* Which of the following is not a Non-deterministic

* Design Pushdown Automata for the language $L = \{a^n b^{2n} | n \geq 1\}$ pg No:- 4-9

* Explain what undecidable problem is and post correspondence problem? pg No:- 6-10, 6-8

* Difference between recursively language and recursively Enumerable Languages. pg No:- 6-7

* Construct a TM for checking the palindrome of a string odd palindrome for $\Sigma = \{0, 1\}$ pg No:- 5-20

* Construct TM for checking well formness of the parantheses. pg No:- 5-33

* Construct a TM for the addition function for the Unary number System. pg No:- 5-23

* Write and explain closure properties of context Free Languages. pg No:- 4-56

* Explain various components of context free grammer and derivation tree in detail. pg No:- 3-15, 3-3

* State and explain in detail about P and NP problems. pg No:- 6-12

* Design Push down Automata for the language $L = \{a^n b^n | n \geq 1\}$

* Explain indetail about primitive recursive functions. pg No:- 4-5 (to) 4-8

* Construct the PDA to the following grammer:

$S \longrightarrow AB$

$A \longrightarrow BS | b$

$B \longrightarrow A | a$

* Convert the following grammer to Greibach Normal form

$S \longrightarrow ABA$

$A \longrightarrow aA | \epsilon$ pg No:- 3-55

$B \longrightarrow bB | \epsilon$

and simplify the grammer.

* Construct a TM for the language $L = \{a^n b^n\}$ where $n \geq 1\}$ pg No:- 5-14

*

* Which of [illegible]

* Let G be a grammer
  $S \longrightarrow 0B/1A$
  $A \longrightarrow 0/0S/1AA$
  $B \longrightarrow 1/1S/0BB$.
  For the string 00110101 find its left most derivation and derivation tree. pg NO:- 3-27

* Explain in detail about Universal Turing machine. pg NO:- 6-9

* (i) Show that $E \longrightarrow E+E/E*E/(E)/id$ is ambigous pg NO:- 3-24
  (ii) Give an example for a context free grammer.

* Explain in detail about post correspondence problem pg NO:- 6-21

* Design Push down Automata for the language
  $L = \{wcw^R / w \text{ is in } (a+b)^*\}$. pg NO:- 4-17.

* Design Turing Machine for the language $L = \{a^n b^n c^n / n \geq 0\}$ Pg NO:- 5-16

* Convert the following context free grammer to Chomsky Normal form.
  $S \longrightarrow aSa/bsb/a/b$. pg NO:- 3-43

* Explain in detail about NP Complete problem. pg NO:- 6-12

* Consider the correspondence system as given below
  $A = (1; 0; 010; 11)$ and $B = (10; 10; 01; 1)$. the input set is $\Sigma = \{0, 1\}$. pg NO:- 6-21

* Design Push down Automata for the language
  $L = \{a^n b^{2n} / n \geq 1\}$ pg NO:- 4-9

* What is derivation in grammar? (A)

(A) Derivation is a sequence of production rules and derive the input string or terminal from those.

(B) Production rules.

(C) Deriving set of non terminal derived from production rules

(D) Both of above

(E) None of above.

* Every grammer in Chomsky Normal form is: (C)

(a) regular

(b) Context sensitive

(c) Context free

(d) all of the mentioned.

* A Turing machine operates over: (B)

(a) Finite memory tape

(b) Infinite memory tape

(c) Depends on the algorithm

(d) None of the mentioned.

* Construct a CFG for the regular expression $(0+1)^*$ (C)

(a) $S \rightarrow 0A$, $A \rightarrow 1B$ and $B \rightarrow \varepsilon$

(b) $S \rightarrow 0A$, $A \rightarrow 1S$ and $A \rightarrow \varepsilon$

(c) $S \rightarrow 0S \mid 1S$ and $S \rightarrow \varepsilon$

(d) None of them.

* Pushdown automata can recognize language generated by (C)

(a) Only context free grammer

(b) Only regular grammer

(c) Context free grammer or regular grammer

(d) Only context sensitive grammer.

* The language $L = \{$ set of odd palindrome over a and b$\}$ gen by the grammar. (B)

(a) $S \rightarrow ab \mid asb$

(b) $S \rightarrow a \mid b \mid asa \mid bsb$

(c) $S \rightarrow ab \mid asb \mid \varepsilon$

(d) $S \rightarrow aSa \mid bSb \mid \varepsilon$

* The minimum number of productions required to produce a language consisting of palindrome strings over $\Sigma = \{a, b\}$ is (C)

(A) 3 (B) 7 (C) 5 (D) 6

* The languages ..... are the examples of non-regular languages. (A)

(A) PALINDROME and PRIME (B) PALINDROME and EVEN-EVEN

(C) EVEN-EVEN and PRIME (D) FACTORIAL and SQUARE

* Turing machine can be represented using the following tools (D)

(a) Transition graph (b) Transition table

(c) Queue and Input tape (d) All of the mentioned

* Which of the following is a multi-tape Turing machine? (C)

(a) Post-Turing Machine (b) Wang-B Machine

(c) Obstinate Turing Machine (d) All of the mentioned

* The value of n if Turing machine is defined using n-tuple (B)

(a) 6 (b) 7 (c) 8 (d) 5

* What is Rightmost Derivation in CFG? (C)

(A) Leftmost Derivation is the process of deriving a nonterminal from Grammar.

(B) Read the nonterminal from right to left.

(C) The input string is derived by replacing the production rule from right to left. It read the input.

(D) String from right to left.

* Pick the odd one out. (D)

(a) Subroutines (b) Multiple tracks

(c) Shifting over (d) Recursion

* Which of the following is not a Non-deterministic Turing Machine? (C)

(a) Alternating Turing Machine (b) Probabilistic Turing Machine

(c) Read-Only Turing Machine (d) None of the Mentioned.

* 3-SAT and 2-SAT problems are (A)

(A) NP-Complete and P respectively (B) Un decidable and NP-complete.

(C) Both NP-Complete. (D) Both in P

* A CFG is not closed under (D)

(A) Dot Operation (B) Union Operation (C) Concatenation

(D) Iteration.

* A recursive language is also called. (A)

(a) Decidable (B) Undecidable (C) Both(a)&(b) (D) None of these

* Which is false about recursive languages? (D)

(A) The language is recursive then it is decidable.

(B) The language is not recursive then it is undecidable.

(C) There exists a Turing Machine to accept the languages

(D) The complement of recursive language is neither recursive nor non recursive.

* Number of external states of UTM should be at least. (B)

(A) 1 (B) 2 (C) 3 (D) 4.

* NPDA stands for Non-deterministic push down Automata
* A push down automaton employs stack data structure.
* The above grammar is said to be content sensitive
* A Symbol X is reachable if there exists : $S \rightarrow aXb$ L_1
* ~~A~~ push down automata accepts Type-2 languages.
* Let G be a grammar. When the production in G satisfy certain restrictions, then G is said to be in normal form
* $L = \{w \mid M \text{ is a DFA and } M \text{ recognize input } w\}$ where L is Decidable
* The ability for a system of instructions to simulate a Turing machine is called Turing Completeness.
* A multi tape Turing machine is more powerful than a single tape Turing machine.
* ~~A~~ language is Turing recognizable if an only if an enumerator enumerates it correct.
* Recursive languages are A proper superset of CFL
* PCP is : Undecidable
* Recursively enumerable languages are not closed under Complementation
* A Universal Turing machine is a reprogrammable turing machine
* If PCP is decidable then MPCP is Can't say

~~* [illegible]~~

* Pushdown automata can recognize language generated by — context free grammar or regular grammar.