JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS-2022

B.Tech-V Semester (CS/IT/ECE/Civil/BT)

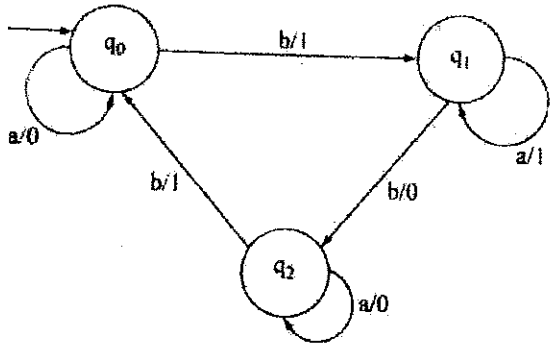
COURSE CODE (CREDITS): 18B11CI513 (3) MAX. MARKS: 25

COURSE NAME: Formal Languages and Automata Theory

COURSE INSTRUCTORS: Dr. (Amit, Shubham, Vipul, Rakesh, Yugal) MAX. TIME: 1:30 Minutes

Note: *All questions are compulsory. Marks are indicated against each question in square brackets.*

Q1.



a) Covert the following Mealy machine into equivalent Moore machine [CO-3] [3]

b) Construct a RE from the given FA (don't consider output) by Algebraic Method using Arden's Theorem [CO-2] [3]

Q2. Suppose that you have been given 2 Regular Languages then prove that both are closed under complement and reversal by making a suitable FA for both. [CO-2] [3]

Q3. Does ambiguous grammar create problem and how we can remove it? Prove that the following grammar is ambiguous. S→a/abSb/aAb; A→bS/aAAb. [CO-4] [3]

Q4. Let G = (V_N, ∑, P, S) be given by the productions: [CO-4] [4]

S→AB, A→a/NULL, B→b/C, C→D, D→A, E→c/NULL.

Find G' to reduce the G.

Q5. Show that L = {$0^n 1^n 2^n$, where n>=1} is not Type-2. [CO-4] [3]

Q6. Define context free grammar and why is it called context free. Construct a CFG for the given language: L = {$a^n b^n c^m d^m$ | n, m>=1}. [CO-5] [3]

Q7. Mention the process of conversion a context free grammar into Greibach Normal Form and convert the given grammar in GNF: S→ AA/a, A→SS/b. [CO-5] [3]