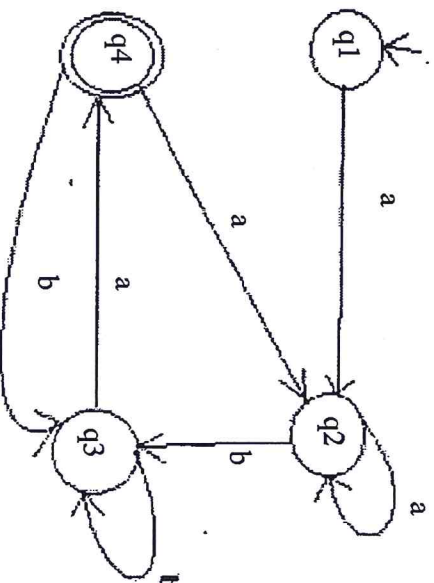


- (d) Find the language generated by the following grammar :
- $S \rightarrow aAb/ab, A \rightarrow bAa, A \rightarrow \epsilon$
- (e) Discuss the halting problem of a Turing machine.

2 Attempt any four parts of the following. **5×4=20**

- (a) Design a FA which accepts set of strings containing exactly four 1's in every string over  $\Sigma = \{0, 1\}$ .
- (b) Design the Turing machine that accepts the language of even integers written in binary.
- (c) Convert the CFG into GNF.  
 ~~$S \rightarrow aSbA$~~   $S \rightarrow as/bA$   
 $A \rightarrow Sa/a$
- (d) Define context free grammar. Find a context free grammar for the following language.  
 $L = \{a^n b^{2n} c^m \mid n, m \geq 0\}$
- (e) Find the regular expression using Arden's theorem of FA given below.



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2

[ Contd...