

8- \rightarrow FIRST(S) = t, z, q, ϵ , x, y

F(A1) = t

\rightarrow F(A2) = z, ϵ

F(B) = x, y

F(C1) = z

\rightarrow F(C2) = z

F(D1) = t, z, q, x, y

\rightarrow F(D2) = ϵ

-1 any missed char

-1 any extra.

4 marks 4 numbers.

4-

insert-stmt := A ~~#~~ INTO qualified-table-name B

A := 'INSERT' | 'REPLACE'

B := C \in 'DEFAULT' 'VALUES'

C := 'C' ID D ']' | ϵ

D := ',' ID D | ϵ

E := 'VALUES' 'C' expr F ']' | select-stmt

F := ',' expr F | ϵ

1- insert/replace 1

2- to main Alt 34

3- optional? 4

4- id star 4

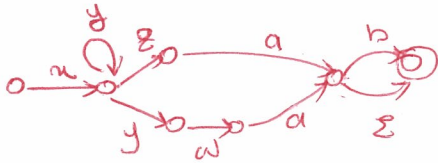
5- expr star 4

6- VALUES | select 1

7- BNF 2

4-

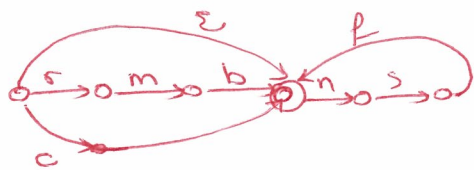
i)



5

xza
 $xyywab$
 $xyyza$

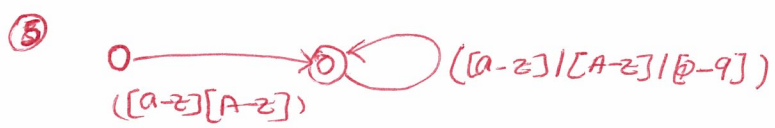
ii)



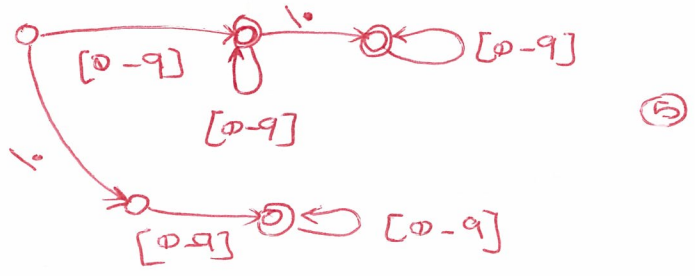
5

2-

i) $([a-z] | [A-Z]) ([a-z] | [A-Z] | [0-9])^*$ or $([a-zA-Z] | [0-9])^*$ 5



ii) $([0-9]^+ (([0-9]^*)^+)) | [0-9]^+$ 5



Question 5

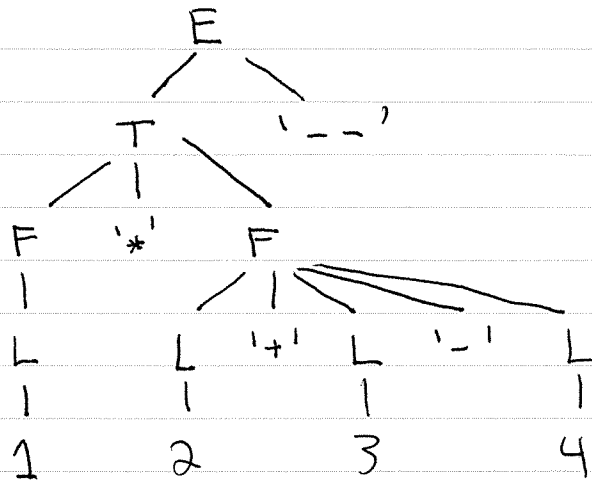
$$E = T ('--')^*$$

$$T = F ('*' F)^*$$

$$F = L (('+' | '-') L)^*$$

L = literal

Sentence: $1 * 2 + 3 - 4 --$



Marking scheme:

- 9 marks for correct rules
- 2 marks for correct top level rule
- 4 marks for being unambiguous
- 5 marks for the parse tree