M	CO2	L2
b)	Write about strassens matrix multiplication in detail	7M	CO2	L2
	OR			
4.	Consider the following instance of knapsack problem n=3, M=20, (p1,p2,p3)=(25,24,15), (w1,w2,w3)=(18,15,10) Find the optimal solution for			
	I. Maximum profit			
	II. Minimum weight			
	III Maximum profit per unit weight	14M	CO2	L3
	UNIT–III			
5. a)	What are advantages of reliability and design problem	7M	CO3	L4
b)	List the applications of All pairs shortest path problem	7M	CO3	L1
	OR			
6. a)	How the matrix chain multiplication problem can be solved by using dynamic programming with suitable example.	7M	CO3	L1
b)	What are the advantages of Travelling sales person problem	7M	CO3	L4
	UNIT–IV			
7. a)	Explain in detail back tracking algorithm for n queens problem	10M	CO4	L2
b)	What are the advantages of n queens problem	4M	CO4	L4
	OR			
8. a)	Explain sum of subsets problem	7M	CO4	L2
b)	What are the principles of branch and bound method	7M	CO4	L4
	UNIT–V			
9. a)	Explain in detail non deterministic algorithms	7M	CO5	L2
b)	Explain in detail deterministic algorithms	7M	CO5	L2
	OR			
10. a)	What is the methodology of non-deterministic algorithms	7M	CO5	L4
b)	Let X be a problem that belongs to the class NP. Then X may be NP complete. Justify.	7M	CO5	L5

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R-19

Code: 19A544T

II B.Tech. II Semester Supplementary Examinations July/August 2022
Object Oriented Programming using JAVA
(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
	UNIT–I				
1.	a)	Explain the benefits and applications of OOPs	7M	CO1	L2
	b)	Define Constructor. Explain parameterized constructor.	7M	CO1	L2
		OR			
2.		How many types of access specifiers are supported by java? Explain each with suitable example program.	14M	CO1	L1
	UNIT–II				
3.		Define package. Explain creating, importing, accessing a package with an example.	14M	CO2	L3
		OR			
4.		What is Inheritance? Discuss different forms of inheritance. Write programs for any two forms of inheritance.	14M	CO2	L3
	UNIT–III				
5.		Define an Exception. Explain the exception hierarchy and how to throw, catch and handle an exception with an example program	14M	CO3	L1,L2
		OR			
6.	a)	Explain the ways of creating a thread with an example.	7M	CO3	L2
	b)	Write a program that creates 3 threads by extending Thread class. First thread displays "Good Morning" every 1 sec, the second thread displays "Hello" every 2 seconds and the third displays "Welcome" every 3 seconds	7M	CO3	L3
	UNIT–IV				
7.	a)	Explain method references in java.	7M	CO4	L2
	b)	How to create Generic Constructors in java? Explain with an example	7M	CO4	L2
		OR			
8.	a)	Define Lambda expression. Explain about Blocked Lambda expressions.	7M	CO4	L1
	b)	What are Generics? Explain about bounded types in generics with an example program.	7M	CO4	L1,L2
	UNIT–V				
9.	a)	What are the main differences between array and collection?	7M	CO5	L3
	b)	Explain StringTokenizer with a java program.	7M	CO5	L2,L3
		OR			
10.	a)	Discuss about Scanner class in java with example program	6M	CO5	L2
	b)	Explain various interfaces used in Collection framework?	8M	CO5	L2

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