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Department of Artificial Intelligence and Data Science
II Year IV Semester
4AID4-05: Database Management System

Note: Each assignment of Maximum Marks 10.All question carries equal marks.

ASSIGNMENT-I

Q1. List four significant differences between a file-processing system and aDBMS.	BLT-2	CO-1
Q2. What are attributes? What are different types of attributes you have studied? Explain each with suitable example.	BLT-2	CO-1
Q3. What is data abstraction and data independence?	BLT-1	CO-1
Q4. Explain the difference between a weak and strong entity set with example?	BLT-2	CO-1
Q5. Draw and explain Three Schema Architecture of DBMS.	BLT-3	CO-1
Q6. Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests conducted.	BLT-6	CO-1

ASSIGNMENT-II

Q1. Construct an ER Diagram for Hospital Management System.	BLT-6	CO-2
Q2. Discuss various fundamental operations of Relational algebra.	BLT-2	CO-2
Q3. Write short note on Outer Join.	BLT-1	CO-2
Q4. What do you understand by Relational Calculus, discuss its types?	BLT-2	CO-2
Q5. What do you understand by triggers, explain with the helpof example?	BLT-2	CO-2

ASSIGNMENT-III

Q1. Discuss various types of keys in detail.	BLT-2	CO-3
Q2. Discuss types of functional dependency. Also discuss about the properties of functional dependencies.	BLT-2	CO-3
Q3. What do you understand by data modification anomalies,explain.	BLT-2	CO-3
Q4. What is Normalization? Explain types of normal forms.	BLT-1	CO-3
Q5. What do you understand by prime and non-prime attribute, explain with the help of example?	BLT-2	CO-3

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Department of Artificial Intelligence and Data Science
II Year IV Semester
4AID4-05: Database Management System

ASSIGNMENT-IV

Q1. Discuss ACID properties in detail.	BLT-2	CO-4
Q2. Discuss various states of transaction, with the help of properdiagram.	BLT-2	CO-4
Q3. What do you understand by Schedule? Also discuss its types.	BLT-2	CO-4

Q4. Write short notes on-
   (a) Lost update problem
   (b) Dirty Read Problem
	BLT-1	CO-4

Q5. What do you understand by conflict serialize ability, explainwith the help of an example?	BLT-2	CO-4

ASSIGNMENT-V

Q1. Explain 2-Phase Locking Protocol (2PL) in detail.	BLT-1	CO-5
Q2. What is Deadlock in DBMS? Discuss Deadlock Avoidance.	BLT-1	CO-5
Q3. Discuss about database failure in detail.	BLT-2	CO-5
Q4. Discuss Concept of shadow Paging.	BLT-2	CO-5
Q5. Define Shared lock and Exclusive lock and also make compatibility table.	BLT-4	CO-5

*BLT: BLT shows the **Bloom's taxonomy** levels

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Department of Artificial Intelligence and Data Science
II Year IV Semester
4AID4-07: Data Communication and Computer Networks

Note: Each assignment of Maximum Marks 10.All question carries equal marks.

ASSIGNMENT-I

Q.1Define the various Topology in networking.	BLT-1	CO-1
Q.2 Give the brief introduction about: (i) Analog signal (ii) Digital signal (iii) Aperiodic signal	BLT-2	CO-1
Q.3 Sketch OSI architecture and explain it.	BLT-3	CO-1
Q.4 Sketch TCP/IP Model and explain it.	BLT-3	CO-1
Q.5 Define various Topologies.	BLT-1	CO-1

ASSIGNMENT-II

Q1. Explain various types of errors in Data Link Layer.	BLT-1	CO-2
Q2. Explain a) Single parity check b) Two dimensional parity check.	BLT-1	CO-2
Q3. Explain the error correction and detection in data link layer.	BLT-1	CO-2
Q4. Differentiate between Pure ALOHA and Slotted ALOHA .	BLT-3	CO-2
Q5. What is CSMA? Define a) CSMA/CD b) CSMA/CA	BLT-2	CO-2

ASSIGNMENT-III

Q1. Explain Design issues in Network layer.	BLT-2	CO-3
Q2. Differentiate between IPV4 and IPV6.	BLT-3	CO-3
Q3. Compare Unicast and multicast routing algorithm.	BLT-2	CO-3
Q4. Define Broadcast routing algorithm.	BLT-1	CO-3
Q5. How the Quality of Service does affects the user in the ternet working?	BLT-3	CO-3

Department of Artificial Intelligence and Data Science
II Year IV Semester
4AID4-07: Data Communication and Computer Networks
ASSIGNMENT-IV

Q.1 Define the elements of Transport protocol.	BLT-1	CO-4
Q. 2 What is Transport Layer and how does it Work?	BLT-2	CO-4
Q. 3 Explain the Token Bucket algorithm.	BLT-2	CO-4
Q. 4 Explain the Leaky Bucket algorithm.	BLT-2	CO-4
Q. 5 Define the various types of transmission control protocol.	BLT-1	CO-4

ASSIGNMENT-V

Q.1 What is FTP? Define Ftp protocols.	BLT-1	CO-5
Q. 2 What is Electronic Mail? How many types of protocol used in Electronic mail?	BLT-1	CO-5
Q. 3 What is WWW? Explain its working method.	BLT-2	CO-5
Q. 4 Sketch the diagram of DNS? Define types of DNS and also define zones in DNS	BLT-3	CO-5
Q. 5 What is SMTP Explain?	BLT-6	CO-5

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Department of Artificial Intelligence and Data Science
II Year IV Semester
4AID2-01: Discrete Mathematics Structure

Note: Each assignment of Maximum Marks 10.All question carries equal marks.

ASSIGNMENT-I

Q1. Prove, for finite sets A and B: n(A B) = n(A) + n(B) – n(A B)	BLT-3	CO-1
Q2. In a class of 80 students, 60 play football and 40 play basket ball. Find how many plays both games and how many play football only play.	BLT-3	CO-1
Q3. State and prove the pigeonhole and generalized pigeonhole principle.	BLT-2	CO-1
Q4. Out of 250 failed students, 128 fails in maths, 87 in physics, and 134 in English, 31 failed in math and physics, 54 failed in English and maths, 30 failed in English and physics. Find:- (i) All three subjects. (ii) In English or in maths, but not in physics.	BLT-4	CO-1
Q5. Define polynomial, exponential and logarithmic function with example.	BLT-1	CO-1

ASSIGNMENT-II

Q1. Show that $(p \wedge q) \wedge (r \wedge s) \rightarrow p$ for any proposition is a tautology	BLT-3	CO-2
Q2. Define finite state machine.	BLT-1	CO-2
Q3. Obtain PCNF of the statement S given be$(\sim p \rightarrow r) \wedge (q \leftrightarrow p)$.	BLT-4	CO-2
Q4. Explain about predicate and quantifier.	BLT-1	CO-2
Q5. Show that $\sim(p \leftrightarrow q) \equiv \sim p \leftrightarrow q \equiv p \leftrightarrow \sim q$	BLT-2	CO-2

ASSIGNMENT-III

Q1. Determine the number of ways to place 2k+1 indistingushable balls in three distinct boxes so that any two boxes together will contain more than other one.	BLT-1	CO-3
Q2. Prove that C(2n,2) = 2C(n,2) + n^2	BLT-2	CO-3
Q3. Find the number of way in which an arrangement of 4 letter can be made from the letters of the word PROPORTION .	BLT-4	CO-3
Q4. Solve the recurrence relation a_n + 5a_(n-1) + 6a_(n-2) = 3n^2 - 2n + 1	BLT-3	CO-3
Q5. Solve the recurrence relation 3a_(n+1) = 〚 2a〛 _n +a_(n-1) ,n≥ 1 with a_0 =7 ,a_1 = 3	BLT-3	CO-3

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Department of Artificial Intelligence and Data Science
II Year IV Semester
4AID2-01: Discrete Mathematics Structure
ASSIGNMENT-IV

Q1. Show that If f is a homomorphism of a group G into a group G' with kernel K is a normal subgroup of G.	BLT-1	CO-4
Q2. Let H be a subgroup of index 2 in a group G. Show that H is a normal subgroup of G.	BLT-3	CO-4
Q3. Let G be the set of all non-zero real numbers and let a*b = ab/2 . Then show that (G,*) is an abelian group	BLT-3	CO-4
Q4. Define the binary operations $\oplus$ and Θ on Z by $x \oplus y = x + y - 7$ and $x \Theta y = x + y - 3xy$,$\forall$ x,y $\in$ Z. Is (Z, $\oplus$, Θ) is a ring? if not then why ?	BLT-1	CO-4
Q5. Every field is an integral domain but the converse is not true.	BLT-4	CO-4

ASSIGNMENT-V

Q1. Prove that a simple graph with n vertices and k components can have at most ((n-k)(n-k+1))/2 edges	BLT-3	CO-5
Q2. Let G be connected planar graph with n_v vertices, n_e edges and n_(f) faces .then prove that n_v -n_e + n_(f) = 2 .	BLT-3	CO-5
Q3. Show that in a complete graph with n- vertices there are (n-1)/2 edge disjoint Hamiltonian circuits, if n is an odd number> 3.	BLT-3	CO-5
Q4. A planar graph has 30 vertices each of degree 3 . in how many regions can this graph be partitioned ?	BLT-1	CO-5

Q5. Define
    (i)   Graph
    (ii)   Undirected graph and directed graph
    (iii)   Finite and infinite graph
    (iv)   Pendent vertex
    (v)   Bipartite graph
	BLT-1	CO-5

*BLT: BLT shows the **Bloom's taxonomy** levels

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Department of Artificial Intelligence and Data Science
II Year IV Semester
4AID3-04: Microprocessor & Interfaces

Note: Each assignment of Maximum Marks 10.All question carries equal marks.

ASSIGNMENT-I

Q1. Explain pin diagram of 8085, also explain program counter, stack pointer and latch.	BLT-1	CO-1
Q2. Explain architecture of 8085 microprocessor.	BLT-1	CO-1
Q3. Classify the address bus, data bus and control bus.	BLT-2	CO-1
Q4. What is the use of flag register with example.	BLT-3	CO-1
Q5. Explain register organization of 8085.	BLT-1	CO-1

ASSIGNMENT-II

Q1. Define stack and subroutine technique with appropriate example.	BLT-2	CO-2
Q2. Briefly mention the different categories of the instruction in 8085.	BLT-2	CO-2
Q3. Explain arithmetic group of instruction. Describe each instruction of this group.	BLT-1	CO-2
Q4. Describe various addressing modes supported by the 8085 microprocessor with the help of example.	BLT-1	CO-2
Q5 Differentiate between CALL &JUMP instruction.	BLT-3	CO-2

ASSIGNMENT-III

Q1. Write the program for BCD subtraction in 8085 microprocessor.	BLT-6	CO-3
Q2. What is cod conversion? Write a program for BCD to binary conversion.	BLT-6	CO-3
Q3. Compare DAA and DAD instruction with example.	BLT-2	CO-3
Q4. Compare LHLD, SHLD, XCHG instruction with example.	BLT-2	CO-3
Q5. Explain time delay using loop within loop technique.	BLT-1	CO-3

Department of Artificial Intelligence and Data Science
II Year IV Semester
4AID3-04: Microprocessor & Interfaces
ASSIGNMENT-IV

Q1.Differentiate between Hardware and software interrupt.	BLT-2	CO-4
Q2. Explain interrupt procedure and vectored interrupt in detail.	BLT-1	CO-4
Q3. Draw the block diagram of 8251 and explain the transmitter section of 8251.	BLT-3	CO-4
Q4. Draw and explain the diagram of serial I/O communication?	BLT-3	CO-4
Q5. Explain RIM instruction in detail with example.	BLT-1	CO-4

ASSIGNMENT-V

Q1. Explain USART 8251 with block diagram?	BLT-1	CO-5
Q2. Short note on: (a) RS-232 (b) RS-422 A	BLT-1	CO-5
Q3. What is parallel interface centronics.	BLT-2	CO-5
Q4. Draw Sketch diagram of Interfacing of matrix keyboard.	BLT-3	CO-5
Q5. Interface LCD display interfacing with microprocessor 8085.	BLT-6	CO-5

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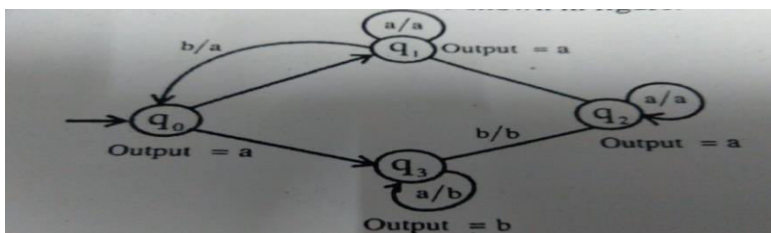# Department of Artificial Intelligence and Data Science
II Year III/IV Semester
3AID1-02/4AID1-02 - TECHNICAL COMMUNICATION
ASSIGNMENT-I

Note: Each assignment of Maximum Marks 10.All question carries equal marks.

Q.1What is TC and why it is important	BLT-1	CO-1
Q.2 Differentiate between General communication and Technical Communication	BLT-3	CO-1
Q.3 Aspects of TC.	BLT-1	CO-1
Q.4 Define technical communication skills.	BLT-2	CO-1
Q.5 Briefly explain gender theory of multiple intelligence	BLT-2	CO-1

ASSIGNMENT-2

Note: First, Second question carries 4 marks and third carries 2 marks.

Q1 Explain note making and its types with the help of diagram,	BLT-1	CO-2
Q.2Write any three primary data collection methods	BLT-2	CO-2
Q.3 Differentiate between informative and descriptive summary	BLT-3	CO-2

ASSIGNMENT-3

Q1 Write a letter for placing orders with ABC books and Stationers worth rupees 50000 (Jaipur)	BLT-1	CO-3
Q.2 Differentiate between creative and technical writing	BLT-2	CO-3

ASSIGNMENT-4

Q1 Make a table for types of technical proposals	BLT-2	CO-4
Q.2 Make a table for types of technical reports	BLT-2	CO-4

ASSIGNMENT-5

Q.1 Differentiate between Resume and CV	BLT-3	CO-3
Q.2 Write 5 characteristics of reports	BLT-2	CO-4

*BLT: BLT shows the **Bloom's taxonomy** levels.

Department of Artificial Intelligence & Data Sciences
II Year IV Semester
4AID4-06: Theory of Computation

Note: Each assignment of Maximum Marks 10.All question carries equal marks.

ASSIGNMENT-I

Q1. Consider the Moore machine show bellow. What is the output for input "ababa"?	BLT-5	CO-1
Q2. Convert the following Moore machine into Mealy Machine.	BLT-4	CO-1

Table for Q2:

State	Input		output
	a	b	
Q_0	Q_1	Q_3	1
Q_1	Q_3	Q_1	0
Q2	Q0	Q3	0
Q3	Q3	Q2	1

Q3. Explain the process for minimization of finite automata with example.	BLT-1	CO-1
Q4. Differentiate between DFA and NDFA. Convert the following NDFA to DFA.	BLT-2	CO-1
Q5. Write a regular expression (R) for following ($\sum$=a,b) a) R that generate all the string where the length of string is at least 3. b) R that generate all the string where every 'a' must followed by 'b' c) R that generate all the string containing second symbol from RHS is 'a' R that generate all the string where each string contain at most two b's	BLT-6	CO-1
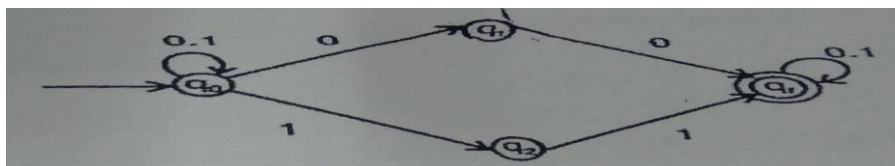
Department of Artificial Intelligence & Data Sciences
II Year IV Semester
4AID4-06: Theory of Computation
ASSIGNMENT-II

Q1. What is ambiguity ?	BLT-1	CO-2
Q2. Differentiate L* and L+	BLT-4	CO-2
Q3. What is context free grammar?	BLT-1	CO-2
Q4. Consider the context free grammarS -> AA A -> AAA|bA|Ab|a find the parse tree for string " bbaaaab "	BLT-4	CO-2
Q5 Construct a r.e for the language which accepts all strings with at least two c' over theset Σ={c,b}	BLT-6	CO-2

ASSIGNMENT-III

Q1. Define Push Down Autometa?	BLT-1	CO-3
Q2. State the equivalence of PDA and CFL.	BLT-3	CO-3
Q3. What are the closure properties of CFL?	BLT-1	CO-3
Q4. Give an example of Deterministic CFL.	BLT-2	CO-3
Q5 What are the properties of CFL?	BLT-1	CO-3

ASSIGNMENT-IV

Q1. What is a Turing machine?	BLT-1	CO-4
Q2. Write short notes on:(i) Context sensitive language(ii)Chomsky hierarchy	BLT-1	CO-4
Q3. Give examples of recursive languages?	BLT-3	CO-4
Q4. Differentiate recursive and recursively enumerable languages.	BLT-4	CO-4
Q5. What are UTMs or Universal Turing machines?	BLT-1	CO-4

ASSIGNMENT-V

Q1. What is vertex cover problem?	BLT-2	CO-5
Q2. Explain Hamiltonian path problem.	BLT-2	CO-5
Q3. Differentiate NP-complete and NP-hard problem.	BLT-4	CO-5
Q4. Explain Traveling salesman problem.	BLT-2	CO-5
Q5. Define the type of complex classes.	BLT-1	CO-5

***BLT**: BLT shows the **Bloom's taxonomy** levels.