



Shri Shankaracharya Institute of Professional Management & Technology

Department of Information Technology

Class Test – I Session- Jan-june, 2023 Month-April

Sem- IT 4th Subject- Data structure Code:- B033411(033)

Time Allowed: 2 hrs Max Marks: 40

Note: - All questions are compulsory.

Q. N.	Questions	Marks	Levels of Bloom's taxonomy	COs
A.	Describe sparse matrix and also write its implementation techniques.	[8]	Understand	CO1
B.	Write an algorithm to insert an element at all possible position in singly linked list.	[8]	Apply	CO1
C.	Write an algorithm to traverse in doubly linked list and delete last element.	[8]	Apply	CO1
D.	Write an algorithm to bubble sort and also find its time complexity.	[8]	Understand	CO5
E.	Write an algorithm to binary search and also find its time complexity.	[8]	Understand	CO5



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Department of Information Technology

Class Test – I, Session- March-June 2023,

Sem- B.Tech. 4th Sem IT, Subject- Database Management System, Subject Code B033412(033)

Time Allowed: 2 hrs.

Max Marks: 40

Note: Solve any two questions from each part.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
Section 1				
Part-1				
Q1	Describe applications and advantages of DBMS.	4	Understand	CO1
Q2	Explain instance and schema with example?	4	Understand	CO1
Q3	Describe various types of attributes?	4	Understand	CO1
Part-2				
Q4	Define weak, strong entity sets and keys.	6	Understand	CO1
Q5	Explain two tier and three architectures of DBMS.	6	Understand	CO1
Q6	Solve a B+ tree in which the maximum number of keys in a node is 5. Demonstrate the minimum number of keys in any non-root node? Also explain indexing techniques using B Trees and B+ trees.	6	Apply	CO2
Section-2				
Part-3				
Q7	Define relational database query?	4	Understand	CO1
Q8	Use of SELECTS and PROJECT operation in Relational algebra with example?	4	Apply	CO2
Q9	Explain how to add a NOT NULL column in a table?	4	Understand	CO1
Part-4				
Q10	Explain the types of Data model and Relational data model.	6	Understand	CO1
Q11	Define Data Definition Language (DDL), Data Control Language (DCL), Data Manipulation Language (DML).	6	Understand	CO1
Q12	Solve Relational Algebra <ul style="list-style-type: none">• Lives (person-name, street, city)• works (person-name, company-name, salary)• located-in (company-name, city)• Manages (person-name, manager-name) For the above schema (the primary key for each relation is denoted by the underlined attribute), provide relational algebra expressions for the following queries: <ol style="list-style-type: none">1. Find all tuples in works of all persons who work for the City Bank company (which is a specific company in the database).2. Find the name of persons working at City Bank who earn more than \$50,000.3. Find the name and city of all persons who work for City Bank and earn more than 50,000. Similar to previous query, except we have to access the lives table to extract the city of the employee. Note the join condition in the query.	6	Apply	CO2

Note: - All questions are compulsory .

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs																								
1	Enumerate the different operating system structures with neat sketch.	[8]	Understand	CO1																								
2	Discuss the evolution of operating system.	[8]	Understand	CO1																								
3	<p>Consider the following set of processes, with the length of CPU burst time given in milliseconds (ms):</p> <table border="1"> <thead> <tr> <th>Process</th> <th>Run Time (ms)</th> <th>Start Time (ms)</th> <th>Finish Time (ms)</th> </tr> </thead> <tbody> <tr> <td>P₁</td> <td>0.3</td> <td>10.0</td> <td>10.4</td> </tr> <tr> <td>P₂</td> <td>0.5</td> <td>10.2</td> <td>11.35</td> </tr> <tr> <td>P₃</td> <td>0.1</td> <td>10.4</td> <td>10.65</td> </tr> <tr> <td>P₄</td> <td>0.4</td> <td>10.5</td> <td>11.4</td> </tr> <tr> <td>P₅</td> <td>0.1</td> <td>10.8</td> <td>11.1</td> </tr> </tbody> </table> <p>Calculate average waiting time and average turn around time.</p>	Process	Run Time (ms)	Start Time (ms)	Finish Time (ms)	P ₁	0.3	10.0	10.4	P ₂	0.5	10.2	11.35	P ₃	0.1	10.4	10.65	P ₄	0.4	10.5	11.4	P ₅	0.1	10.8	11.1	[4]	Apply	CO2
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5	<p>Consider the following set of processes, with the length of CPU burst time given in milliseconds (ms):</p> <table border="1"> <thead> <tr> <th>Process</th> <th>Arrival Time</th> <th>Burst Time (ms)</th> </tr> </thead> <tbody> <tr> <td>P₁</td> <td>0.000</td> <td>4</td> </tr> <tr> <td>P₂</td> <td>2.001</td> <td>7</td> </tr> <tr> <td>P₃</td> <td>3.001</td> <td>2</td> </tr> <tr> <td>P₄</td> <td>3.002</td> <td>2</td> </tr> </tbody> </table> <p>Calculate average waiting time and average turn around time for following algorithms:</p> <ol style="list-style-type: none"> Preemptive Shortest Job First (SJF) scheduling Non preemptive SJF scheduling Round Robin (Quantum = 1) Round Robin (Quantum = 1) 	Process	Arrival Time	Burst Time (ms)	P ₁	0.000	4	P ₂	2.001	7	P ₃	3.001	2	P ₄	3.002	2	[8]	Apply	CO2									
Process	Arrival Time	Burst Time (ms)																										
P ₁	0.000	4																										
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6	<p>a. Draw process state diagram. How transition take place in the life cycle?</p> <p>b. What is Process Control Block (PCB)? Discuss its major fields.</p>	[4] [4]	Analyze Analyze	CO2 CO2																								



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Class Test – I Session- Jan. – June, 2023 Month- April

Sem- 4th Subject- Analog Electronic Circuits- B033413(033)

Time Allowed: 2 hrs Max Marks: 40

Note: - Attempt any 5 question. All questions carry equal marks.

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Explain (i) Diffusion Current (ii) Drift Current	[8]	Understanding	CO1
2.	Draw and explain the working of transistor and its three biasing condition.	[8]	Understanding	CO2
3.	Explain conductivity of extrinsic Semiconductor.	[8]	Understanding	CO1
4.	Explain biasing in PN junction diode.	[8]	Understanding	CO1
5.	Draw and explain different Clamper Circuits.	[8]	Understanding	CO2
6.	Draw and explain different Clipper Circuits.	[8]	Understanding	CO1



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Class Test – I Session- Jan – June, 2023 Month- April

Sem- IT 4th, Subject- Internet of Things, Code - B0333415 (033)

Time Allowed: 2 hrs Max Marks: 40

Note: - Attempt any 5 questions. All questions carry equal marks..

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Define Internet of Things (IoT)? List out the different characteristics of IoT.	[8]	Understand	CO1
2	Discuss various communication models and API's of IoT	[8]	Understand	CO1
3	Demonstrate physical design of an IoT.	[8]	Apply	CO1
4	What are various functional blocks of IoT ?	[8]	Understand	CO1
5	Differentiate between IoT and M2M ?	[8]	Understand	CO2
6	Demonstrate the various gateways used in M2M.	[8]	Apply	CO2

****Best of luck****



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Class Test – I Session- Jan – June, 2023 Month- April

Sem- IT 4th, Subject- Internet of Things, Code - B0333415 (033)

Time Allowed: 2 hrs Max Marks: 40

Note: - Attempt any 5 questions. All questions carry equal marks..

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Define Internet of Things (IoT)? List out the different characteristics of IoT.	[8]	Understand	CO1
2	Discuss various communication models and API's of IoT	[8]	Understand	CO1
3	Demonstrate physical design of an IoT.	[8]	Apply	CO1
4	What are various functional blocks of IoT ?	[8]	Understand	CO1
5	Differentiate between IoT and M2M ?	[8]	Understand	CO2
6	Demonstrate the various gateways used in M2M.	[8]	Apply	CO2

****Best of luck****