

Name:

Reseaux Mobiles: Quick Quiz 4 (GSM3)

1. A radio channel has a bandwidth of 200kHz. The noise level is 10dBm. What is the theoretical channel capacity (to 2SF) if the signal level is:
 - a. 10dBm? $C=B=200\text{kbps}$
 - b. 15dBm? $C=2.07*B=410\text{kbps}$
 - c. 5mW? $C=B*0.6=120\text{kbps}$

2. What is the last message sent to a mobile station before handover and what essential information does it contain? HANDOVER COMMAND (Target channel, reference)

3. Who does what in handover? In the matrix, put 1=Yes, 0=No

Operation	MS	BTS	BSC	MSC
Take Measurements of radio conditions	<u>1</u>	<u>1</u>	<u>0</u>	<u>0</u>
Decide when handover is required	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>
Choose target cell	<u>0</u>	<u>0</u>	<u>1</u>	<u>X</u>
Construct target channel address	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>

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4. In an urban environment, which kind of mobile would you put on umbrella cells?
 - a. Some pedestrian users from a lightly loaded cell
 - b. Some pedestrian users from a heavily loaded cell
 - a. Cars on the fast highway
5. Why does GSM use power control?
 - a. Increase MS battery time
 - b. Maximize number of mobiles in the network
 - c. Reduce interference levels in the network
6. A power control command 19dBm is sent to a mobile which is transmitting at 25dBm. What does the mobile do?
 - a. switch to 25dBm immediately
 - b. decrease power in steps towards 19dBm
 - c. switch to the average of 25dBm and 19dBm
 - b. respond to further power commands on the SACCH
 - c. respond to further power commands on the SDCCH
7. Where is the Ki stored?
 - a. SIM and AUC
 - b. HLR and ME
 - c. MS and NSS
 - d. MS and BSS
8. Give a key property of the functions A8 and A3 used in GSM, which protects Ki
Trap-door function (One-way function)