

**Course Name: (1) : Selective Course (2) (Compilers)**

**Program:** Computer and Control Eng. (CCE 423) Program

**Academic Year:** 2022-2023

**Level:** Fourth Year

**Semester:** First term

**Sheet No. (4)**

**Subject: Compiler Design**

**Q1:** Consider the following grammar and eliminate left recursion-

$$A \rightarrow ABd / Aa / a$$

$$B \rightarrow Be / b$$

**Q2:** Consider the following grammar and eliminate left recursion-

$$S \rightarrow (L) / a$$

$$L \rightarrow L, S / S$$

**Q3:** Consider the following grammar and eliminate left recursion-

$$S \rightarrow A$$

$$A \rightarrow Ad / Ae / aB / ac$$

$$B \rightarrow bBc / f$$

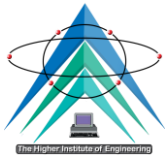
**Q4:** calculate steps to draw parse tree by LL(1) as atop down parser  
for following grammar

$$A \rightarrow ACB / CbB / Ba$$

$$A \rightarrow da / BC$$

$$B \rightarrow g / \epsilon$$

$$C \rightarrow h / \epsilon$$



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**Q5:** calculate steps to draw parse tree by LL(1) as atop down parser  
for following grammar

$S \rightarrow ACBDE$

$A \rightarrow a / \epsilon$

$B \rightarrow b / \epsilon$

$C \rightarrow c$

$D \rightarrow d / \epsilon$

$E \rightarrow e / \epsilon$