Full marks: 20   **Time: 1hr**

1. Briefly explain the different stages of a compiler.   6

2. What is shift-reduce parser?   2

3. How can we eliminate left recursion from a grammar?   2

4. Consider the following grammar-   10

$$E \longrightarrow TE'$$
$$E' \longrightarrow +TE' \mid \epsilon$$
$$T \longrightarrow FT'$$
$$T' \longrightarrow *FT' \mid \epsilon$$
$$F \longrightarrow (E) \mid id$$

Find FIRST and FOLLOW for the above grammar. Draw a predictive parser table for the above grammar.