

Ans (2) \rightarrow Four necessary and sufficient condition for deadlock.

(a) Mutual exclusion. The resource involved must be unusable otherwise the process would not be protected from using resource when necessary.

(b) Hold and wait or partial allocation.

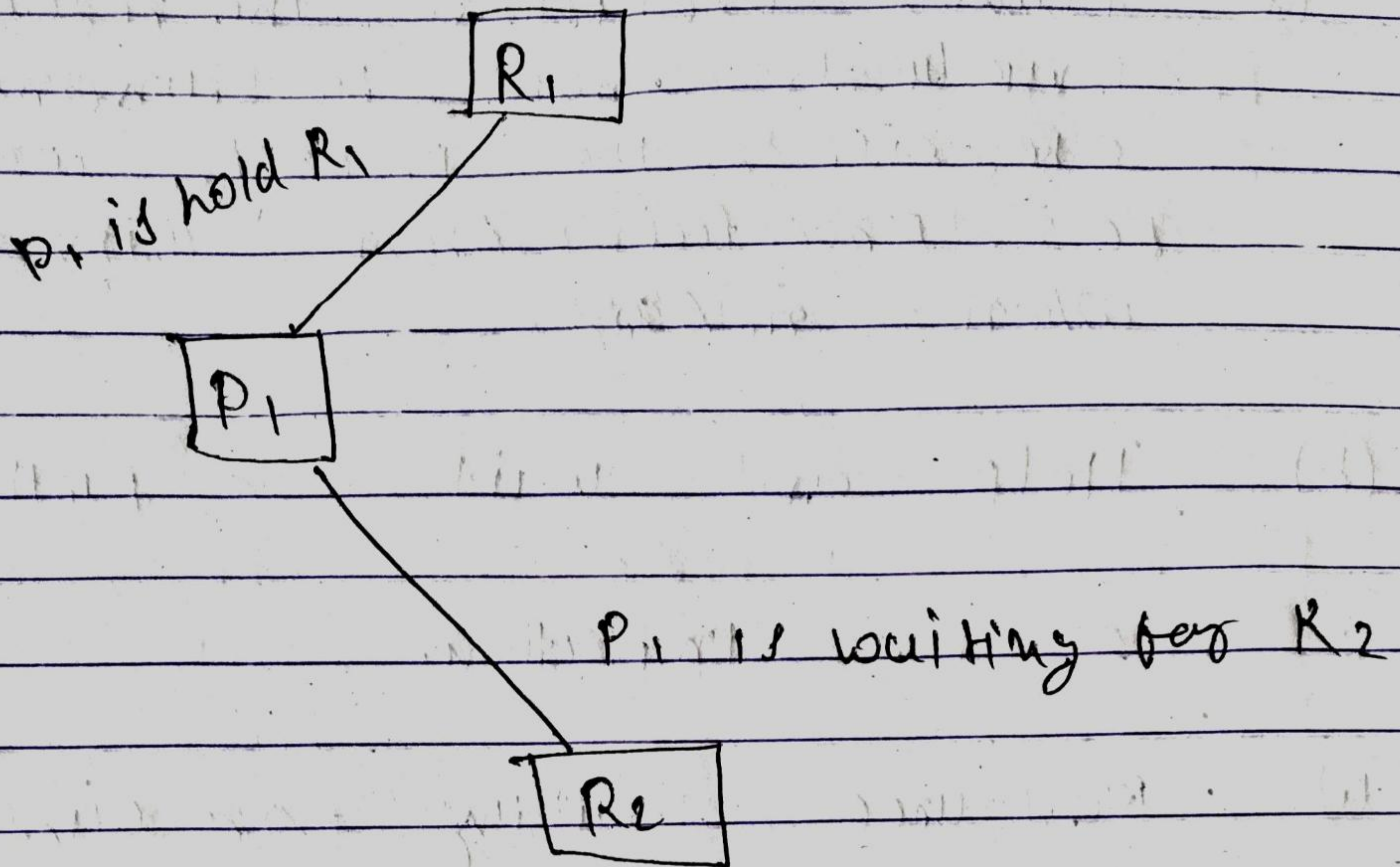
(c) No pre-emption.

(d) Resource waiting or circular wait.

circular wait.

One protocol to avoid that the circular wait condition never hold is impose a linear ordering of all resource types. Then each process can only request resource in an increasing order of priority with the priority. If process P wants to

use r_1 and r_3 it should
first request r_1 then r_3 .



Hold and wait