VIT UNIVERSITY
(Estd. u/s 3 of UGC Act 1956)

SCHOOL OF INFORMATION TECHNOLOGY AND ENGINEERING

CAT I – B.Tech (IT) - Fall Semester – 2019 - 20

Course Name Theory of Computation — **Duration:** 90 MINUTES

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

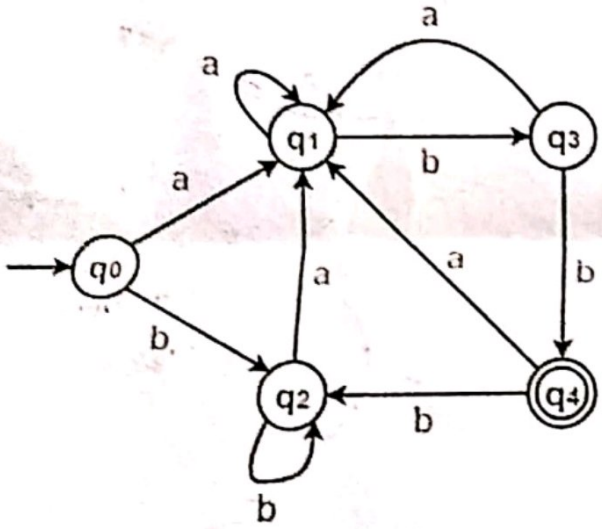
Slot : B1+ TB1

Faculty : R. Raghavan

PART A (5 x 10 = 50 marks)

ANSWER ALL THE QUESTIONS

1. Minimize the following DFA

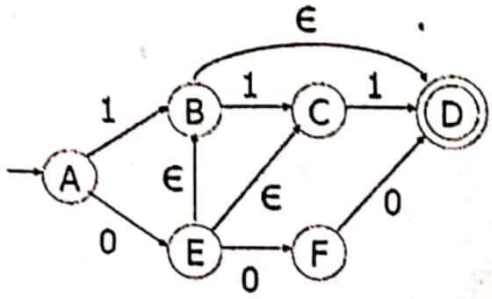


2. a) Give the Kleene's theorem transition diagram template for union, concatenation and star closure. (3 marks)
b) Find the corresponding transition systems using kleene's theorem for the following regular expression (7 marks)

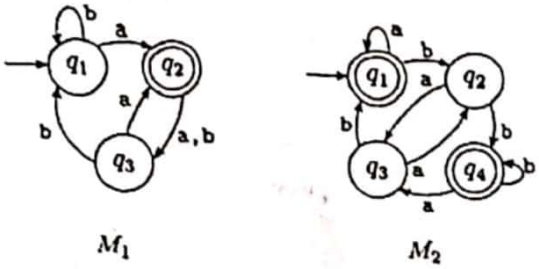
$$(a^* + b^*)^* + abc + b^*c^*$$

3. a) For the following transition system find ϵ-closure(A,0) and ϵ-closure(A,01) (5 marks)

Scanned by CamScanner



b) Check whether the following automata are equivalent or not (5 marks)

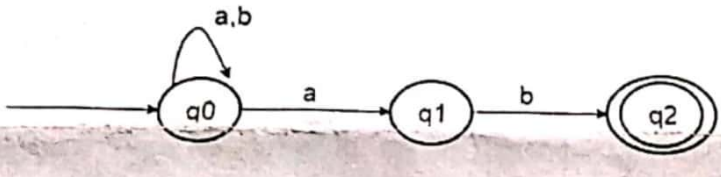


M_1 M_2

4.

a) Differentiate NFA and DFA in terms of tuple definition. (2 marks)

b) Convert the following Nfa to Dfa (8 marks)



(2) (0)

5. Design a DFA corresponding to accept set of binary numbers which are divisible by 3.

==========

Scanned by CamScanner