DATE: / /

Question Bank 2

1. Design a DFA for the R.E $(a+b)^* aba$

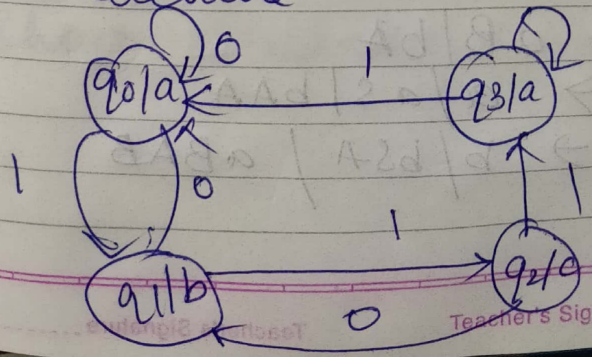
2. Design a moore machine to convert each occurence of 1000 to 1001.

3. Write a short note on moore & mealey machine.

4. Design moore m/c to count each occurence of "aab" over $\Sigma = \{a, b\}$

5. Design mealey m/c to change each occurence of "abb" to "aba" over $\Sigma = \{a, b\}$

6. Convert moore m/c to mealey machine.



Teacher's Signature .....

(7) Explain chomskys Hierarchy.

(8) Check for ambiguity

$E \rightarrow E+E / E*E / id$

Derive "id+id*id" and if ambiguous remove ambiguity

(9) Write CFG to generate strings starting and ending with different letter over $\Sigma = \{a, b\}$.

(10) Define CFG and construct a CFG for $L = \{a^m b^{2m} / m > 0\}$.

(11) Simplification of CFG.

(12) Express CFG in CNF

a) $S \rightarrow aB / bA$

$A \rightarrow a / aS / bAA$

$B \rightarrow b / bS / aBAB$

(12) b) $S \to aAbB$
$A \to aA/a$
$B \to bB/b$.

c) $S \to ASB/\epsilon$
$B \to SbS/A/bb$
$A \to aAS/a$.

(13) Formal Definition of PDA.

(14) Design PDA for recognising

a) $L = \{ a^m b^n c^{m+n} / m,n \geq 1 \}$

b) $L = \{ a^n b^{2n+1} / n \geq 1 \}$

(15) Design PDA for the following.

$S \to aSa/bSb/c$.

(16) Short Note on Turing machine.

(17) Design T.M for recognizing
$L = \{ 1^n 2^n 3^n / n \geq 1 \}$

(18) Design T.M for recognising
$L = \{ a^n b^n / n \geq 1 \}$.

(19) Using Pumping lemma check if the following language is regular or not

a) $L = \{ a^n b^n c^n / n \geq 0 \}$.

b) $L = \{ a^n b^n / i \geq 1 \}$.

(20) Halting Problem.

(21) Post correspondence problem.

(22) Unsolvable Problems.