

Hall Ticket No :

Question Paper Code :

**ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES
(AUTONOMOUS)**

III/IV B. Tech I- Semester Regular Examinations Nov - 2017

**Database Management Systems
(IT)**

Time: 3 Hours

Max Marks: 60

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT-I

1.
 - a) Define database. (2M)
 - b) How DBMS advantages over File Systems (4M)
 - c) Who are the users involved in the DBMS? Explain their roles? (6M)

(OR)
2.
 - a) Why levels of abstraction is important in DBMS? Mention different schemas relates to levels of schemas with data independence. (6M)
 - b) Define the terms: Entity, Attributes, Keys. (2M)
 - c) Design a database with ER-Model for banking System. (4M)

UNIT-II

3.
 - a) Why integrity constraints required for DBMS? Discuss different integrity constraints with examples? (6M)
 - b) Explain Relational Algebra operations with examples (6M)

(OR)
4.
 - a) Write different joins used in database? Explain the importance of joins? (6M)
 - b) Why relational Calculus for DBMS? Write about TRC and DRC? (6M)

UNIT-III

5.
 - a) Define data definition language? List various DDL commands? Explain them with suitable Examples? (6M)
 - b) What is Nested Query? When to use nested queries? Explain nested query with an example? (6M)

(OR)
6.
 - a) When to use Group by having clause? Mention with Examples? (4M)
 - b) What are different set operators in SQL? Discuss them? (4M)
 - c) What is Triggers? Explain different types of Triggers with examples? (4M)

UNIT-IV

- 7.
- a) Why Normalization used in relational database? Explain Functional dependencies with examples? **(6M)**
 - b) What are the dependencies involved in the 3NF, BCNF, Explain 3NF, BCNF **(6M)**

(OR)

- 8.
- a) What are the problems caused by redundancy **(3M)**
 - b) What is lossless join decomposition **(3M)**
 - c) How a composite attribute can be converted into relational schema **(6M)**

UNIT-V

- 9.
- a) What is transaction? Discuss ACID Properties in detail? **(6M)**
 - b) What is Phantom Problem? Can it occur in a database when the set of database objects is fixed and only the values of objects can be changed? **(6M)**

(OR)

- 10.
- a) Why concurrency control in DBMS? Explain it in terms of locking mechanism of two phase locking protocol. **(6M)**
 - b) What is serializability and recoverability? **(6M)**
 - c) What are the disadvantages B-Tree over B+ Trees? **(3M)**

**ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES
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III/IV B. Tech I- Semester Regular Examinations Nov - 2017

**Formal Languages Automata Theory
(IT)**

Time: 3 Hours

Max Marks: 60

Answer ONE Question from each Unit

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UNIT-I

1.
 - i. Find the DFA for the following language on $\{a,b\}$ $L=\{w:|w|\bmod 3 = 0\}$. (6M)
 - ii. How NFA is different from DFA? explain with example. (6M)

(OR)

2.
 - i. Write a procedure to convert NFA with ϵ moves to NFA without ϵ moves. (6M)
 - ii. Construct mealy machine that takes binary number as input and produces residue modulo 5 as output. (6M)

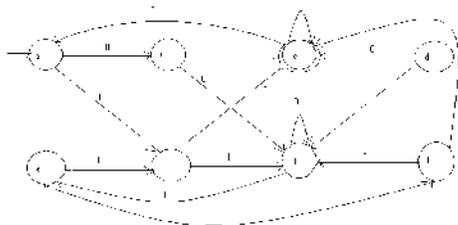
UNIT-II

3.
 - i. Construct a FA equivalent to the regular expression $10 + (0 + 11)0^*1$ (6M)
 - ii. Find the RE for the following (6M)
 - a. set of all strings that contains exactly two a's.
 - b. set of all strings that contains at least two a's.
 - c. set of all strings that contains at most two a's.

(OR)

4.
 - i. Prove that $L=\{a^p : p \text{ is prime}\}$ is not regular. (4M)
 - ii. Minimize the following DFA by using Myhillnerode theorem. (8M)

Fig.



UNIT-III

5. i. What is an Ambiguous Grammar? Give Example. (4M)
ii. let G be the grammar given as $S \rightarrow 0B / 1A$, $A \rightarrow 0 / 0S / 1AA$, $B \rightarrow 1 / 1S / 0BB$

For the string 00110101 find a) LMD b) RMD c) Derivation tree (8M)

(OR)

6. i. Show that $L = \{ a^i b^j c^k : i \geq 1 \}$ is not CFL. (4M)
ii. Find an equivalent GNF for the following grammar $S \rightarrow AA / a$, $A \rightarrow SS / b$. (8M)

UNIT-IV

7. Design PDA that accepts a string of well formed parenthesis
(consider the parenthesis is as (,), {, }, [,]). (12M)

(OR)

8. Let $M = (\{q_0, q_1\}, \{0, 1\}, \{X, Z_0\}, q_0, Z_0, \delta)$ where δ is given by $(q_0, 0, Z_0) = (q_0, XZ_0)$, $(q_0, 0, X) = (q_0, XX)$,
 $(q_0, 1, X) = (q_1,)$, $(q_1, 1, X_0) = (q_1,)$, $(q_1, , X) = (q_1,)$, $(q_1, , Z_0) = (q_1,)$. (12M)

UNIT-V

9. i. Define Turing Machine. (2M)
ii. Design TM for $L = \{ a^n b^n c^n : n \geq 1 \}$. (10M)

(OR)

10. i. Explain about Chomsky hierarchy of languages. (6M)
ii. Explain Post Correspondence Problem with suitable example. (6M)

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**ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES
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III/IV B. Tech I- Semester Regular Examinations Nov - 2017

**Object Oriented Programming through Java
(IT)**

Time: 3 Hours

Max Marks: 60

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT-I

1. a) Explain JDK, JRE and JVM. (4 M)
b) What is inheritance? Explain Multi-level inheritance with an example (8 M)
(OR)
2. What is dynamic binding? Explain with an example (12 M)

UNIT-II

3. Explain the concept of Exception handling in Java (12 M)
(OR)
4. Draw the life cycle of a thread. Explain producer-consumer problem in java (12 M)

UNIT-III

5. a) What is a String Tokenizer? List out various methods of String Tokenizer. (2 M)
b) Explain File Operations in java. (10M)
(OR)
6. What is JDBC? List various types of drivers. Write the procedure to connect to a Database in java (12 M)

UNIT-IV

7. Write about Layout managers in java (12 M)
(OR)
8. Write a program to create a calculator application using Grid layout (12 M)

UNIT-V

9. a) Differentiate event sources and event listeners. (4 M)
b) Write a program to demonstrate mouse-handling events. (8 M)
(OR)
10. a) Differentiate an applet from an application. (4 M)
b) Develop an applet demonstrating the Life cycle of applets (8M)

**ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES
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III/IV B. Tech I- Semester Regular Examinations Nov - 2017

UNIX NETWORK PROGRAMMING

(IT)

Time: 3 Hours

Max Marks: 60

Answer ONE Question from each Unit

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UNIT-I

- 1 a) What does the acronym OSI stand for? Describe the architectural design of OSI model. (8M)
 b) Name and describe the stands of UNIX (4M)
- (OR)**
- 2 a) Describe different transport layer protocols. (4M)
 b) Explain in detail the three way handshaking and four way handshaking in detail (8M)

UNIT-II

- 3 a) Explain IPV4 and IPV6 socket address structures. (6M)
 b) Explain with an example Byte ordering and manipulation functions and related functions. (6M)
- (OR)**
- 4 Explain the socket, connect, bind and listen functions in detail. (12M)

UNIT-III

- 5 a) Explain the steps involved in the normal termination of TCP client server. (4M)
 b) Describe the steps involved in the crashing and rebooting of server host. What happens when server host is shut down? (8M)
- (OR)**
- 6 a) Discuss five I/O models that are available to us under Unix. (6M)
 b) What is the use of select function in I/O model? Discuss the conditions that cause select function to return "ready" for sockets. (6M)

UNIT-IV

- 7 a) Discuss recvfrom and sendto functions in the context of UDP client/server. (4M)
 b) How a UDP socket is used to determine the outgoing interface used to a particular destination? (8M)
- (OR)**
- 8 a) Discuss the usage of gethostbyname and gethostbyaddr functions. (4M)
 b) Explain the scenario to examine starting the client without starting the server. (8M)

UNIT-V

- 9 a) Discuss inter-process communication using a) PIPE b)FIFO (8M)
 b) Discuss various functions used in record locking. (4M)
- (OR)**
- 10 a) Explain the steps required to build RPC client server. (6M)
 b) Explain inter-process communication using semaphores. (6M)
