SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMAKURU

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

IS5TH4: Introduction to Automata Theory and Computation

Date: 04/11/2022 **TEST1** Time: 1 Hr

Note: Answer all the questions.

		M	C	B
1.	Define the following terms with an example for each: a) Alphabet b) Power of an alphabet c) Languages	6	1	2
2.	Obtain a DFA to accept the language L = { w: |w| mod 3 ≠ |w| mod 2 where w ∈ ∑* and ∑ = {a,b} }.	6	2	3
3.	Prove that D = {QD, ∑, δD, {q0}, FD} is the DFA constructed from NFA N = { QN, ∑, δN, {q0}, FN} by the subset construction method, then L(D)=L(N).	6	1	4
4.	Consider the following ε-NFA: Convert the automata to its equivalent DFA.	6	3	3
5.	Explain the order of precedence of operators in Regular Expression (RE) with an example. Obtain REs for the following languages: a) L = { w : |w| is divisible by 2 or 3 on the alphabet a } b) The set of all strings over { 0, 1 } having no substring of more than two adjacent 0's.	6	2	3

δ	ε	a	b	c
→p	ϕ	{p}	{q}	{r}
q	{p}	{q}	{r}	ϕ
*r	{q}	{r}	ϕ	{p}

NOTE: M is marks, C is CO and B is Blooms level.

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMAKURU

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

IS5TH4: Introduction to Automata Theory and Computation

Date: 06/12/2022 **TEST 2** Time: 1 Hr

Note: Answer all the questions.

		M	C	B
1.	Using Pumping Lemma theorem, prove that the following languages are not regular. a) $L=\{ 0^n 1 0^n \mid n>=1\}$ b) $L=\{ a^n b^n \mid n>=0\}$	6	2	5
2.	Consider the DFA given:	6	3	3

δ	0	1
→ q1	q2	q3
q2	q3	q5
*q3	q4	q3
q4	q3	q5
*q5	q2	q5

a) Draw the table of distinguishable states for this automata.

b) Construct the minimum state equivalent DFA.

3.	Outline the applications of Context-Free Grammar (CFG). Explain YACC parser generator application in detail.	6	1	2
4.	Write the CFG for the language L= {w wR | w ϵ {a,b}*} and construct the parse tree for the derivation of a string aabbaa.	6	2	3
5.	*Write the steps followed while eliminating useless symbols from the grammar. Eliminate ϵ-productions from the given grammar:* $S \rightarrow ABCa \mid bD$ $A \rightarrow BC \mid b \quad B \rightarrow b \mid \epsilon \quad C \rightarrow c \mid \epsilon$ $D \rightarrow d$	6	2	3

NOTE: M is marks, C is CO and B is Blooms level.

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMAKURU

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

IS5TH4: Introduction to Automata Theory and Computation

Date: 30/12/2022 **TEST 3** Time: 1 Hr

Note: Answer all the questions.

		M	C	B
1.	With a neat diagram, explain the working of PDA and define the language accepted by PDA.	5	1	2
2.	Design a PDA to accept the language $L= \{a^n b^{3n}$ for $n>=1$ on $\sum = \{a, b\}\}$. Show the moves made by a PDA for the string abbb.	5	2	3
3.	Convert the given grammar to a corresponding PDA that accepts the same language by empty stack. $S \rightarrow 0AA$ $A \rightarrow 0S \mid 1S \mid 0$	5	3	4
4.	State the conditions to be met for the PDA to be deterministic. Explain with an example.	5	1	2

NOTE: M is marks, C is CO and B is Blooms level.

2	0	I	S	0	5	8

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMKUR.

(A Constituent College of Sri Siddhartha Academy of Higher Education, Agalakote, Tumkur.)

B.E. SEMESTER END EXAMINATION – JAN 2023

IS5TH4 : INTRODUCTION TO AUTOMATA THEORY AND COMPUTATION

TIME: 3.00 Hrs **SEM: V** **MAX. MARKS: 100**

NOTE: Answer any five full questions selecting one full question from each choice.

		M	CO	BL
1.a)	Write formal definition for the following terms: i) Alphabet ii) Nondeterministic finite automata iii) Epsilon Closure	06	1	1
b)	Define deterministic finite automata and construct the deterministic finite automata for the given language L={ W | W Є {a, b}* and | W | mod 3 > | W | mod 2} Show that the string "bbabb" is accepted or not by using extended transition function.	08	4	3
c)	Explain the subset construction algorithm to convert NFA to DFA with an example.	06	3	2
	OR			
2.a)	Write the formal definition for the following terms: i) Power of an Alphabet ii) Language iii) Extended transition function for NFA	06	1	1
b)	Construct the Nondeterministic finite automata that accepts set of all strings of a's and b's end with substring with ab or ba and convert the same to the equivalent deterministic finite automata.	08	4	3
c)	Define Є- NFA. Consider the following Є- NFA.	06	3	3

δ	Є	a	b	c
→ p	Φ	{p}	{q}	{r}
q	{p}	{q}	{r}	Φ
*s	{q}	{r}	Φ	{p}

i) Compute the Є -Closure of each state.
ii) Convert the automation to a DFA.

3.a)	Write formal definition of regular expression. Write regular expression for the set of strings over {0, 1, 2} containing atleast one 0 and atleast one 1.	06	2	3
b)	State and prove the pumping lemma for regular languages and show that the language $L = \{ a^n b^n \mid n \geq 0\}$ is not regular.	08	1	3
c)	Convert the following DFA to regular expression using the state elimination technique.	06	3	3

.δ	0	1
→ q_1	q_1	q_2
q_2	q_3	q_2
*q_3	q_1	q_2

OR

4.a)	Minimize the following DFA using table filling algorithm.	08	3	3

δ	0	1
→ A	B	A
B	A	C
C	D	B
*D	D	A
E	D	F
F	G	E
G	F	G
H	G	D

b)	Prove that regular languages are closed under intersection and complementation.	06	1	2
c)	Mention the application of regular expression and explain any one in detail.	06	1	2
5.a)	Define the following terms: i) Ambiguous grammar. ii) Context Free Grammar.	04	1	1
b)	Design Context Free Grammar for the following language. $L=\{ a^n b^m c^k \mid n+2m = k, n, m \geq 0\}$. Find the leftmost and rightmost derivation for the input string "abbccc".	10	2	3
c)	Eliminate unit production for the given grammar. $S \rightarrow AB$ $A \rightarrow a$ $B \rightarrow C \mid b$ $C \rightarrow D$ $D \rightarrow E \mid bC$ $E \rightarrow d \mid Ab$	06	3	3
	OR			
6.a)	Mention the application of context free grammar and explain any one application in detail.	06	1	2
b)	Show that the following grammar is ambiguous. $S \rightarrow AB \mid aaB$ $A \rightarrow a \mid Aa$ $B \rightarrow b$	04	2	3
c)	Simplify and Convert the following grammar to Chomsky normal form. $S \rightarrow aA \mid aBB$ $A \rightarrow aaA \mid \epsilon$ $B \rightarrow bB \mid bbC$ $C \rightarrow B$	10	3	3
7.a)	Wire the formal definition of the following terms: i) Pushdown automata ii) Instantaneous Description iii) Language accepted by PDA	10	1	1
b)	Design deterministic pushdown automata for the language $L= \{ a^n b^m c^{n+m} \mid n \geq 1, m \geq 1\}$. Draw transition diagram and also show the ID for the input string "abbccc".	10	4	3
	OR			
8.a)	Write the formal definition of the following terms with an example: i) Deterministic Pushdown automata. ii) Language of PDA.	10	1	1
b)	Design pushdown automata for the language $L= \{ a^n b^m \mid n \geq m, n \geq 0, m \geq 0\}$. Draw transition diagram and also show the ID for the input string "aaabb".	10	4	3
9.a)	Define Turing Machine. Explain the working of Nondeterministic Turing machine.	10	1	2
b)	With a neat diagram, explain the working of Turing machine and design Turing machine to accept palindrome over the input $\{a,b\}^*$.	10	2	3
	OR			
10.a)	With a neat diagram, explain the working of Turing machine.	6	1	2
b)	Design Turing machine for the language to accept the set of strings with equal number of 0's and 1's and also show the instantaneous description for the input string "110100".	10	4	3
c)	Define the following: i) Language of a turing machine ii) Halting of a turing machine	4	1	1

****

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMAKURU

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

IS5TH3: Database Management Systems

Date:04/11/2022 **TEST1** Time:1.00Hr

Answer all the questions

		M	C	B
1.	Differentiate the following i) Logical data independence and Physical data independence. ii) 2-tier client/server architecture and 3-tier client/server architecture.	6	1	2
2.	With a neat diagram discuss the phases of database design.	6	1	2
3.	Illustrate different types of attributes used in DB with examples.	6	1	2
4.	Discuss Binary, Ternary and Recursive relationships with examples.	6	2	2
5.	Explain different types of users in DBMS.	6	1	2

NOTE: M is marks, C is CO and B is Blooms level

DDHARTHA INSTITUTE OF TECHNOLOGY, TUMAKURU

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

IS5TH3: Database Management Systems

Date:06/12/2022 **TEST-2** Time:1.00Hr

Answer all the questions

		M	C	B
1.	Design an E-R diagram for a movie database. Assume your own entities (minimum 4), attributes and relationships.	6	1	3
2.	Explain the entity integrity and referential integrity constraints. Why each is considered important? Give examples	6	2	2
3.	Consider the Sailors-Boats-Reserves DB described in the text. SAILOR (SID, SNAME, RATING, AGE) BOATS (BID, BNAME, COLOR) RESERVES (SID, BID, DATE) Specify the following queries in SQL by creating tables a. Find the colors of boats reserved by Albert. b. Find all sailor id's of sailors who have a rating of at least 8 or reserved boat 103.	6	2	3
4.	Consider the following employee database EMPLOYEE (Name, Ssn, Bdate, Address, Salary, Super_ssn, Dno) DEPARTMENT (Dname, Dnumber, Mgr_ssn, Mgr_start_date) DEPT_LOCATIONS (Dnumber, Dlocation) PROJECT (Pname, Pnumber, Plocation, Dnum) WORKS_ON (Essn, Pno, Hours) Specify the following queries in SQL by creating tables a. Increase the salary of employees who works on the project 'LIFELINE-2020' by 20% and all others by 10% b. Find the names of all the employees who work on all the projects controlled by department no 3.	6	2	3
5.	Write a note on aggregate functions in SQL with examples.	6	2	2

NOTE: M is marks, C is CO and B is Blooms level

SRI SIDDHARTH INSTITUTE OF TECHNOLOGY, TUMKUR

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

IS5TH3: Database Management Systems

Date:30/12/2022 **TEST 3** Time:1.00Hr

Answer all the questions

		M	C	B
1.	Explain insertion, deletion and modification anomalies. Why are they considered bad? Illustrate with example.	5	4	2
2.	Define a normal form. Explain the First Normal Form (1NF) with an example.	5	4	2
3.	Explain the different reasons for a transaction to fail in the middle of execution.	6	1	2
4.	Describe the ACID properties of a transaction.	4	1	2

NOTE: M is marks, C is CO and B is Blooms level

Student (Stud_no: integer,Stud_name: string)

2	0	J	S	0	5	8

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMKUR.

(A Constituent College of Sri Siddhartha Academy of Higher Education, Agalakote, Tumkur.)

B.E. SEMESTER END EXAMINATION – JAN 2023

IS5TH3: DATABASE MANAGEMENT SYSTEMS

TIME: 3.00 Hrs **SEM: V** **MAX MARKS: 100**

NOTE: Answer any five full questions selecting one full question from each choice.

		M	CO	BL
1.a)	Interpret the main characteristics of the database approach and how it differs from traditional file systems.	8	1	2
b)	Illustrate with a neat diagram three-tier client/server database architecture.	8	1	2
c)	Explain different types of user-friendly interfaces and types of users who typically use each.	4	1	2
	OR			
2.a)	With a neat diagram, describe the component modules of a DBMS and their interactions.	8	1	2
b)	Explain the types of end users with suitable examples.	8	1	2
c)	Differentiate between database schema and a database state?	4	1	2
3.a)	Explain with examples the Update Operations on Relations	12	2	2
b)	Describe the different types of Attributes and Keys with suitable examples.	8	2	2
	OR			
4.a)	Discuss the entity integrity and referential integrity constraints.	8	2	2
b)	Suppose you are given the following requirements for a simple database for the National Hockey League (NHL): 1. The NHL has many teams. 2. Each team has a name, a city, a coach, a captain, and a set of players 3. Each player belongs to only one team 4. Each player has a name, a position (such as left wing or goalie), a skill level, and a set of injury records 5. A team captain is also a player Construct a clean and concise ER diagram for the NHL. List your assumptions and clearly indicate the cardinality mappings as well as any role indicators in your ER diagram.	12	2	4
5.a)	Write a command that is used for table creation. Explain how constraints are specified in SQL during table creation, with suitable example.	6	3	2
b)	List and explain the various types of data types used in SQL.	4	3	1
c)	Consider the given SQL Schema: Student (Stud_no: integer,Stud_name: string) Membership (Mem_no: integer,Stud_no: integer) Book (book_no: integer, book_name:string, author: string) Iss_rec(iss_no:integer, iss_date: date, Mem_no: integer, book_no: integer) For the above schema, perform the following: a) List all the student names with their membership numbers b) List all the issues for the current date with student and Book names c) Give a count of how many books have been bought by each student d) Give a list of books taken by student with stud_no as 5 e) Create a view which lists out the iss_no, iss _date, stud_name, book name	10	3	4

OR

6.a) Consider the Relation Schema of Warehouse database in Table 6a and answer the following queries using SQL. 10 3 4

Table 6a: Relations to consider for answering question no 6a

Manufacturers (M-code, M-name) Products (P-code, P-name, Price, M-code)

i. Retrieve all the products pricing between Rs. 500 and Rs. 2500.
ii. Compute the average price of all the products with manufacturer code equal to CS2022.
iii. Retrieve the name and price of all the products with a price larger than or equal to Rs.1500, and sort first by price (in descending order)
iv. Apply a 10% discount on all products.
v. Select the product name, price, and manufacturer name of all the products.

b) Interpret the concept of Views in SQL with appropriate syntax and Example. 5 3 2

c) What are aggregate functions and list down 5 examples? 5 3 1

7.a) List and explain the four informal guidelines used to measure the quality of the relation schema design. 10 4 1

b) Consider the three transactions T1, T2, and T3, and the schedules S1 and S2 given below. Write the algorithm of 'Testing for conflict serializability' and draw the serializability (precedence) graphs for S1 and S2, and state whether each schedule is serializable or not. 10 4 4

T1: r1 (X); r1 (Z); w1 (X);
T2: r2 (Z); r2 (Y); w2 (Z); w2 (Y);
T3: r3 (X); r3 (Y); w3 (Y);
S1: r1 (X); r2 (Z); r1 (Z); r3 (X); r3 (Y); w1 (X); w3 (Y); r2 (Y); w2 (Z); w2 (Y);
S2: r1 (X); r2 (Z); r3 (X); r1 (Z); r2 (Y); r3 (Y); w1 (X); w2 (Z); w3 (Y); w2 (Y);

OR

8.a) A Bank Customer is identified by a unique Customer_ID and has only one address. Customers can have multiple simultaneous Loans, but they always have different Request dates. The Customer can make multiple Repayments on the same day, but not more than one Repayment per Loan per day. 10 4 4

Table 8a: Relation Schema and FDs to consider for answering Q. No. 8a

LOAN (Customer_ID, Customer_Name, Customer_Address, Loan_Amount, Request_Date, Repayment_Date, Repayment_Amount) FD1: Customer_ID → Customer_Name FD2: Customer_ID → Customer_Address FD3: Customer_ID, Request_Date → Loan_Amount FD4: Customer_ID, Request_Date, Repayment_Date → Repayment_Amount

Analyze the Relation Schema with Functional Dependencies given in Table 8a and answer the following:

i. Determine the Candidate Keys for LOAN Relation.
ii. Can the relation be normalized? If yes, normalize the LOAN relation up to 3NF with appropriate justification.

b) Demonstrate the various kind of problems that may occur when two simple transactions run concurrently with example. 10 4 2

9.a) What is NoSQL? Describe the use of NoSQL in Industry and list the NoSQL vendors. 10 3 1

b) Compare and contrast SQL, NoSQL and NewSQL. 10 3 2

OR

10.a) Give reasons why NoSQL is used. Explain the advantages of NoSQL. 10 3 1

b) Summarize the different types of NoSQL database with suitable examples. 10 3 2

****

Sri Siddhartha Institute of Technology, Tumakuru
(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)
Department of Electrical and Electronics Engineering

EE5OE61: ENERGY CONVERSION TECHNIQUES
TEST1

Answer all the questions **SEMESTER: V** **MAX MARKS: 30**

Q. No.	Questions	Marks	CO	BTL
1	Energy is the fundamental need of our everyday life. Substantiate	8	4	3
2	What are the different types of DC Generators. Write one application of each type	8	2	3
3	Draw the Torque-Slip Characteristics of a three phase Induction Motor explaining through the connected equations.	8	3	2
4	Explain the terms absorption and scattering of solar radiation with appropriate figure.	6	2	2

Sri Siddhartha Institute of Technology, Tumakuru
(A constituent college of Sri Siddhartha Academy of Higher Education,Tumakuru)
Department of Electrical and Electronics Engineering

EE5OE61: ENERGY CONVERSION TECHNIQUES

TEST 2

Answer all the questions **SEMESTER: V** **MAX MARKS: 30**

Q. No.	Questions	Marks	CO	BTL
1	With a neat sketch, describe a solar pond.	8	1	3
2	With a neat diagram, explain the construction of KVIC bio-gas plant.	8	2	3
3	Describe the working of a nuclear plant with the help of a neat sketch.	8	3	2
4	Write the 3 advantages and 3 disadvantages of a WECS?	6	4	2

Sri Siddhartha Institute of Technology, Tumakuru

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

Department of Electrical and Electronics Engineering

EE5OE61: ENERGY CONVERSION TECHNIQUES

TEST 3

Answer all the questions **SEMESTER: V** **MAX MARKS: 20**

Q. No.	Questions	Marks	CO	BTL
1	With a neat diagram, describe the working of a Series hybrid vehicle	8	2	2
2	With a neat diagram, describe the working of AC traction motor.	8	2	2
3	Write the 2 advantages and 2 disadvantages of LIM?	4	3	3

2	0	J	S	0	S	8

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMKUR.

(A Constituent College of Sri Siddhartha Academy of Higher Education, Agalakote, Tumkur.)

B.E. SEMESTER END EXAMINATION – JAN 2023

EE5OE61 : ENERGY CONVERSION TECHNIQUES

E: 3.00 Hrs | SEM: V | MAX MARKS: 100

TE: Answer any five full questions selecting one full question from each choice.

		M	CO	BL
a)	Energy is essential to man's economic growth and development. Substantiate.	10	3	5
b)	With a neat diagram, explain the construction of a 3 phase slip ring Induction Motor.	10	1	2
	OR			
a)	Draw the circuit representation of different types of DC Generators. Write one application of each type	10	1	3
b)	Draw and explain Torque vs armature current and Torque vs speed Characteristics of series and shunt motors. Write two applications of each type of motor.	10	2	3
4.a)	With the help of a neat diagram describe the construction of KVIC plant.	10	4	3
b)	With the help of a neat sketch describe the construction and working of a solar pond	10	3	3
	OR			
4.a)	Explain various factors to be considered for selecting the site for WECS?	10	2	3
b)	Discuss anaerobic digestion and fermentation. What are the advantages of Biogas plant?	10	3	3
5.a)	How is nuclear power generated? With a neat diagram explain the construction of a Nuclear reactor.	10	2	3
b)	With a neat sketch describe the construction of an alkaline battery.	10	2	2
	OR			
6.a)	With a neat sketch describe the construction of an Nickel cadmium battery.	10	3	2
b)	List the advantages and limitation of a nuclear power plant.	10	3	3
7.a)	With a neat diagram, describe the parallel hybrid vehicle.	10	4	2
b)	Describe a double sided linear induction motor (DLIM) with a neat sketch	10	4	2
	OR			
8.a)	With a neat block diagram, describe the working of AC electrification system.	10	4	3
b)	What is a traction motor? What are the advantages and disadvantages of a traction motor.	10	4	3
9.a)	With a neat circuit explain the working of a Reluctance Motor..	10	3	2
b)	What is a strain gauge? What is the basic principle of a strain gauge? What are its characteristics?	10	3	2
	OR			
10.a)	With a neat circuit explain the working of a Stepper Motor.	10	3	2
b)	Write the application, advantages and disadvantages of Universal Motor.	10	3	2

****

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMAKURU

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

IS5TH1: Computer Networks-II

Date:03/11/2022

TEST1

Time:1.00Hr

Answer all the questions

		M	C	B
1.	Explain the Implementation of Connectionless-Oriented Service with a neat diagram.	6	1	2
2.	Differentiate Adaptive and Non-adaptive routing algorithms. Explain Count-to-Infinity problem.	6	1	2
3.	Illustrate the timescales of approaches to congestion control. Explain hop-by-hop Backpressure technique of Traffic Throttling.	6	1	2
4.	Define Traffic shaping. Explain leaky bucket and token bucket algorithms.	6	1	2
5.	Describe the different techniques used in packet scheduling algorithm.	6	1	2

NOTE: M is marks, C is CO and B is Blooms level

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMAKURU

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

IS5TH1: Computer Networks-II

Date:05/12/2022 **TEST 2** Time:1.00Hr

Answer all the questions

		M	C	B
1.	Illustrate IPv4 and IPv6 header formats.	6	2	2
2.	Explain the different IP address formats. Identify to which class the following IP address belong to: (a) 139.20.20.10 (b) 222.100.10.0	6	3	2
3.	Discuss three protocol scenarios for establishing connection using three-way handshake.	6	4	2
4.	Describe UDP header with IPv4 pseudoheader included in UDP checksum.	6	3	2
5.	Explain Remote Procedure Call with a neat diagram.	6	4	2

NOTE: M is marks, C is CO and B is Blooms level

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMAKURU

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

IS5TH1: Computer Networks-II

Date:29/12/2022 **TEST 3** Time:1.00Hr

Answer all the questions

		M	C	B
1.	Explain TCP Segment Header with a neat diagram.	5	4	2
2.	Illustrate TCP connection management finite state machine.	5	4	2
3.	Describe silly window syndrome.	5	3	2
4.	Explain the different types of TCP timers.	5	3	2

NOTE: M is marks, C is CO and B is Blooms level

2	0	I	S	0	5	8

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMKUR.

(A Constituent College of Sri Siddhartha Academy of Higher Education, Agalakote, Tumkur.)

B.E. SEMESTER END EXAMINATION – JAN 2023

IS5TH1 : COMPUTER NETWORKS - II

TIME: 3.00 Hrs **SEM: V** **MAX MARKS: 100**

NOTE: Answer any five full questions selecting one full question from each choice.

		M	CO	BL
1.a)	Explain routing with datagram network and virtual circuit network.	10	1	2
b)	Find the shortest path from A to F for the given network graph using Dijkstra's algorithm.	5	1	3

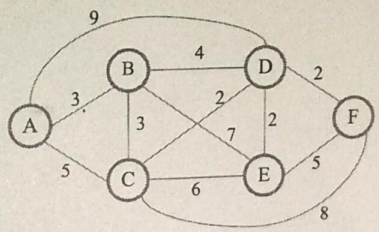

Fig: 1

c)	Explain the concept of count to infinity.	5	1	2

OR

2.a)	Outline the steps of link state routing in detail.	10	1	2
b)	Explain the timescale approaches to congestion control.	5	1	2
c)	Explain hop-by-hop backpressure technique.	5	1	2
3.a)	Explain the different types of packet scheduling algorithms.	10	1	2
b)	Explain leaky bucket and token bucket algorithm with necessary diagrams.	5	1	2
c)	Explain tunneling of a packet.	5	1	2

OR

4.a)	Illustrate the Internet Protocol header for IPV6 and IPV4 protocol.	10	1	2
b)	Explain the types of fragmentation.	5	1	2
c)	Identify the class of following IP addresses: i) 172.16.254.1 ii)123.89.46.72 iii) 69.89.31.226 iv) 225.2.3.40 v) 212.11.123.3	5	1	3
5.a)	Explain the concept of addressing in transport layer in detail.	10	2	2
b)	Illustrate the working of 3 way handshake protocol during connection establishment.	5	2	2
c)	Explain any 3 protocol scenarios for connection release.	5	2	2

OR

6.a)	Explain crash recovery and different combinations of client and server strategies.	10	2	2
b)	Describe multiplexing and inverse multiplexing.	5	2	2
c)	Write the steps in making a remote procedure call.	5	2	2
7.a)	Explain TCP connection management finite state machine and states used in detail.	10	2	2
b)	Write TCP segment header and describe any 5 fields.	5	2	2
c)	Explain TCP sliding window.	5	2	2

OR

8.a)	Illustrate the working of four different timers used by TCP.	10	2	2
b)	Explain Additive Increase and multiplicative decrease.	5	2	2
c)	What is Selective Acknowledgement? Explain.	5	2	2
9.a)	Explain the architecture of WWW and differentiate static, dynamic and active web documents.	10	3	2
b)	Illustrate how cookies are created and stored.	5	3	2
c)	Explain e-mail architecture.	5	3	2
	OR			
10.a)	Explain the different security attacks and security mechanisms.	10	4	2
b)	What is caching? Explain.	5	4	2
c)	Write short note on DNS.	5	4	2

****

/ /

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMAKURU

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

IS5TH2: Advanced Java and J2EE

Date:03/11/2022 **TEST 1** Time:1.00 Hr

Answer all the questions

		M	C	B
1	Why main thread is important give reasons? Illustrate how to control the main thread with an example program.	5	1	3
2	Describe Synchronization and its importance.	5	1	2
3	Demonstrate with the help of the Java program the importance of isAlive() and join().	5	1	3
4	"Java has an elegant interthread communication mechanism". Discuss.	5	2	2
5	Explain the following Event Classes in java.awt.event i)WindowEvent Class ii)ItemEvent Class	5	2	2
6	Summarize any five Event Listener Interfaces.	5	2	2

NOTE: M is marks, C is CO and B is Blooms level

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMAKURU

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

IS5TH2: Advanced Java and J2EE

Date:05/12/2022 **TEST 2** Time:1.00 Hr

Answer all the questions

		M	C	B
1	Write a Java program to demonstrate several mouse event handlers.	6	2	3
2	Describe Anonymous Inner classes with an example program.	6	2	2
3	Explain the Swing GUI Key items Components and Containers.	6	2	2
4	Implement a program to create a JTextField and adds it to the content pane. When the user presses "enter key", an action event is generated.	6	2	3
5	Explain JToggleButton in swing with an example program.	6	2	3

NOTE: M is marks, C is CO and B is Blooms level

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMAKURU

(A constituent college of Sri Siddhartha Academy of Higher Education, Tumakuru)

IS5TH2: Advanced Java and J2EE

Date:29/12/2022 **TEST 3** Time:1.00 Hr

Answer all the questions

		M	C	B
1.	Explain the different JDBC Driver Types.	5	3	2
2.	Implement a program that uses statement object to execute a query.	5	3	3
3.	What is Connection pool? Write a program for connecting to a database using a userID and password.	5	3	3
4.	Write a program for Reading data from ResultSet in JDBC.	5	3	3

NOTE: M is marks, C is CO and B is Blooms level

2	0	I	S	0	5	8

SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY, TUMKUR.

(A Constituent College of Sri Siddhartha Academy of Higher Education, Agalakote, Tumkur.)

B.E. SEMESTER END EXAMINATION – JAN 2023

IS5TH2 : ADVANCE JAVA AND J2EE

TIME: 3.00 Hrs **SEM: V** **MAX MARKS: 100**

NOTE: Answer any five full questions selecting one full question from each choice.

		M	CO	BL
1.a)	With the help of neat diagram, explain thread states.	6	1	2
b)	Write a JAVA program to implement Producer Consumer problem using thread.	8	1	3
c)	Explain how to use thread priority in Java.	6	1	2
	OR			
2.a)	List out the advantages of multi threaded programs.	6	1	2
b)	Write a Java program which creates two threads, one thread displays "SSIT" for every 100 sec and other thread display "Tumkuru" for every 50 sec continuously.	8	1	3
c)	With syntax explain the use of isAlive() and join() method.	6	1	2
3.a)	Discuss delegation event model with suitable examples.	6	2	2
b)	With example, explain inner class and anonymous class.	6	2	2
c)	Implement a code to handle mouse move and mouse dragged event. Program should display position of mouse along with mouse action on status window.	8	2	3
	OR			
4.a)	Explain mouse event listener and mouse wheel event class.	8	2	2
b)	Illustrate with java program to handle key event.	8	2	3
c)	Explain (i) TextEvent (ii) WindlowEvent.	4	2	2
5.a)	Discuss swing features. Explain briefly the component and containers used in swings.	10	2	2
b)	Create a swing applet to contain two buttons name "Alpha" and "Beta" and displays appropriate message when pressed.	6	2	3
c)	Give the purpose of (i) JComboBox (ii) JScrollpane	4	2	2
	OR			
6.a)	Develop an applet program to create a label, a text field and check box with caption "Red", "Blue" and "Green".	10	2	3
b)	List and explain different swing Buttons with code snippets for each.	10	2	2
7.a)	What are database drivers? Mention different types of drivers used in JDBC.	5	3	2
b)	Discuss Callable statement object. Write code snippet to call stored procedure using callable statement.	8	3	3
c)	Write a Java syntax for the following: (i) Selecting the rows from employee table (ii) Counting number of employee working in "ISE" department	7	3	4
	OR			
8.a)	Describe various steps of JDBC process with code snippets.	10	3	2
b)	Develop a program to connect to database with following information. Driver: JDBC/ODBC bridge URL: "jdbc:odbc:Ex" Username:"xyz" Password:"1234" Retrieve all the rows with marks > 70 using prepared statement object. Assume table as follow: Table name: STUDENT Marks-int	10	3	4

9.a)	Define servlet? Explain life cycle of servlet.	6	4	2
b)	Write a java servelet to read a name from client page and say HELLO to the name as the response.	8	4	03
c)	Compare and Contrast between stateless and stateful session beans.	6	4	4
	OR			
10.a)	What is a cookie? List out the methods defined in cookie. Write a program to add a cookie.	8	4	3
b)	Write a Java program to illustrate how to use session state.	6	4	3
c)	With a skeleton, explain entity java bean.	6	4	2

****