Theory of Computation Imp Questions

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UNIT –III

Q1. What do you mean by ambiguous grammar explain with example.

Q2. What do you mean by LMD and RMD explain with example.

Q3. Construct CFG for L = L1 union L2 where Ll = {$a^n b^m$ | m, m > 0) and L2 = An strings having 01 as a substring over (0,1)

Q4. Explain CNF and GNF form of CFG with example .

Q5. Construct CFG in CNF equivalent to G = ({ S,A, B,D} , {0,l}, P,S) where P = { S→0AB, A→aD | lAD, B →0, D →1}

Q6. Explain Pumping lemma for CFLwith example.

Q7. If S→aSb | aAb , A→bAa , A→ba. Find out the CFL.

Q8. Find the grammar in Chomsky Normal form equivalent to S–>aAD;A->aB/bAB;B->b,D->d.

Q9. Construct a grammar in GNF which is equivalent to the grammar S->AA / a , A ->SS / b.

Q10. List the closure properties of Context Free Languages

UNIT -IV

Q1. Design a PDA for the language L = $a^{2n}b^n$, where a and b belongs to the alphabet.

Q2. What are the different ways in which a PDA accepts the language? Define them. Is a true that non deterministic PDA is more powerful than that of deterministic PDA? Justify your answer.

Q3.Explain closure properties of CFL.

Q4. What is the significance of PDA? explain with example.

Q5. Explain how to convert PDA into CFG.

Q6. Construct a PDA that recognizes the language {$a^i b^j c^k$ | i, j, k>0 and i=j or i=k}

Q7. Design a PDA for the language L = $a^n b^n$, where a and b belongs to the alphabet.

Q8. Construct a PDA for set of palindrome over the alphabet {a,b} L(M)={WcW^R}.

Q9. Design a PDA to accept the set of strings with twice as many 0's as 1's.

Q10. Construct the grammar for the following PDA. M=({q0, q1},{0,1},{X,z0},δ,q0,Z0,Φ) and where δ is given by

δ(q0,0,z0)={(q0,XZ0)}, δ(q0,0,X)={(q0,XX)},δ(q0,1,X)={(q1, ε)}, δ(q1,1,X)={(q1, ε)}, δ(q1, ε,X)={(q1, ε)}, δ(q1, ε, Z0)={(q1, ε)}.

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UNIT -V

Q1. Construct a Turing Machine for L = {$a^n b^{2n+2}$ | n > 1}

Q2. Turing Machine models are more powerful than the basic Turing Machines? (In the sense of language Acceptance).

Q3. Explain P and NP Problems.

Q4. Define instantaneous description of a Turing Machine.

Q5. Prove that a language L is recursive if and only if L and $\overline{L}$ are recursively enumerable.

Q6. Construct a Turing Machine that recognizes the language {wcw / w € {a, b} + }

Q7. Design a Turing Machine for the Language L = $a^n b^n c^n$, where a, b and c belongs to the alphabet.

Q8. State and Proof that Halting Problem of Turing Machine is undecidable.

Q9. Describe the Tractable and possibly intractable problems P and NP Completeness.

Q10.Explain Various Properties of Recursive Language