

B.SC. (I. T.) SEM. - V (CBCS - 2015 COURSE) : SUMMER - 2018
SUBJECT: THEORY OF COMPILERS

Day: **Thursday**
 Date: **31/05/2018**

S-2018-0960

Time: **02.30 p.m. to 05.30 p.m.**
 Max Marks: 60

N.B:

- 1) Attempt **ANY SIX** questions
- 2) Figures to the right indicate **FULL** marks
- 3) Draw appropriate diagram wherever **necessary**

Q.1 Explain Left Recursion and Left Factorization with suitable examples. **(10)**

Q.2 Using the following transition table, convert NFA to DFA. **(10)**

States/Input Symbols	A	B
q ₀	{q ₀ , q ₁ }	q ₀
q ₁	q ₂
q ₂	q ₃	q ₃
q ₃

q₃ is the final state.

Q.3 Check whether the following is an SLR(1) grammar or not. **(10)**
 $S \rightarrow AS \mid a$
 $A \rightarrow SA \mid b$

Q.4 Consider the following grammar: **(10)**
 $X \rightarrow XbaaX \mid aX$
 $X \rightarrow Xa \mid Xb \mid \epsilon$ (epsilon)

For the string "abaabb" Find:

- i) Leftmost Derivation
- ii) Rightmost Derivation
- iii) Parse Tree

Q.5 Give the Regular Expressions for input symbols: 0, 1. **(10)**

- i) All the strings that have a single occurrence of '11' in it.
- ii) {x | x starts with a 0 and ends with a 1}.
- iii) {x | x ends with a 00}.
- iv) {x | x x starts with a 0 or 1 and ends with 01}.

Q.6 What is a Symbol Table? Explain different types of symbol table with an example. **(10)**

Q.7 Check whether the Grammar G with production rules- **(10)**
 $X \rightarrow X + X \mid X * X \mid X \mid a$
 is ambiguous or not.

Q.8 Define the following: **(2*5)**

- i) Grammar
- ii) Kleen Closure
- iii) Ambiguous Grammar
- iv) Derivation
- v) FOLLOW

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