PVP 12

Code: IT6T5

III B.Tech - II Semester – Regular Examinations – April 2016

AUTOMATA AND COMPILER DESIGN

(INFORMATION TECHNOLOGY)

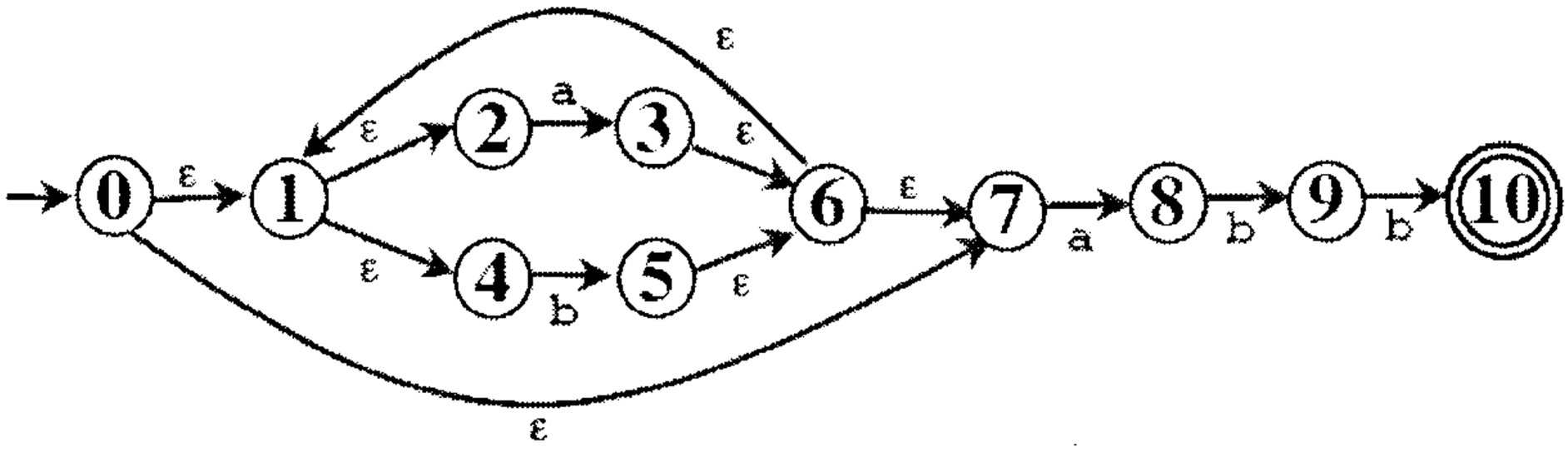
Duration: 3 hours Max. Marks: 70

Answer any FIVE questions. All questions carry equal marks

1)

a) Convert NFA to DFA. Consider NFA Diagram. 10 M

$\Sigma = \{a,b\}$



b) Define analysis phases in phases of compiler. 4 M

2)

a) Design a derivation tree for the following grammar. 7 M

$S \rightarrow aS$

$S \rightarrow aSbS$

$S \rightarrow \epsilon$

Also obtain the LMD & RMD for the string "aaabaab"

b) What is ambiguity in grammar? 7 M

Rewrite the grammar to eliminate ambiguity.

$F \rightarrow F + T|T$

$T \rightarrow T * F| F$

$F \rightarrow F* |a|b$

3) Consider the following grammar 14 M

$S \rightarrow CC$

$C \rightarrow aC$

$C \rightarrow d$

Construct CLR parsing table.

4)

a) Write Syntax directed definition for simple calculator.

6 M

b) What is 3- address code? Represent the expression

a = b * - d + b* - d in Quadruple, Triple & Indirect Triple.

8 M

5)

a) What is overloading? How functions & operators can be overloaded? 7 M

b) Give Specification for a simple type checker. 7 M

6) Discuss about the different dynamic storage Allocation schemes. 14 M

7)

a) What is code optimization? Explain the principal sources to optimization. 8 M

b) Write short notes on 6 M
   i) Inner loops
   ii) Dominators

8)

a) Construct the DAG for the following basic block 8 M

$$d = b * c$$
$$e = a + b$$
$$b = b * c$$
$$a = e - d$$

Generate the code for above constructed DAG by using only one register.

b) Explain object code forms. 6 M