

CS 302
QUIZ 7

25 November, 2017

ANSWERS

$R : E \rightarrow I | E+I | M ; I \rightarrow 0 | 1J ; M \rightarrow M0 ; J \rightarrow 0J | 1J | e$

(a) After eliminating the null productions

$R : E \rightarrow I | E+I | M ; I \rightarrow 0 | 1 | 1J ; M \rightarrow M0 ; J \rightarrow 0 | 1 | 0J | 1J$

After eliminating the unitary productions

$R : E \rightarrow E+I | 0 | 1 | 1J | M0 ; I \rightarrow 0 | 1 | 1J ; M \rightarrow M0 ; J \rightarrow 0 | 1 | 0J | 1J$

After eliminating the nongenerating useless symbol M

$R : E \rightarrow E+I | 0 | 1 | 1J ; I \rightarrow 0 | 1 | 1J ; J \rightarrow 0 | 1 | 0J | 1J$

(b) Chomsky Normal Form

$E \rightarrow EP | 0 | 1 | one J ; P \rightarrow plus I ; I \rightarrow 0 | 1 | one J ; J \rightarrow 0 | 1 | zero J | one J$

$one \rightarrow 1 ; zero \rightarrow 0 ; plus \rightarrow +$