First

- $A \longrightarrow X_1 X_2 \ldots X_n$

First(A) will contain (First(X_j) − {ϵ}) if First(X_i) contains ϵ ∀ $i < j$

- First(ϵ) = ϵ
- First set of any non-terminal may contain "ϵ".

(a)

$S \to ABC$
$A \to a \mid b \mid \epsilon$
$B \to c \mid d \mid \epsilon$
$C \to e \mid f \mid \epsilon$

First(A) = {a, b, ϵ}
First(B) = {c, d, ϵ}
First(C) = {e, f, ϵ}

Now, First(S) = (First(A) − {ϵ}) ∪ (First(B) − {ϵ}) ∪ (First(C) − {ϵ}) ∪ {ϵ}
= {ϵ, a, b, c, d, e, f} Ans.

(b)

$E \to TE'$
$E' \to *TE' \mid \epsilon$
$T \to FT'$
$T' \to \epsilon \mid +FT'$
$F \to id \mid \epsilon$

First(F) = {id, ϵ}
First(T') = {+, ϵ}
First(T) = (First(F) − {ϵ}) ∪ (First(T') − {ϵ}) ∪ {ϵ}
= {+, id, ϵ}
First(E') = {ϵ, *}
First(E) = {+, id, *, ϵ}

Ans