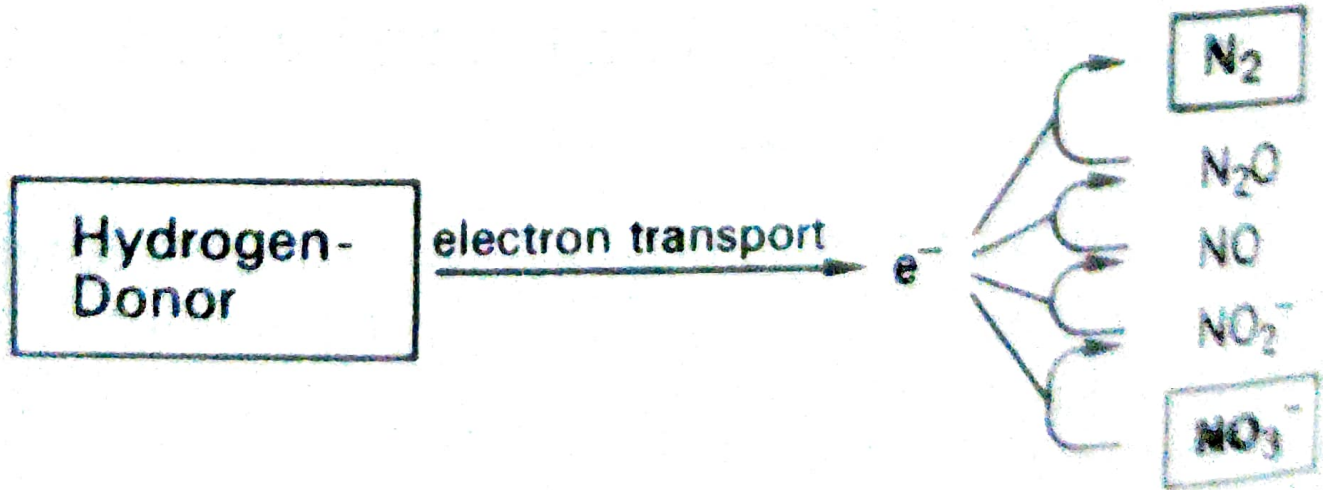


# Electron transport under anaerobic conditions



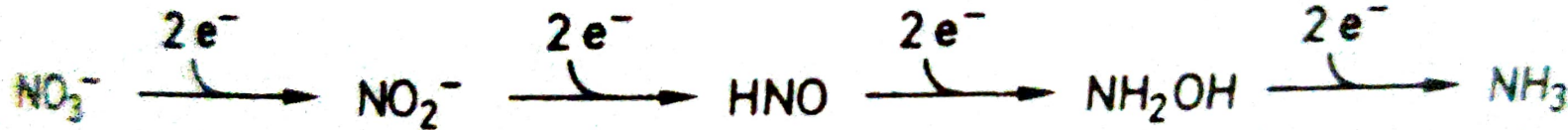
Hydrogen-  
Donor

electron transport

$e^-$

$\text{NO}_2^-$

$\text{NO}_3^-$



*Nitrate-Reductase B*

*Nitrite-Reductase*

Hydrogen-Donor

electron transport

$e^-$

$H_2S$

+

$SO_3^{2-}$

$S_2O_3^{2-}$

+

$SO_3^{2-}$

$S_3O_6^{2-}$

$SO_3^{2-}$

$SO_4^{2-}$

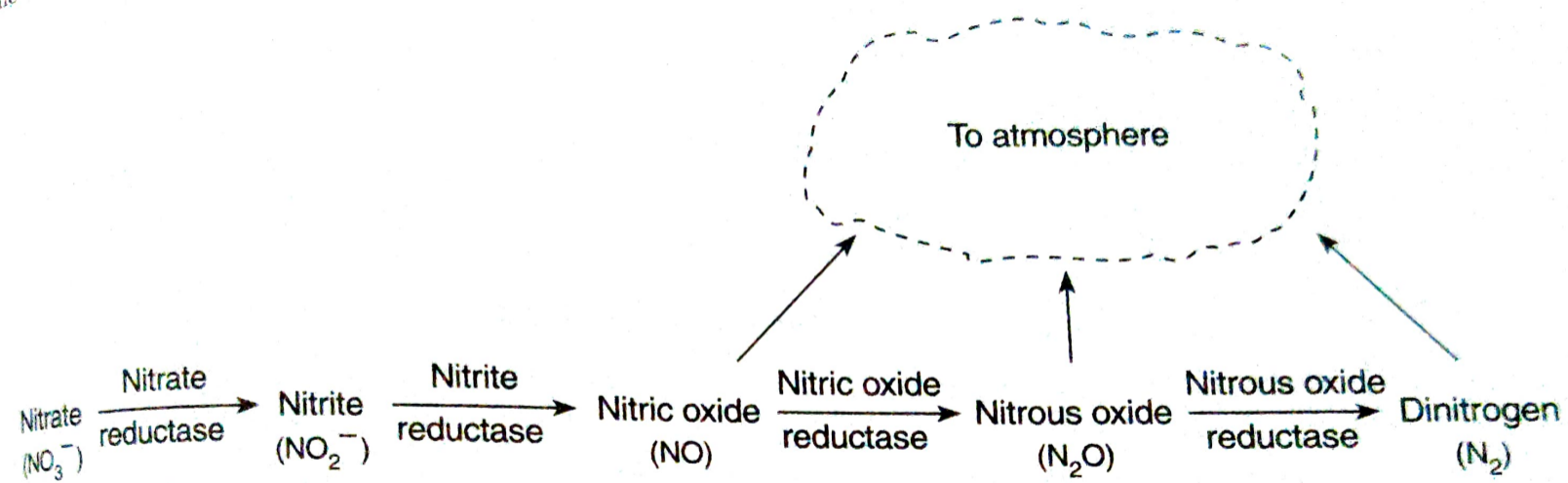
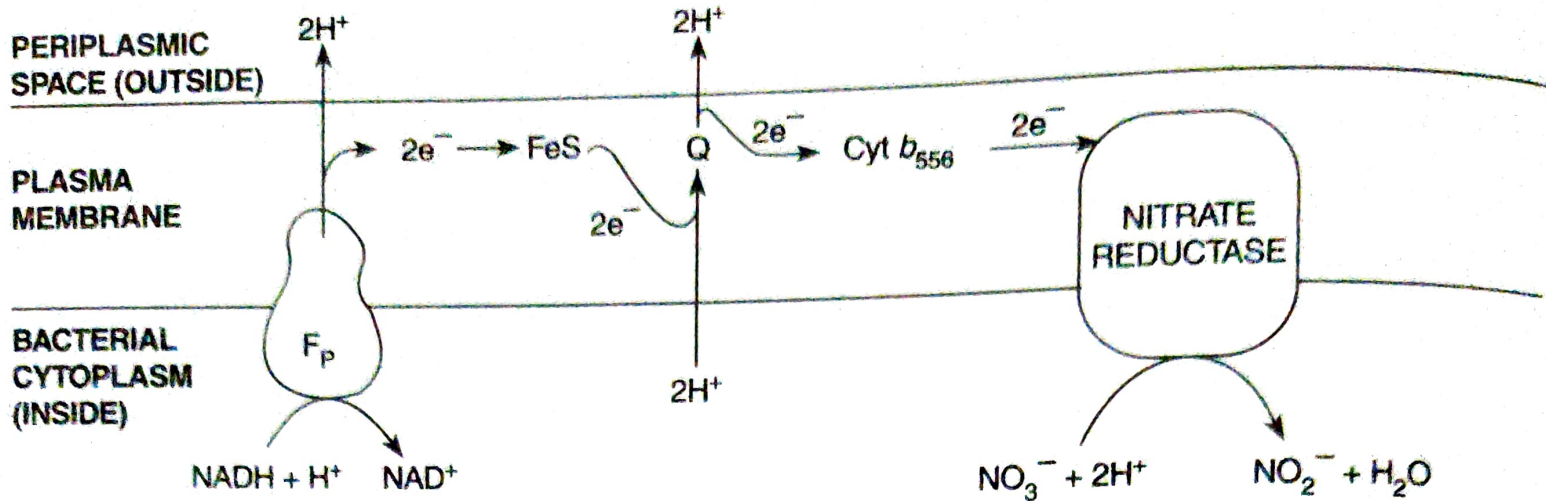
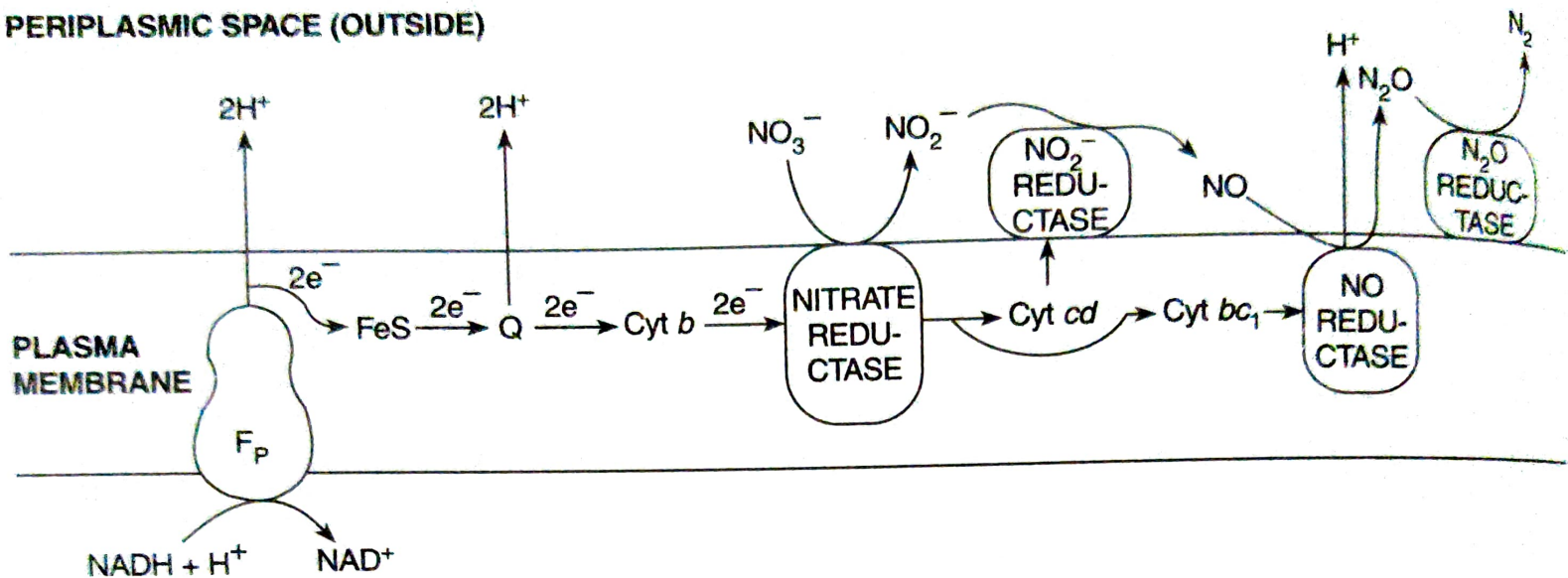


FIG. 24.11. Various steps of the process of denitrification of nitrate ( $\text{NO}_3^-$ ).



4.12. Electron transport chain in *Escherichia coli* when nitrate ( $\text{NO}_3^-$ ) is used as an electron acceptor and  $\text{NADH}$  as electron donor.  $\text{F}_p$  = flavoprotein,  $\text{Q}$  = ubiquinone,  $\text{Cyt}$  = cytochrome.

PERIPLASMIC SPACE (OUTSIDE)



BACTERIAL CYTOPLASM (INSIDE)

FIG. 24.13. Electron transport chain and  $\text{NO}_3^-$  reduction in *Pseudomonas stutzeri*. Nitrate reductase and nitrous oxide ( $\text{N}_2\text{O}$ ) reductase are membrane-bound enzymes, whereas nitrite ( $\text{NO}_2^-$ ) reductase and nitric oxide ( $\text{NO}$ ) reductase are periplasmic.