VIT

Vellore Institute of Technology

SCHOOL OF INFORMATION TECHNOLOGY AND ENGINEERING

CAT 1– B. Tech - Fall Semester - 2018-19

Course Name: Theory of Computation | **Duration : 90 min**

Course Code : ITE1006 | **Max. Marks : 50**

Slot : F1+TF1

Faculty :Dr. Dharmendra Singh R / Dr. Thippa Reddy G / Dr. Kuruva Lakshmanna

Answer all the questions 5 * 10 = 50

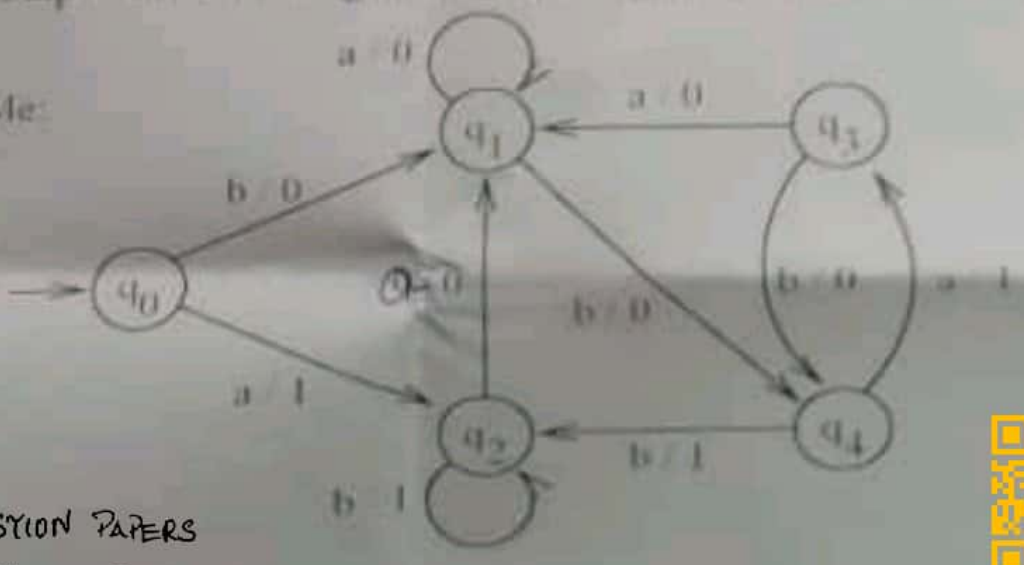
1. For $\Sigma = \{a, b\}$, construct DFA's that accept the sets consisting of
   (a) all strings with exactly one a,
   (b) all strings with at least one a,
   (c) all strings with no more than three a's,
   (d) all strings with at least one a and exactly two b's.

2. Describe the drawback of finite automata without output.Design an NFA with no more than five states for the set $\{abab^n : n > 0\} \cup \{aba^n : n \geq 0\}$.

3. Construct the ϵ – NFA which accepts strings in which some two 0's, are separated by a string of length 3i, i >= 0 and convert the ϵ – NFA (which you got) to NFA.

4. Demonstrate the difference between finite automata with output and without output.Convert the given Mealy machine to Moore machine.

Me:



8 Minimize the given DFA