Q1) Define the following:
   (1) analysis-synthesis model,   (2) LL(1),   (3) Three-Address Code,
   (4) ambiguity,   (5) code optimization.

Q2) for the following grammar:
   \[ E \rightarrow dCT; \]
   \[ C \rightarrow C*f | * \]
   \[ T \rightarrow i \]
   Parse the string (d**f{i}) by using SLR method.

Q3) a- Eliminate left recursion and left factoring (if required) for the grammar:
   \[ E \rightarrow E+T \mid E-T \mid T \]
   \[ T \rightarrow T*P \mid T/P \mid P \]
   \[ F \rightarrow (E) \mid d \]
   b- Write triple and quadruple of the following statement:
   \[ x := a + b / -c * b \]

Q4) Draw the diagram showing the components (main phases) of compiler, explain in brief each component, and give example of errors that can be generated in each phase.

Q5) for the grammar:
   \[ S \rightarrow \text{if } E \text{ then } S \]
   \[ S \rightarrow \text{if } E \text{ then } S \text{ else } S \]
   a- construct the SLR parsing table.
   b- resolve any conflict in the resultant table.

Q6) For the following grammar:
   \[ A \rightarrow A-B \mid B \]
   \[ B \rightarrow B/C \mid C \]
   \[ C \rightarrow \{A\} \mid \text{id} \]
   1- Eliminate left recursion (if needed).
   2- Parse the input id / \{id - id\} using predictive parsing method.