B.tech. IV Sem (C) (CSE), 2019-20

Theory of Computation, Assignment # 3
(Only for online submission)

March 18, 2020

1. Define regular grammar.

2. Define context-free grammar.

3. What is relation between regular and context-free grammar.

4. Given the context-free grammar G, describe the language and find out the strings set for language.

   $G = (V, \Sigma, S, P)$,
   $V = \{S, A\}$,
   $\Sigma = \{a, b\}$,
   $S = \{s \rightarrow AA, A \rightarrow AAA, A \rightarrow a, A \rightarrow bA, A \rightarrow Ab\}$.

5. For each of the following cases, find out language generated by each CFG.

   (a) $S \rightarrow aSa \mid bSb \mid a \mid b \mid \varepsilon$
   (b) $S \rightarrow SS \mid aS \mid Sa \mid b$
   (c) $S \rightarrow aS \mid bS \mid b$

6. Given the production for a CFG as,

   $S \rightarrow bbA$
   $B \rightarrow aAa \mid \varepsilon$
   $A \rightarrow Bb$

   Show that the word *bbaabaab* is not in the language generated by this grammar.

   Submission deadline: 21-03-2020, 23.59 hrs. The assignment must be done in a register and be submitted by uploading its scanned copy in google class.