Complier Design

Answer Keys and Explanations

1. **[Ans. A]**
With atleast one recursive production language can be infinite, because in each step recursive production can produce a new string and can repeat the same till infinite.

2. **[Ans. D]**
Left – linear grammar and right – linear grammar both can describe exactly the regular grammar. And a regular grammar is CFG and CSG both.

3. **[Ans. B]**
In this case everything in FIRST (B) will be in FOLLOW (B) and this will lead us to violation of rules of checking a grammer is LL (1) or not.

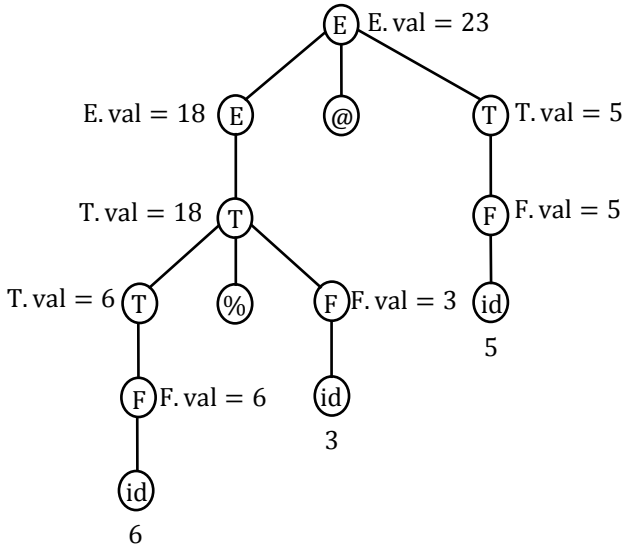
4. **[Ans. B]**
90% of the time is spent on 10% of the code

5. **[Ans. D]**
Both (A) and (B) are contained in LEX source file

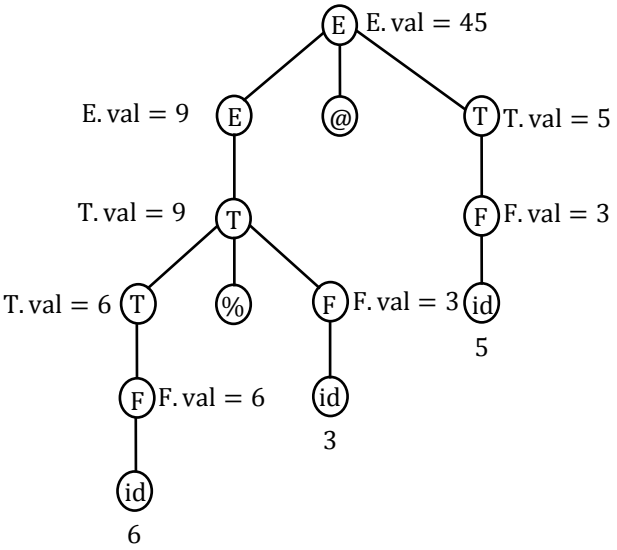
6. **[Ans. A]**
Because in nesting depth of A, N_B is also included. So
N_B Should be: -
$$N_B \geq 1$$
So we can conclude that
$$N_B - N_A \leq 1$$

7. **[Ans. *] Range: 0.50 to 0.52**

Derivation tree for string



For second scheme

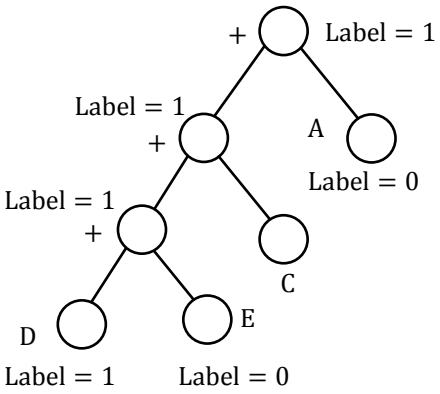


$$\text{Ratio} = \frac{23}{45}$$
$$= 0.51$$

8. **[Ans. *] Range: 1 to 1**

Associative property of '+' operator used for reduction.

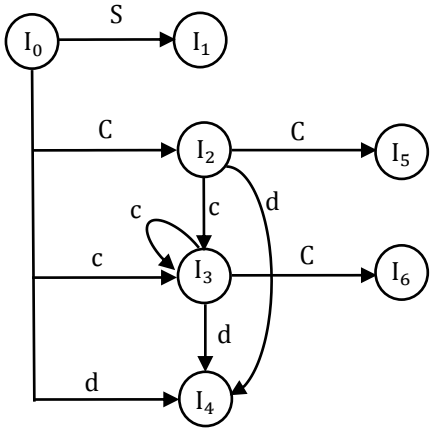
Syntax tree will be as:



9. **[Ans. A]**

Follow (S) = {$, e}
Follow (A) = {e, $}
Follow (B) = {e, $}
Follow (C) = {e, $}
Follow (D) = {e, $}
All contain {e, $}.

10. **[Ans. *] Range 0.33 to 0.34**



No. of outgoing edges = 3 [At I_2]
No. of incoming edges = 1

$$\text{Ratio} = \frac{1}{3} = 0.33$$