THE OPEN UNIVERSITY OF SRILANKA

B.Sc. DEGREE PROGRAMME – Level 05

DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE

CPU 3144 – THEORY OF COMPUTING

NO BOOK TEST-1 (NBT-1) 2015/16

DURATION: ONE HOUR (1 HOUR)

DATE: 01.10.2016   **TIME: 1.00pm – 2.00pm**

Answer **All** Questions.

1. **Write short answers for the following questions given below.**

    I.   Write the complexity theory. Why is it important in computer science?

    II. $\sum=\{0,1\}$ is given. Write $\sum^*$ and a language.

    III.   If L is any language. What is the difference between $\mathbf{L}^*$ and $\mathbf{L}^+$?

    IV.   Define a finite set and a countable set.

    V.   What are Context Free Grammars and Context Free Languages?

    VI.   How many types are in Chomsky Hierarchy of Grammars? What are they?

    VII.   Let $\sum$ be a given alphabet. Write the regular expressions over $\sum$.

2. **Write the corresponding regular languages for the regular expressions given below.**

    I. a^*

    II. $(a+b)^*$

    III. $(a+b)^*(a+bb)$