(17) 00124

THE OPEN UNIVERSITY OF SRI LANKA
B.Sc. DEGREE PROGRAMME: LEVEL 05
DEPARTMENT OF COMPUTER SCIENCE
CSU5305 – THEORY OF COMPUTING
NO BOOK TEST 2(NBT-2) – 2017/2018
DURATION: One Hour only

Date: 28.01.2019 **Time: 4.15pm – 5.15pm**

Answer All Questions.

1.

i. Write the names of Chomsky Hierarchy of grammars.

ii. Using your answer to part (i), name the grammar type given below.

$G = \langle N, \sum, P, S \rangle$

$N = \{S\}$

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

$P = \{S \longrightarrow aSb, S \longrightarrow \varepsilon\}$

iii. Using the information given in part (ii), obtain a sentence in the language generated by G and the sentential form.

2.

i. Give the definitions of a State Transition System (STS) and a Labeled Transition System (LTS).

ii. A Transition System can be represented by several ways. One way is by a Transition Function. Give the names of the other two ways.

iii. Consider the Transition System that has states q_1, q_2 and q_3. Input $\{0, 1\}$.
The Transition Functions are given below.

$\delta(q_1, 0) \longrightarrow q_1$
$\delta(q_1, 1) \longrightarrow q_2$
$\delta(q_2, 0) \longrightarrow q_3$
$\delta(q_2, 1) \longrightarrow q_2$
$\delta(q_3, 0) \longrightarrow q_2$
$\delta(q_3, 1) \longrightarrow q_2$

According to the names given by you as answer to part 2 (ii), draw the two diagrams.