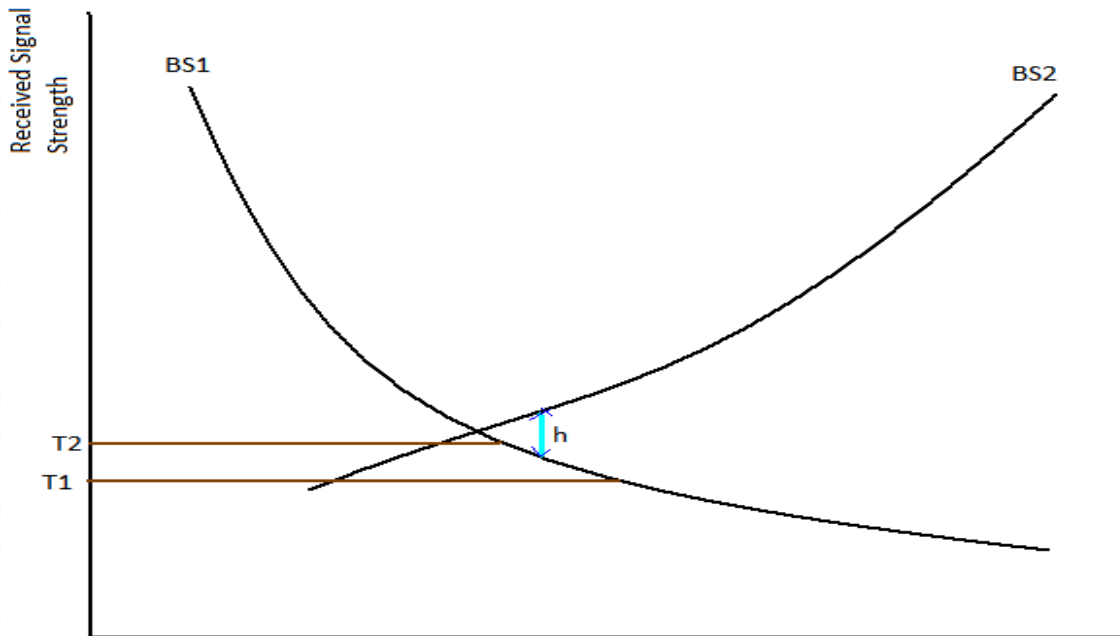


Questions for Quiz:

Q.1.

At what point, the Handoff process will be initiated considering Relative Signal Strength (RSS) with Hysteresis (h) & Threshold value in the given scenario?

- a) Threshold value of $T1$
- b) If the Threshold value is increased to $T2$
- c) If the Threshold value is $T2$ and no hysteresis

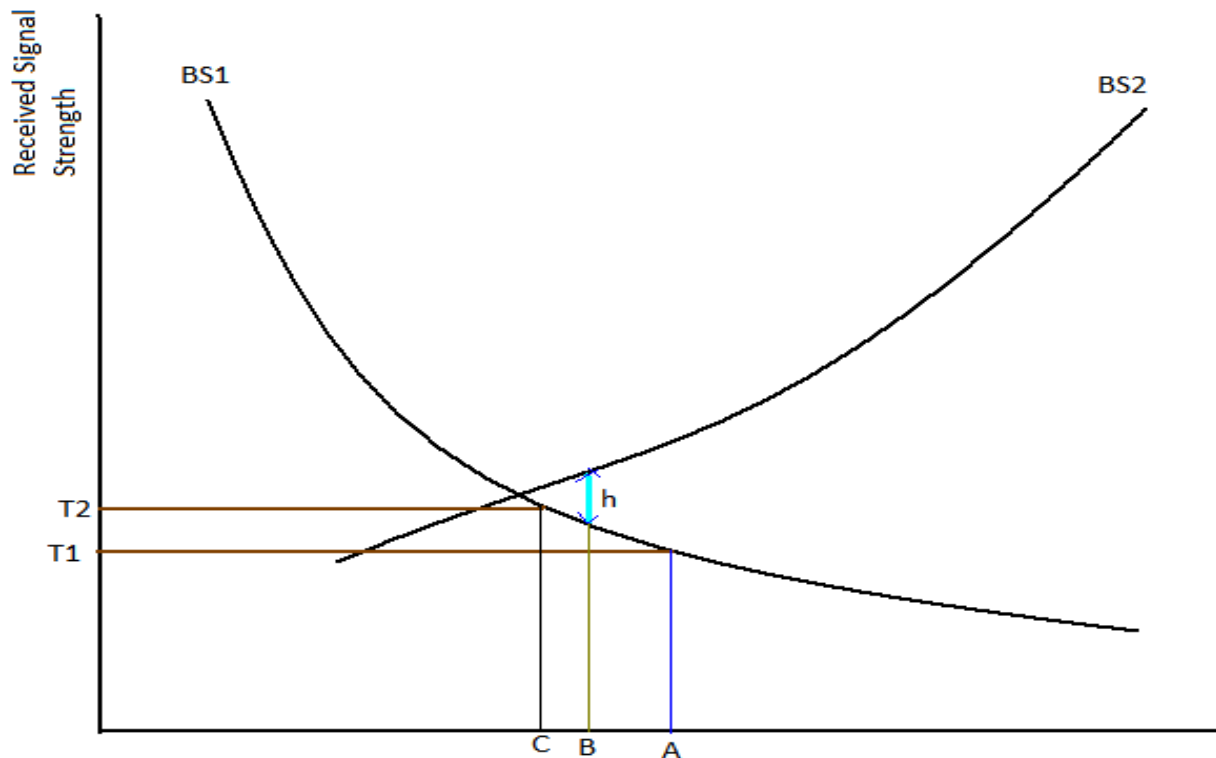



Answer Q.1:

a) At point A, because signal of BS1 is weaker than signal of BS2 by a given hysteresis margin (h) and also weaker than threshold value T1.

b) In 1st case ($P_{BS2} - h$) > Threshold at point A, but now T2 appears before that. So, Handoff initiation won't occur before P_{BS1} becomes weaker than P_{BS2} by a hysteresis margin, h; which is B.

c) In the absence of 'h', condition becomes narrower: (1) $P_{BS1} < P_{BS2}$ and (2) $P_{BS1} < T2$; and both the conditions become true at point C.





Q.2. What is Hard Handoff and Soft Handoff?
Provide 2 differences between them in respect
of resource allocation and technical
requirements in mobile device?

Answer Q.2.

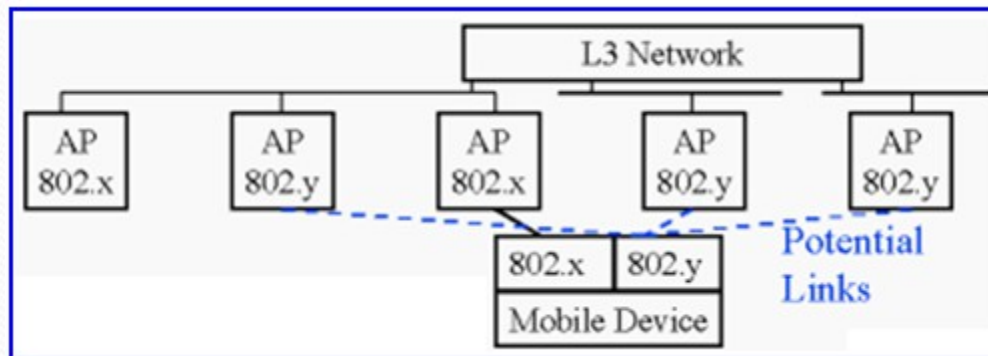
In hard handoff, source channel is released, then target channel is engaged. Connection to source is broken before it is made to the target —known as **break-before-make**. Hard handoff needs to be instantaneous. It is perceived as an event during the call; requires the least processing by the network providing service.

In a soft handoff, source channel is retained and used in parallel with target channel in the target cell. The connection to the target is established before the connection to the source is broken – known as **make-before-break**. It is perceived as a state of the call, rather than a brief event.

Hard handoff	Soft handoff
Only one channel needs to be allocated per call.	Minimum two channels have to be assigned
Mobile device's hardware does not need to be capable of receiving two or more channels in parallel, which makes it cheaper and simpler	Mobile device's hardware must be capable of receiving two or more channels in parallel, which makes it expensive and difficult

Q.3. What is Vertical handoff? In the given scenario, when & how the Vertical Handoff will take place?

- Consider Handoff between technologies:
802.3, 802.11, and 802.16e
- Docked Laptop with 802.3, 802.11, and 802.16e



Answer of Q.3:

Vertical handoff refers to a network node changing the type of connectivity it uses to access a supporting infrastructure, usually to support node mobility.

Sequence of Events in the given scenario:

1. Docked Laptop with 802.3, 802.11, and 802.16e
2. Laptop undocks and switches to 802.11
3. User moves outside the building, laptop switches to 802.16e (Vertical Handoff is completed)