R-14

Code: 4G143

II B.Tech. II Semester Supplementary Examinations May 2019
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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| UNIT–I |

1. a) Design a DFA that accepts the language L(M)={W/W∈ {a, b}*} and W does not contain 3 consecutive b's.   7M

   b) Construct a Moore machine to determine the residue mod 3 for each binary string treated as a binary integer.   7M

OR

2. a) Develop deterministic finite automata accepting the language given over the alphabet {0, 1}. L= {the set of all strings such that every block of five consecutive contains at least two 0's}.   7M

   b) Discuss about minimization of FSM and equivalence between two FSMs.   7M

| UNIT–II |

3. a) Construct NFA with   moves for the regular expression (0+1)*.   7M

   b) Prove or disprove that the language L given by L = { $a^m b^n$/ m n, m and n are positive integer} is regular.   7M

OR

4. a) Construct FA for regular expression 0*1 + 10.   7M

   b) Discuss about closure properties of regular sets.   7M

| UNIT–III |

5. a) Construct a regular grammar for the regular expression a*b(a+b)*.   7M

   b) Convert the given CFG to CNF

   S→aAs/ a

   A→SbA/SS/ba   7M

OR

6. Convert the given CFG to GNF

   S→ABA

   A→Aa/   14M

| UNIT–IV |

7. a) Design a PDA for accepting a language L={ $a^n b^n$/ n 1}   7M

   b) Discuss the procedure for conversion of CFG to PDA   7M

OR

8. a) Design PDA for the following grammar

   S→0A

   A→0AB/1

   B→1   7M

   b) Construct PDA for the language L={$a^n b^{2n}$/n 1}   7M

| UNIT–V |

9. a) Write short notes on decidability of problems in detail?   7M

   b) Construct Turing Machine for language consisting of strings having any number of 0's and only even number of 1's over the input set {0, 1}.   7M

OR

10. a) Discuss the procedure for constructing items in LR(0) grammar with illustration. 7M

    b) Analyze Universal Turing Machine and Linear Bounded Automata.   7M

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II B.Tech. II Semester Supplementary Examinations May 2019
Object Oriented Programming Through JAVA
(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 and describe Java Buzzwords.

    b) Explain Object Oriented Programming concepts.

OR

2. a) List and classify the operators used in java. Explain any two operator classifications.

    b) Define recursion. Write a java program to find the factorial of a given number using recursion.

UNIT–II

3. a) What is meant by method overriding? Illustrate with an example.

    b) How packages are imported? Explain with suitable example.

OR

4. a) What are the uses of final keyword in inheritance? Explain with suitable examples.

    b) How to find packages and CLASSPATH in package? Explain.

UNIT–III

5. a) Explain isAlive() and join() methods in threads.

    b) How to create own exception sub class? Explain with example.

OR

6. a) Explain suspending, resuming and stopping threads.

    b) Write the benefits of Exception handling.

UNIT–IV

7. a) List the collection interfaces. Describe List interface.

    b) Explain applet life cycle with suitable program.

OR

8. a) With suitable example explain StringTokenizer.

    b) Describe the window fundamentals.

UNIT–V

9. a) Define an Event. List and briefly describe the event listener interfaces.

    b) What are the limitations of AWT?

OR

10. a) Write a java program to implement mouse events.

    b) Describe URL connection

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II B.Tech. II Semester Supplementary Examinations May 2019
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) Identify the main components in a DBMS and explain what they do.   7M
    b) What are the advantages of DBMS? Explain.   7M

OR

2. a) What are five main functions of a database management administrator?   7M
    b) Explain various storage manager components and its functions.   7M

UNIT–II

3. Draw ER diagram for the company database incorporating all the ER notations with explanation.   14M

OR

4. a) What are the steps in designing a database?   7M
    b) With examples, explain enforcing integrity constraint.   7M

UNIT–III

5. a) Consider the following tables:
        Employee (Emp_no, Name, Emp_city)
        Company (Emp_no, Company_name, Salary)
        i.   Write a SQL query to display Employee name and company name.   7M
        ii. Write a SQL query to display employee name, employee city ,company name and
             salary of all the employees whose salary >10000
        iii. Write a query to display all the employees working in 'XYZ' company.
    b) Briefly discuss about aggregate functions. Explain any three aggregate functions. 7M

OR

6. a) Briefly discuss about virtual table.   7M
    b) With an example explain trigger and its needs.   7M

UNIT–IV

7. a) Compare 3NF and BCNF with a suitable example.   7M
    b) What is dependency preserving for decomposition? Explain why it is important.   7M

OR

8. a) Suppose you are given a relation R = (A,B,C,D,E) with the following functional
        dependencies: {CE$\rightarrow$D, D$\rightarrow$B, C$\rightarrow$A}.
        i.   Find all candidate keys.
        ii. Identify the best normal form that R satisfies (1NF, 2NF, 3NF, or BCNF).   7M
        iii. If the relation is not in BCNF, decompose it until it becomes BCNF. At each step,
             identify a new relation, decompose and re-compute the keys and the normal
             forms they satisfy.
    b) Explain 1st normal form(1 NF) with example.   7M

UNIT–V

9. a) Explain the distinctions between the terms Serial schedule and Serializable schedule. 7M
    b) Why does a DBMS interleave current transactions?   7M

OR

10. a) Briefly discuss the AICD prosperities of transaction.   7M
    b) What are the main difference between ISAM and B+ tree indexes?   7M

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