PVP 12

Code: IT6T5

III B.Tech - II Semester – Regular Examinations - May 2015

AUTOMATA AND COMPILER DESIGN

(INFORMATION TECHNOLOGY)

Duration: 3 hours Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

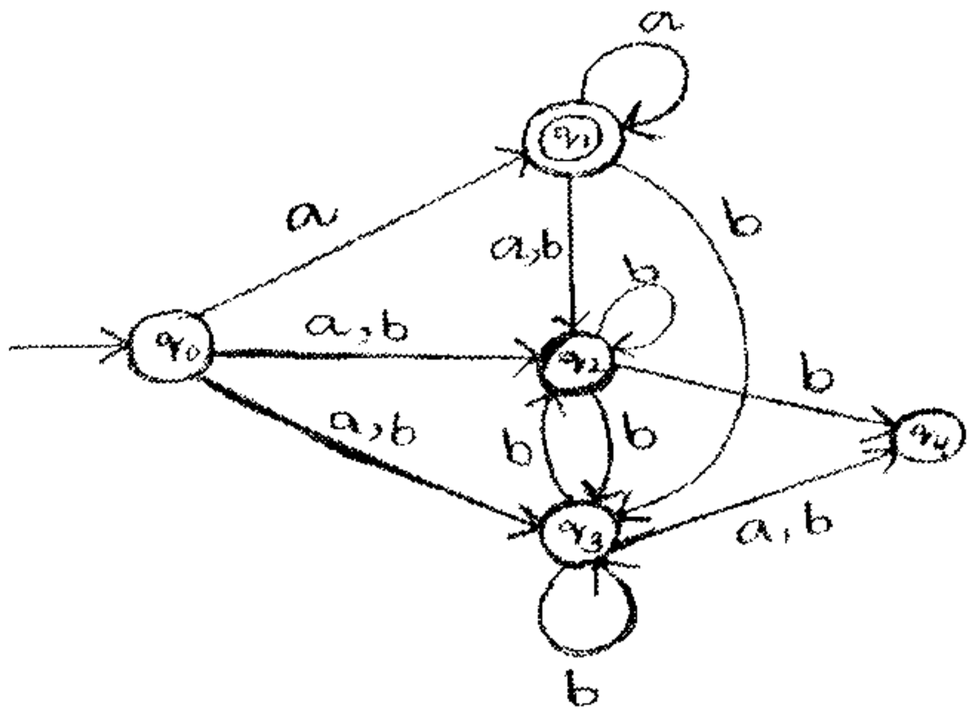
1 a) Write regular expressions for the following languages.

i) The set of strings of 0's and 1's whose number of 0's is divisible by 5. 3 M

ii) The set of a's and b's with atmost one pair of consecutive a's. 2 M

iii) The set of all strings of 0's and 1's not containing 101 as substring. 2 M

b) Convert the following Non-Deterministic Finite Automata (NFA) to Deterministic Finite Automata (DFA). 7 M



2 a) Show that the following grammar is ambiguous: 7 M

E⟶ E+E| E*E| (E)| id

Write an unambiguous grammar for the same.

b) Construct the predictive parsing table for the following grammar. 7 M

S ⟶ (L)| a

L ⟶L,S| S

3 Construct Canonical LR(1) parsing table for the following grammar 14 M

S⟶ CC , C⟶ cC | d

4 a) Define the following with examples. 7 M

i) Synthesized attribute

ii) Inherited Attribute

b) With an example, explain the various formats of intermediate code. 7 M

5 Describe the specification of simple type checker. 14 M

6 a) What is an activation record? Explain its possible structure. 7 M

b) Explain different dynamic storage allocation strategies. 7 M

7 a) Explain the principal sources of optimization in detail. 7 M

b) Discuss the various peephole optimization techniques in detail. 7 M

8 a) Explain the issues in the design of a code generator. 7 M

b) Discuss the following terms with examples: 7 M

i) Basic blocks

ii) Next-use information