Hall Ticket Number :										

R-15

Code: 5G141

II B.Tech. II Semester Supplementary Examinations March 2021

Computer Organization

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	State the differences between encoder and multiplexer. Mention the role of these components in the design of computers.	6M	CO1	L2
	b)	Given a 16 X 8 ROM chip with chip enable input, show the external connections necessary to construct a 128 X 8 ROM after determining the number of chips required and a decoder logic.	8M	CO1	L3
		OR			
2.	a)	Represent 67 in 1's and 2's complement 8-bit binary number system. Prove that the resultant of the arithmetic operation (67-67) is different in these two types of representation schemes.	8M	CO1	L5
	b)	Explain the format of floating-point numbers in computer organization with suitable examples.	6M	CO1	L1
		UNIT–II			
3.	a)	Illustrate the sequence of operations carried out in the transfer of contents from a register to another with the signals CLOCK and LOAD.	6M	CO2	L2
	b)	Design a 4 bit binary adder/subtractor with full adder as a basic building block. Describe its functionality..	8M	CO2	L3
		OR			
4.	a)	Enumerate the sequence of micro operations for the following memory-referencing instructions: LDA, BSA, BUN and ISZ.	8M	CO2	L2
	b)	Write down the sequences of operations effected by a processor whenever it is interrupted by an Input/Output device.	6M	CO2	L1
		UNIT–III			
5.	a)	Write brief notes on the control address register and micro program sequencer.	6M	CO3	L1
	b)	What is the significance of address sequencer in micro programmed control unit? With a neat sketch of block diagram, explain the process of determining the next micro address.	8M	CO3	L2
		OR			
6.	a)	Describe the format of microinstructions and the associated bit fields.	8M	CO3	L2
	b)	Compare and contrast between hardwired and micro programmed control units.	6M	CO3	L2
		UNIT–IV			
7.	a)	What is divide overflow? Explain any one method by which this can be handled in the hardware implementation of division algorithm.	8M	CO4	L2
	b)	With a schematic explain the use of 2-bit by 2-bit array multiplier in the implementation of Booth's multiplication algorithm.	6M	CO4	L3
		OR			

8.	a)	Depict the addition and subtraction of floating point numbers using an appropriate flow chart and explain the data flow.	8M	CO4	L2
	b)	Narrate the steps involved in the multiplication of floating point numbers with a suitable example.	6M	CO4	L1

UNIT–V

9.	a)	Compare and contrast between the source-initiated and destination initiated data transfer using handshake methods.	8M	CO5	L2
	b)	State the requirements in processor architecture to support Direct Memory Access.	6M	CO5	L2

OR

10.	a)	What are the impacts of branching instructions in the pipelined architecture? Discuss the strategies to mitigate these problems.	8M	CO5	L2
	b)	Write brief notes on memory interleaving technique used in vector processors.	6M	CO5	L1

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Hall Ticket Number :										

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Code: 5G441

II B.Tech. II Semester Supplementary Examinations March 2021

Database Management Systems

(Common to CSE & IT)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) List four significant differences between a file processing system and a DBMS.
   b) Explain different types of database users and write the functions of DBA?

OR

2. a) Explain different types of database users and write the functions of DBA?
   b) Discuss about the Levels of Abstraction in a DBMS

UNIT–II

3. a) Discuss about the logical database design?
   b) Explain about different types of integrity constraints?

OR

4. Distinguish strong entity set with weak entity set? Draw an ER diagram to illustrate weak entity set?

UNIT–III

5. What are Correlated Queries how they are applied in SQL?

OR

6. What are Stored Functions? Explain with one example?

UNIT–IV

7. Give an example of a relation schema R and a set of dependencies such that R is in BCNF but is not in 4NF.

OR

8. Define functional dependencies. How are primary keys related to FDs?

UNIT–V

9. Discuss about the dynamic index structure with one example?

OR

10. a) Briefly discuss the AICD prosperities of transaction.
    b) Explain Transaction Support in SQL.

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Code: 5G142

II B.Tech. II Semester Supplementary Examinations March 2021

Design and Analysis of Algorithms

(Common to CSE & IT)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.		Explain briefly the Mathematical analysis of recursive and non-recursive algorithms.	14M	1	2
		OR			
2.		Explain briefly Big oh Notation, Omega Notation and Theta Notations. Give Examples.	14M	1	2
		UNIT–II			
3.	a)	What is divide and conquer strategy and explain the binary search with suitable example.	7M	2	1
	b)	Apply quick sort to sort the list E,X,A,M,P,L,E in alphabetical order. Generate the tree of the recursive calls made.	7M	2	4
		OR			
4.	a)	Solve the Knapsack Problem where m=10, n=4, P= (40,42,25,12), W= (4,7,5,3) using greedy algorithm.	7M	2	3
	b)	What is job sequencing with deadline problem? Let n=5, profits = (10,3,33, 11,40), deadlines=(3,1,1,2,2) respectively. Find the optimal solution using greedy algorithm.	7M	2	1
		UNIT–III			
5.		Explain optimal binary search tree problem with the help of an example using dynamic programming.	14M	3	2
		OR			
6.	a)	Solve the all pair shortest path problem using dynamic programming for the diagraph with the following weight matrix: $\begin{vmatrix} 0 & 2 & \infty & 1 & 8 \\ 6 & 0 & \infty & \infty & \infty \\ \infty & \infty & 0 & 4 & \infty \\ \infty & \infty & 2 & 0 & \infty \\ 3 & \infty & \infty & \infty & 0 \end{vmatrix}$	7M	3	3
	b)	Develop a pseudo code for all pair shortest path problem using dynamic programming.	7M	3	3
		UNIT–IV			
7.	a)	Explain the backtracking solution to solve 8-queens problem.	7M	4	5
	b)	Develop the pseudo code for 8-queens problem using backtracking algorithm.	7M	4	3
		OR			
8.		Solve Travelling Salesperson Problem using Branch and Bound algorithm for the given instance: $\begin{vmatrix} \infty & 2 & 5 & 7 \\ 2 & \infty & 8 & 3 \\ 5 & 8 & \infty & 1 \\ 7 & 3 & 1 & \infty \end{vmatrix}$	14M	4	6
		UNIT–V			
9.	a)	Using an example prove that satisfiability of boolean formula in 3- Conjuctive normal form is NP-Complete.	7M	5	5
	b)	What does Nondeterministic Algorithm mean? Distinguish between deterministic and nondeterministic algorithm in design and analysis of algorithm?	7M	5	4
		OR			
10.		Discuss the need of approximation algorithms and how they can be used for NP Hard Problems.	14M	5	6

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Code: 5G143

II B.Tech. II Semester Supplementary Examinations March 2021

Formal Languages and Automata Theory

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Design FA to check whether given decimal number is divisible by three.	7M	1	L5
	b)	Differentiate between DFA and NFA with suitable illustration.	7M	1	L3
		OR			
2.	a)	Design a Moore machine to determine the residue mod 5 for each binary string treated as integer?	7M	1	L5
	b)	Give Moore machine for ∑={0,1,2}, print the residue modulo 5 of input treated as a ternary number.	7M	1	L1
		UNIT–II			
3.	a)	Discuss applications of regular expressions and finite automata	7M	2	L2
	b)	Prove L={a^p/ p is a prime} is not regular.	7M	2	L3
		OR			
4.	a)	Design a FA from given regular expression 10+(0+11)0*1	7M	2	L5
	b)	Construct Finite automata to accept the regular expression (0+1)*(00+11)(0+1)*	7M	2	L3
		UNIT–III			
5.	a)	Differentiate between right linear and left linear grammar with suitable examples.	7M	3	L2
	b)	Convert the following CFG to GNF. **A1→A2A3** **A2→A3A1/b** **A3→A1A2/a**	7M	3	L3
		OR			
6.	a)	Define Greibach Normal Form and Convert the given CFG to GNF **S→ABA** **A→aA/ε** **B→bB/ε**	7M	3	L4
	b)	Discuss about minimization of context Free Grammar.	7M	3	L3
		UNIT–IV			
7.	a)	Construct PDA for the language L={$a^n b^{2n}$/n≥1}	7M		
	b)	Construct PDA for the given CFG S→OBB B→OS/ 1S/ 0 Test whether 010^4 is acceptable by this PDA.	7M	3	L4
		OR			
8.	a)	Design PDA for the language that accepts strings with $n_a(w)<n_b(w)$ where w belongs to (a+b)*	7M	4	L5
	b)	Design a PDA for the following grammar. S→0A A→0AB/1 B→1	7M	4	L5
		UNIT–V			
9.	a)	Explain the types of Turing Machines	7M	5	L2
	b)	Design Turing Machine to recognize an arbitrary string divisible by 4 from ∑ = {0, 1, 2}.	7M	5	L5
		OR			
10.	a)	Explain the differences between PDA and TM.	7M	5	L2
	b)	Explain the properties of recursive and recursive enumerable languages.	7M	5	L2

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Code: 5G144

II B.Tech. II Semester Supplementary Examinations March 2021

Object Oriented Programming

(Common to CSE & IT)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Explain relational operators in java. 5M
   b) Java does not support goto statement. Why? 4M
   c) Explain garbage collection in Java. 5M

OR

2. a) Explain the OOPs concepts: Encapsulation, Polymorphism and Abstraction 7M
   b) Explain the java buzz words. 4M
   c) What is the difference between String and StringBuffer objects? 3M

UNIT–II

3. a) Explain method overriding with an example. 7M
   b) Explain the different levels of access protection in java. 7M

OR

4. a) Explain the difference between class and interface with an example each. 7M
   b) Explain in detail the process of creating, defining, importing and accessing a package with suitable examples 7M

UNIT–III

5. a) Explain the creation and usage of your own exception with an example. 7M
   b) Explain thread synchronization with an example. 7M

OR

6. a) Write the differences between multithreading and multi tasking. 3M
   b) Write short notes on ThreadGroup class. 4M
   c) Explain the creation of thread using Runnable interface with an example. 7M

UNIT–IV

7. Explain in detail any four classes of the java.net package. 14M

OR

8. a) Write the differences between applet and an application program. 7M
   b) Write an applet to display the current date and time. 7M

UNIT–V

9. a) Describe delegation event model 5M
   b) Write the limitations of AWT components 4M
   c) Write a java program to illustrate TextEvent. 5M

OR

10. a) Write a java program to display the month names by JList and display the days by JComboBox. 7M

    b) In what way JButton is better than Button class? Explain it with an example. 7M

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