Figure 4.1 Fixed-priority scheduling protocol behavior.
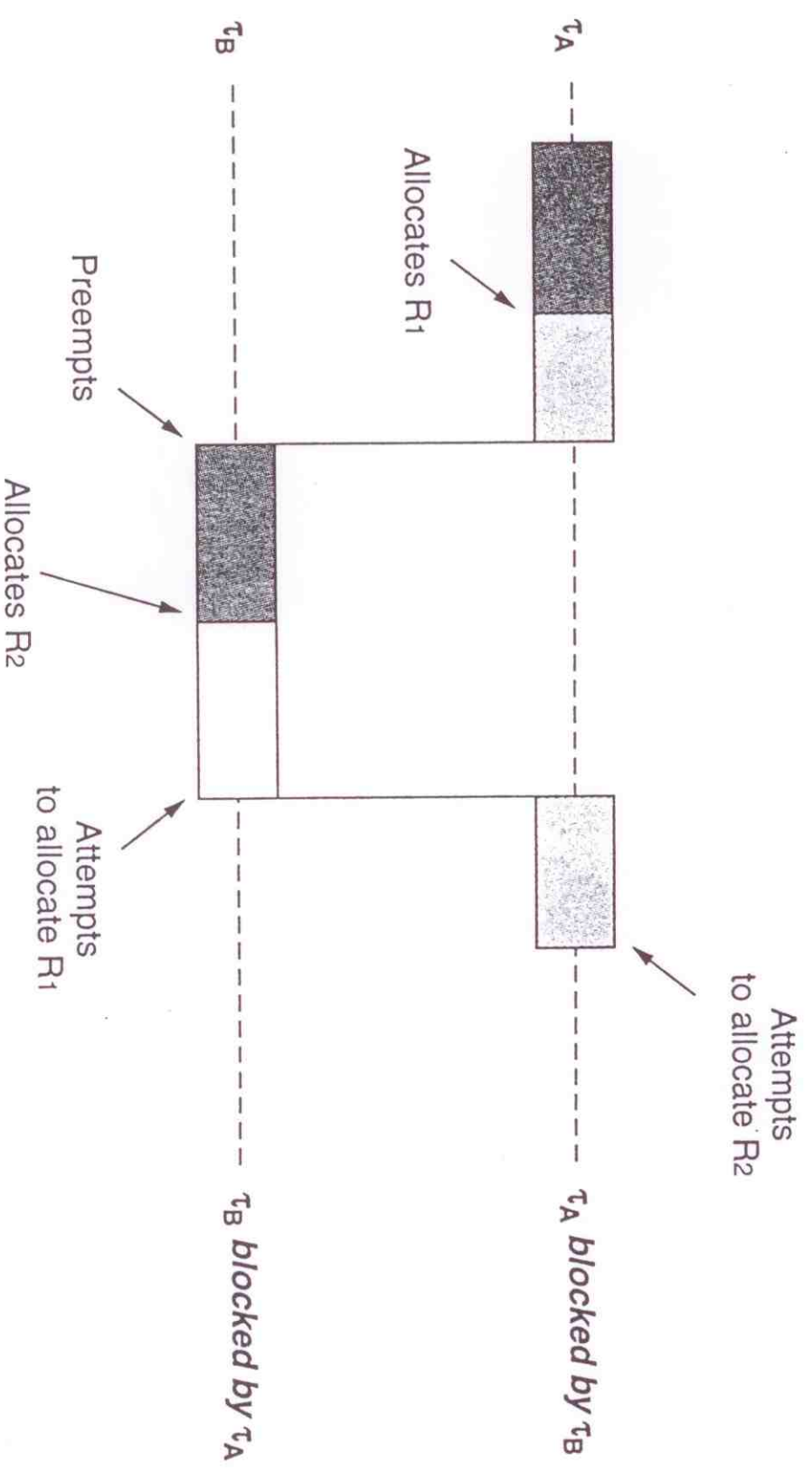
τ_A

Allocates R

Still owns R

R is freed

τ_B

Preempts

Terminates

Preempts and allocates R

τ_C

Preempts

Attempts to allocates R

Blocking Time

Frees R, terminates

τ_A

Allocates R1

Preempts

Allocates R2

Attempts
to allocate R1

Attempts
to allocate R2

τ_A *blocked by* τ_B

τ_B

τ_B *blocked by* τ_A

Figure 4.2   Deadlock.

τ_A

Allocates R

Prio τ_A = Prio τ_C

R is freed
Prio τ_A retrieved

τ_B

Preempts

Preempts and
allocates R

Terminates

τ_C

Preempts   Attempts to
allocates R

*Blocking
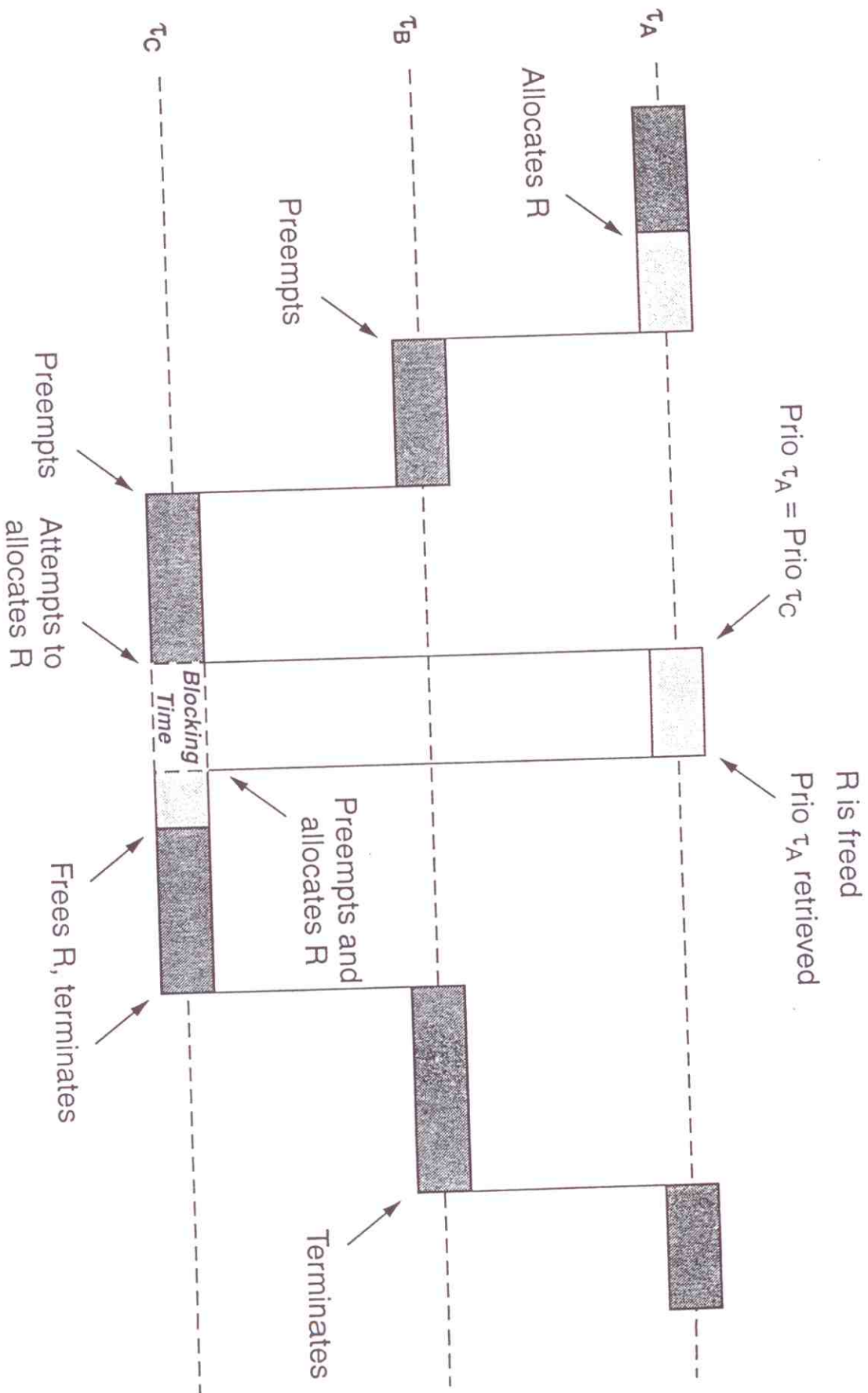Time*

Frees R, terminates

Figure 4.3   Basic priority inheritance protocol behavior.
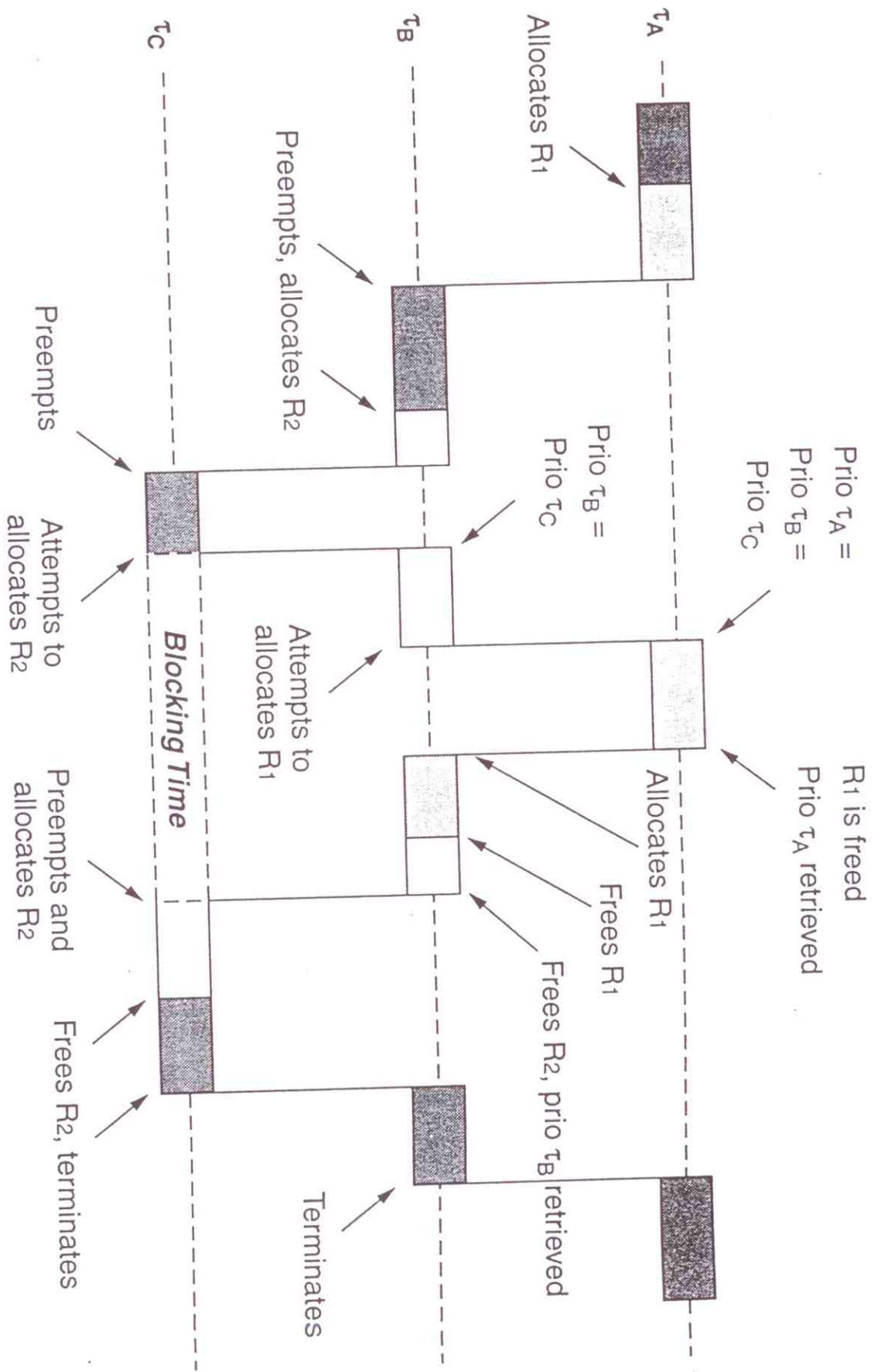
Figure 4.4 Basic Priority inheritance protocol behavior in presence of multiple blocking.

Prio τ_A = Prio τ_B

τ_A

Allocates R_1

R1 is freed
Prio τ_A retrieved

Allocates R_1

Terminates

τ_B

Preempts   Attempts to
allocates R_2

Preempts and   Frees R_1 Frees R_2
allocates R_2

τ_C

Preempts   Allocates R_2 Frees R_2 Terminates
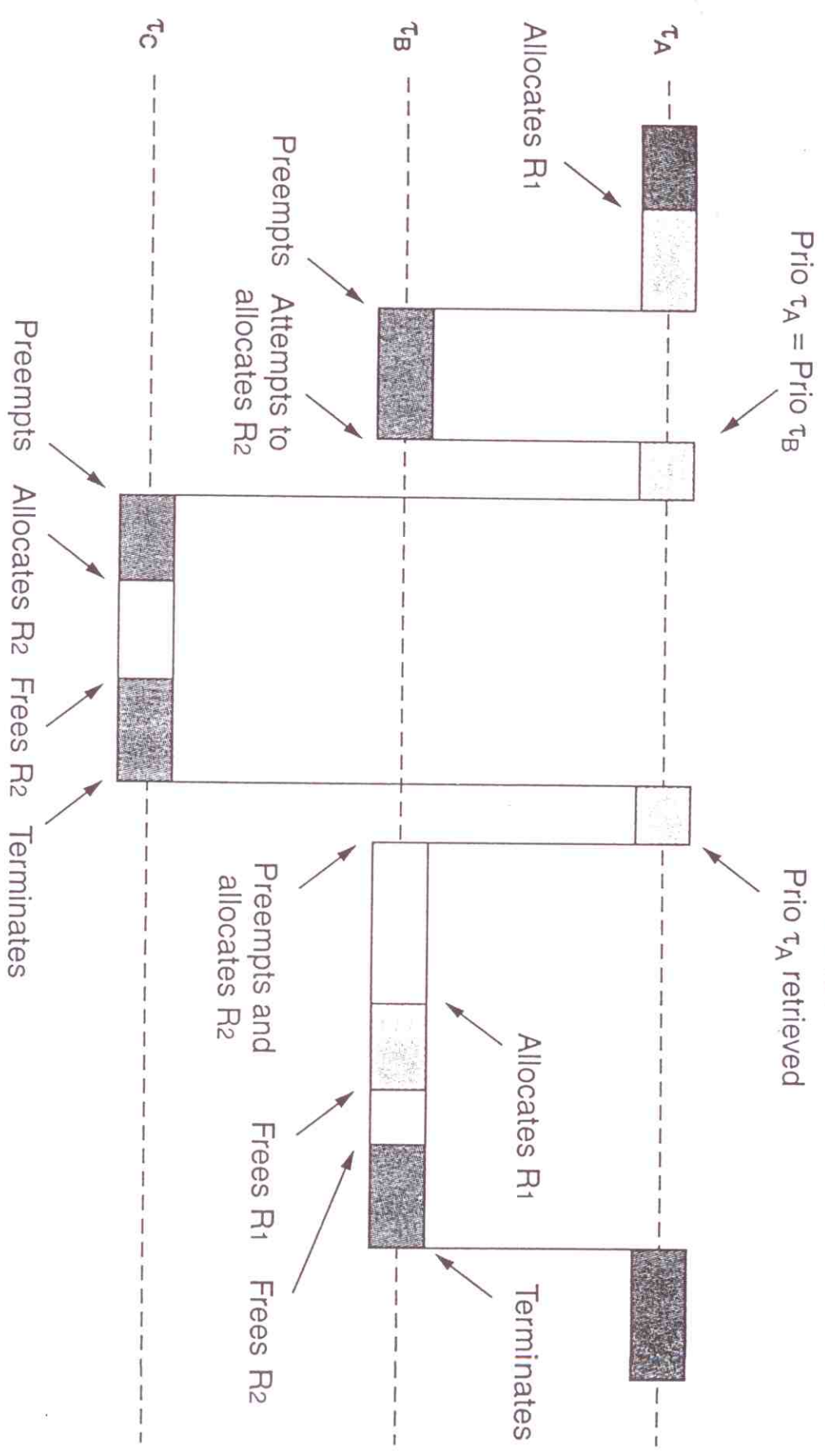
Figure 4.5   Priority ceiling protocol behavior in presence of multiple blocking.

τ_A

Prio τ_A = R_1 ceiling + 1

Allocates R_1

Frees R_1

Basic prio τ_A retrieved

Allocates R_1

τ_B

Cannot preempt

Preempts

Frees R_1

Allocates R_2

Prio τ_B = R_2 ceiling + 1

Frees R_2

Basic prio τ_B retrieved

Terminates

τ_C

Preempts

Allocates R_2   Frees R_2

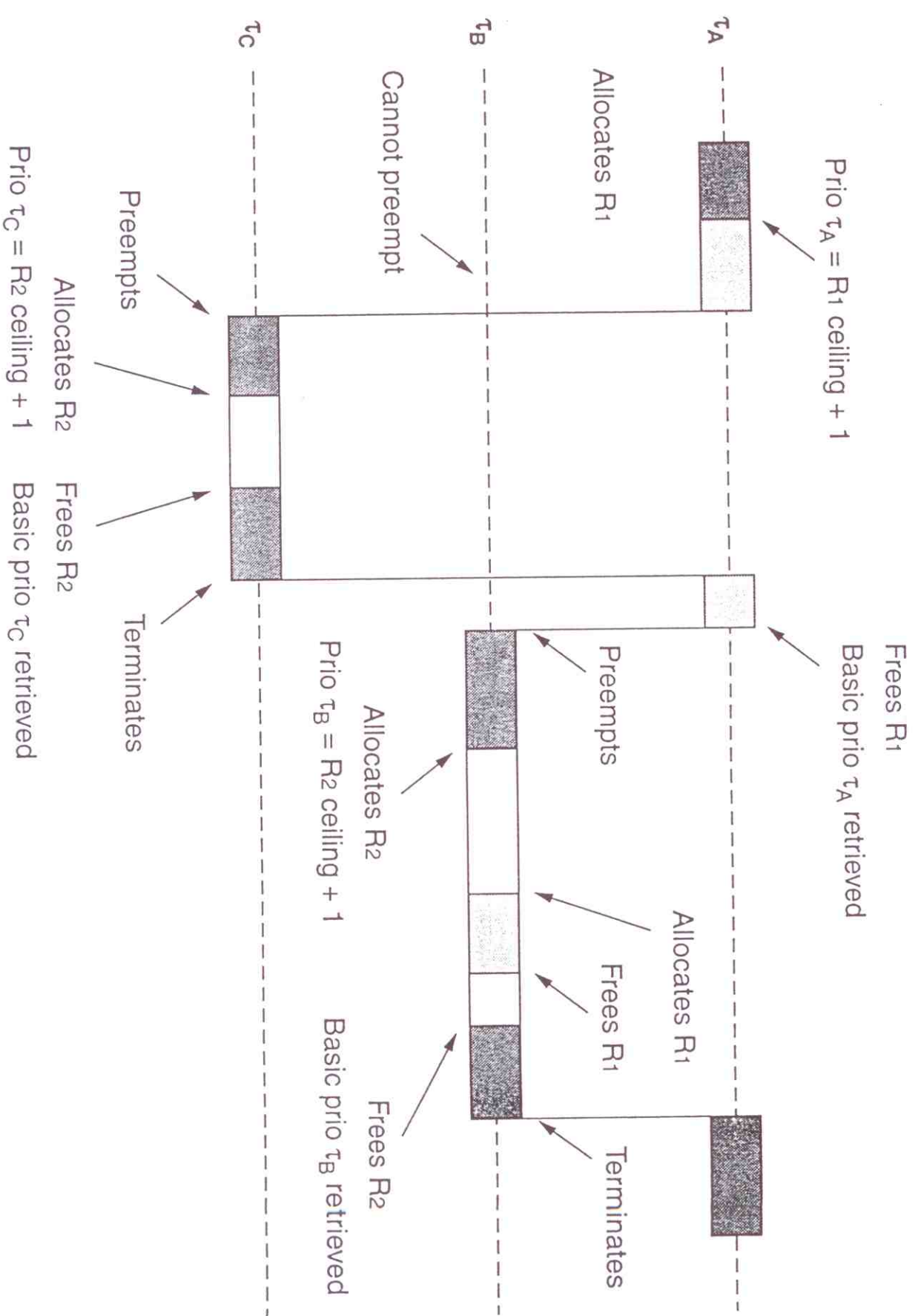Prio τ_C = R_2 ceiling + 1   Basic prio τ_C retrieved

Terminates

Figure 4.6   Highest locker protocol behavior in presence of multiple blocking.