**R-19**

**Code: 19A533T**

II B.Tech. I Semester Supplementary Examinations March/April 2023

# Digital Logic Design and Computer Organization

(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 | BL |
|---|---|---|---|---|---|

**UNIT–I**

| 1. | a) | How do you evaluate a computer's performance? What are the various metrics that are used to represent a computer's performance? | 7M | 1 | L3 |
|---|---|---|---|---|---|
|  | b) | Demonstrate n's complement and n-1's complement of a number? Explain it with an example? | 7M | 1 | L3 |

**OR**

| 2. | a) | Convert the following numbers into decimals.<br>(i) $(B65F)_{16}$     (ii) $(127.4)_8$     (iii) $(4021.2)_5$ | 6M | 1 | L2 |
|---|---|---|---|---|---|
|  | b) | What is a bus? Briefly explain various types of buses used in modern computers? | 8M | 1 | L2 |

**UNIT–II**

| 3. | a) | What are universal gates? Why they are called universal gates? Prove that they are universal along with supporting diagrams and Boolean theorems? | 7M | 2 | L2 |
|---|---|---|---|---|---|
|  | b) | Convert the following into another canonical form<br>$F(A,B,C,D)= \sum(0,2,6,11,13,14)$. | 7M | 2 | L2 |

**OR**

| 4. | a) | Implement the following two Boolean functions with a PLA:<br>F1(A ,B,C ) =   (0,1,2,4).          F2(A ,B ,C ) =   (0,5,6,7). | 7M | 2 | L6 |
|---|---|---|---|---|---|
|  | b) | Illustrate the design of a 4-bit shift register with an example? | 7M | 2 | L4 |

**UNIT–III**

| 5. | a) | Devise an algorithm for fixed-point subtraction representation? | 7M | 3 | L2 |
|---|---|---|---|---|---|
|  | b) | Represent the number $(+43.2)_{10}$ as a floating-point binary number with 32 bits? | 7M | 3 | L2 |

**OR**

| 6. |  | What is an Addressing mode? What are the various addressing modes used by computer systems? Explain them with example instructions? | 14M | 3 | L1,L2 |
|---|---|---|---|---|---|

**UNIT–IV**

| 7. | a) | Describe the mechanism of data transfer between main memory and secondary memory? | 7M | 4 | L2 |
|---|---|---|---|---|---|
|  | b) | Elaborate about Virtual Memory in detail? | 7M | 4 | L2 |

**OR**

| 8. | a) | Compile the organization of a 2M x 32 memory module using 512K x 8 static memory chips? | 7M | 4 | L3 |
|---|---|---|---|---|---|
|  | b) | Explain the mechanism of data transfer between main memory and secondary memory? | 7M | 4 | L2 |

**UNIT–V**

| 9. | a) | Explain how multiple I/O devices are handled on a common interface along with their pros and cons? | 7M | 5 | L2 |
|---|---|---|---|---|---|
|  | b) | How program-controlled I/O is performed using polling? Explain? | 7M | 5 | L3 |

**OR**

| 10. | a) | Explain about the following.<br>(i) UART              (ii) PCI bus | 7M | 5 | L3 |
|---|---|---|---|---|---|
|  | b) | What is cycle stealing?  Explain it with a neat diagram? | 7M | 5 | L1, |

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**R-19**

**Code: 19A532T**

II B.Tech. I Semester Supplementary Examinations March/April 2023

# Datastructures through Python

(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 | BL |
|---|---|---|---|---|---|

**UNIT–I**

| | | | Marks | CO | BL |
|---|---|---|---|---|---|
| 1. | a) | Describe the following <br> (i) Encapsulation   (ii) Inheritance   (iii) Polymorphism | 12M | CO1 | L2 |
| | b) | Define Name Mangling. | 2M | CO1 | L1 |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 2. | a) | What is the use of super() method in inheritance? Demonstrate with suitable example. | 8M | CO1 | L3 |
| | b) | Write a python program to illustrate _repr_() , _cmp_() and _len_() methods. | 6M | CO1 | L6 |

**UNIT–II**

| | | | | | |
|---|---|---|---|---|---|
| 3. | a) | How can you create user defined exception in python? Explain with simple example program. | 8M | CO2 | L2 |
| | b) | List and explain any four built-in exceptions in python. | 6M | CO2 | L2 |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 4. | a) | Discuss about stack ADT. | 4M | CO2 | L2 |
| | b) | Write a python program to implement stack ADT using python list. | 10M | CO2 | L6 |

**UNIT–III**

| | | | | | |
|---|---|---|---|---|---|
| 5. | a) | Write a Python function to perform the following Operations <br> (i). Traversing a Double Linked List <br> (ii). Adding a node to circular singly Linked list | 10M | | L6 |
| | b) | What is MAP ADT? | 4M | CO3 | L1 |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 6. | | Write a Python program to implement operations of Double linked list | 14M | CO3 | L6 |

**UNIT–IV**

| | | | | | |
|---|---|---|---|---|---|
| 7. | a) | What is Recursion? Explain the Properties and working of Recursion with suitable example. | 7M | CO4 | L2 |
| | b) | Write a python program to find a factorial of a number using recursion and draw the recursive call tree to find factorial of 5? | 7M | CO4 | L6 |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 8. | a) | Explain the following hash functions with suitable examples. <br> i).Division ii). Truncation iii). Folding iv). Hashing Strings | 8M | CO4 | L2 |
| | b) | Explain methods In Hash Map ADT. | 6M | CO4 | L2 |

**UNIT–V**

| | | | | | |
|---|---|---|---|---|---|
| 9. | a) | Sort the following list of elements using Heap sort method. <br> (9, 53, 19, 32, 13, 5, 24, 29) | 8M | CO5 | L3 |
| | b) | Write short notes on Heap Sort | 6M | CO5 | L1 |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 10. | a) | Discuss AVL Tree and its Properties. | 6M | CO5 | L1 |
| | b) | Explain different AVL tree Rotations with suitable examples. | 8M | CO5 | L2 |

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**Code: 19AC34T**

II B.Tech. I Semester Supplementary Examinations March/April 2023
# Life Sciences for Engineers
(Common to CE, ME & CSE)

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 | BL |
|---|---|---|---|---|

### UNIT–I

| 1. | Describe meant by classification? Write the importance of Classification? | 14M | CO1 | 2 |
|---|---|---|---|---|

**OR**

| 2. | Write the structure of animal cell with labelled diagram? | 14M | CO1 | 1 |
|---|---|---|---|---|

### UNIT–II

| 3. | Describe nucleic acids? Write the structure and functions of nucleic acids? | 14M | CO2 | 2 |
|---|---|---|---|---|

**OR**

| 4. | Describe the mechanism of enzyme action? | 14M | CO2 | 2 |
|---|---|---|---|---|

### UNIT–III

| 5. | Explain the reaction of Electron Transport Chain? | 14M | CO3 | 2 |
|---|---|---|---|---|

**OR**

| 6. a) | Explain the Neuromuscular junctions? | 7M | CO3 | 2 |
|---|---|---|---|---|
| b) | Describe the Glycolysis? | 7M | CO3 | 2 |

### UNIT–IV

| 7. a) | Briefly describe the transcription and translation? | 7M | C04 | 2 |
|---|---|---|---|---|
| b) | Write the importance of Genetic code? | 7M | C04 | 1 |

**OR**

| 8. | Discuss in detail about Gene Mapping? | 14M | C04 | 2 |
|---|---|---|---|---|

### UNIT–V

| 9. | Describe the DNA Microarray technique, types and applications? | 14M | CO5 | 2 |
|---|---|---|---|---|

**OR**

| 10. | Explain the various process of recombinant DNA technology? | 14M | CO5 | 2 |
|---|---|---|---|---|

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**Code: 19A534T**

II B.Tech. I Semester Supplementary Examinations March/April 2023

# Web Programming

(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

## UNIT–I

1.  a)  Write any two Core attributes in HTML.                                                    7M
    b)  Explain the inline elements in HTML with example                                          7M

**OR**

2.  a)  Explain the target Attribute with values.                                                 7M
    b)  What is the Internationalization Activity                                                 7M

## UNIT–II

3.  a)  What is audio tag? Write any five audio tag attributes.                                   7M
    b)  What is Accessible Tables  in html                                                        7M

**OR**

4.      Write a html form to manage personal details of a student like name, class,
        qualification, photo, address etc., using suitable tags and send Form Data to the
        Server.                                                                                  14M

## UNIT–III

5.      Define an HTML Table. How to set the border spacing for a table, using the
        CSS border-spacing property.                                                            14M

**OR**

6.      What are Pseudo-classes? Explain with examples.                                          14M

## UNIT–IV

7.      What do you mean by looping? What are the types of looping statements available in
        java script?                                                                            14M

**OR**

8.      Write short notes on java script built in objects.                                       14M

## UNIT–V

9.  a)  Differentiate Ajax with jQuery                                                            7M
    b)  Name the jQuery method which is used to perform an asynchronous HTTP request?             7M

**OR**

10. a)  What is jQuery UI? Explain.                                                               7M
    b)  What is selector in jQuery? Explain with an example?                                      7M

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**R-19**

**Code: 19A531T**

II B.Tech. I Semester Supplementary Examinations March/April 2023

# Database Management 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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### UNIT–I

1. Explain the differences between external, internal and conceptual schemas. How are these different schema layers related to the concepts of logical and physical data independence.

**OR**

2. a) Describe about the three levels of data abstraction

   b) Explain about types of database languages with syntax and example?

### UNIT–II

3. Discuss about the logical database design?

**OR**

4. a) With examples, explain enforcing integrity constraint.

   b) Name the main steps in database design. What is the goal of each step? In which step is the E-R model mainly used?

### UNIT–III

5. a) Briefly discuss about aggregate functions? Explain about 'group by' and 'having' clauses.

   b) Write about Views? Explain how views are created, updated and deleted with examples.

**OR**

6. a) Compare the stored procedures with stored functions?

   b) What are Correlated Queries how they are applied in SQL?

### UNIT–IV

7. a) Define multivalued dependencies. Describe Fourth Normal form with an example.

   b) List out the problems related to Decomposition?

**OR**

8. Define Boyce-Codd normal form (BCNF). How does it differ from 3NF? Why is it considered a strong form of 3NF?

### UNIT–V

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

   b) Discuss about lock-based concurrency control.

**OR**

10. How does a B+ tree index handle search, insert and delete?

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**Code: 19AC33T**

R-19

II B.Tech. I Semester Supplementary Examinations March/April 2023
# Discrete Mathematics
(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

### UNIT–I

1. a) Prove that $(P \rightarrow Q) \wedge (R \rightarrow Q) \leftrightarrow (P \vee R) \rightarrow Q$ by using substitution method.  7M
   b) Explain Free and Bound variables with examples.  7M

**OR**

2. a) Define rules of inference. And Show that $R \rightarrow S$ can be derived from the premises $P \rightarrow (Q \rightarrow S)$, $\sim R \vee P$ and R.  8M
   b) Write short notes on Quantifiers  6M

### UNIT–II

3. State relation and explain properties of binary relations with examples.  14M

**OR**

4. a) What is Hass diagram? Let $X=\{2,3,6,12,24,36\}$ and the relation on set X defined by x divides y then draw the Hass diagram.  10M
   b) What is lattice? Explain lattice properties.  4M

### UNIT–III

5. Define Group, monoid, semigroups and subgroups with examples.  14M

**OR**

6. a) Explain Binomial and multinomial theorems.  9M
   b) Prove by pigeonhole principle that in a group of 61 people, at least 6 people were born in the same month.  5M

### UNIT–IV

7. a) Find a generating function for the recurrence relation $a_{n+1}-a_n=3^n, n>=0, a_0=1$. Find the general solution  10M
   b) Find the sequence generated by the following function. $(3+x)^3$  4M

**OR**

8. Solve the recurrence relation $2a_{n+3}=a_{n+2}+2a_{n+1}-a_n$ for n>=0 with $a_0=0, a_1=1, a_2=2$  14M

### UNIT–V

9. a) What is bipartite graph? Explain with an example.  5M
   b) Define Chromatic number. Find the chromatic number of the following graph.



9M
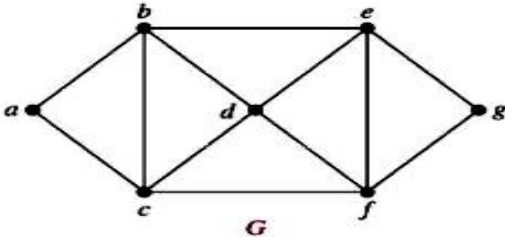
**OR**

10. a) What is Hamiltonian graph? Explain with an example.  8M
    b) Explain the following terms with examples.
       i) Complete graph   ii) Dual graph  6M

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