** Department of CSE, SOET, CUH Mahendergarh**
Sessional Exam-II, Dec 2023

Course: B. Tech. (CSE) 5th Sem   **Subject Title: Analysis & Design of Algorithms**
Paper Code: BT CS 501A   Max Marks: 20   Time Allowed: 1 hour

Note: Attempt ALL questions.

1	Write the isSafe() function for N-Queens problem which takes 3 arguments i.e. Board[n][n], row, col and return a boolean value. It checks if a queen can be placed safely at (row, col).	7
2	Find the longest common sequence using dynamic programming for the given strings s1={B,C,D,A,A,C,D}, s2={A,C,D,B,A,C}.	7
3	Draw the venn diagram to explain the relationship between P, NP, NP-Hard and NP-Complete	6

Department of Computer Science and Engineering
Course Code- BT CS 502A
Couse Title-Theory of Computation

Attempt any four Questions-

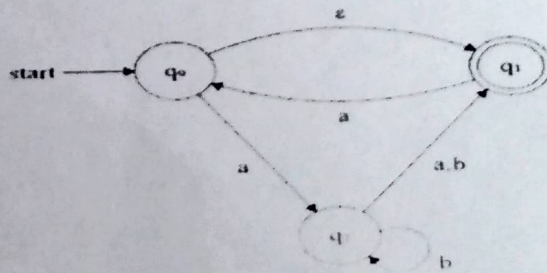Q.1-Differentiate between Moore machine and Mealy Machine.

Q.2- Covert from moore to mealy machine.
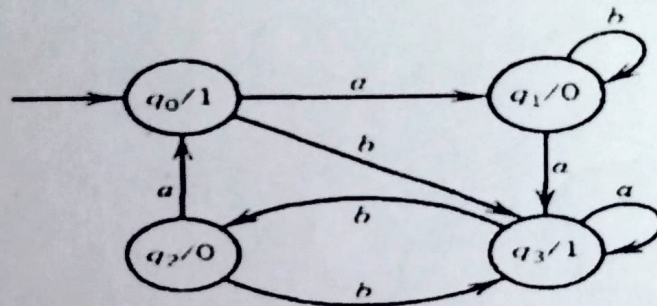
Q.3- What do you mean by Regular grammar? Explain regular language by taking a suitable example.

Q.4- Write in detail about all the closure properties of RG.

Q.5- Convert given NFA into DFA.

Course Code: BT CS 504A   Max Time: 1 Hour

Course Title: Microprocessor and Interfacing   Max Marks: 20

Note: Attempt any four questions. All questions carry equal marks.

Q. No.1 What are addressing modes? Explain with examples.

Q. No.2 Explain procedure or subroutine with example.

Q. No.3 What is DMA? Explain 8237 DMA controller with proper diagram.

Q. No 4 Discuss 8254 Programmable Interval timer with diagram.

Q. No. 5 Why I/O interface is used? Explain asynchronous communication in brief.

Theory of Computation (BT CS 502A)

Max Marks-20

Attempt all the questions-

Q1. Write CFG to accept the language defined by, $L = \{a^i \ b^j \ c^k \mid i, j, k >= 0 \ and \ i = j + k\}$.

Q2. Draw pushdown automata to accept all palindromes of odd length.

Q3. Convert the following grammar to Chomsky Normal form.

$S \rightarrow A \mid AB0 \mid A1A$

$A \rightarrow A0 \mid \epsilon$

$B \rightarrow B1 \mid BC$

$C \rightarrow CB \mid CA \mid 1B$.

Q4. How ϵ-productions are eliminated from a grammar whose language doesn't have empty string? Remove ϵ-productions from the grammar given below.

$S \rightarrow a \mid aA \mid B \mid C$

$A \rightarrow aB \mid \epsilon$

$B \rightarrow Aa$

$C \rightarrow aCD$

$D \rightarrow ddd$

Central University of Haryana
Department of Computer Science and Engineering.

Mid Sem-II   Branch: CSE (3ʳᵈ year)   Subject- Programming with Python

MM: 20

Time: 01:00 Hours

Note: All questions are compulsory.

Question No. 1 Discuss graphics and image processing libray like Matplotlib and OpenCV and give task example. (8 Marks)

Question No. 2 Discuss the object oriented features and explain public and private data members with examples. (6 Marks)

Question No. 3 Explain with suitable examples different types of inheritance supported by Python. (76Marks)