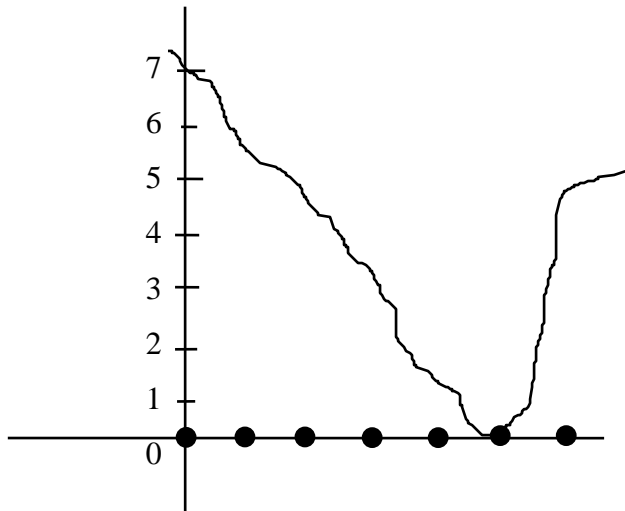
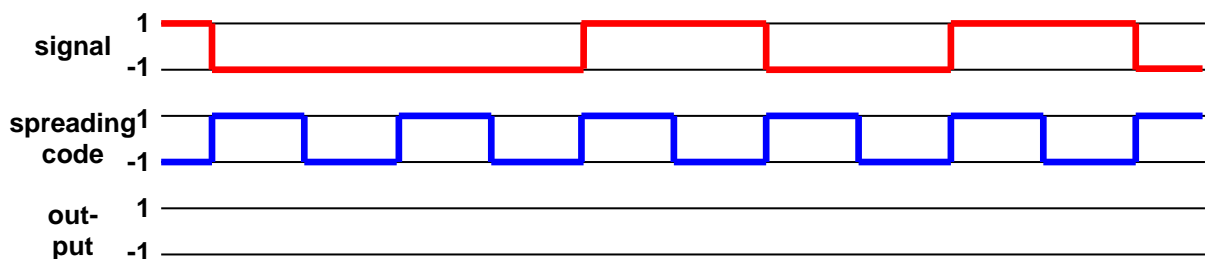


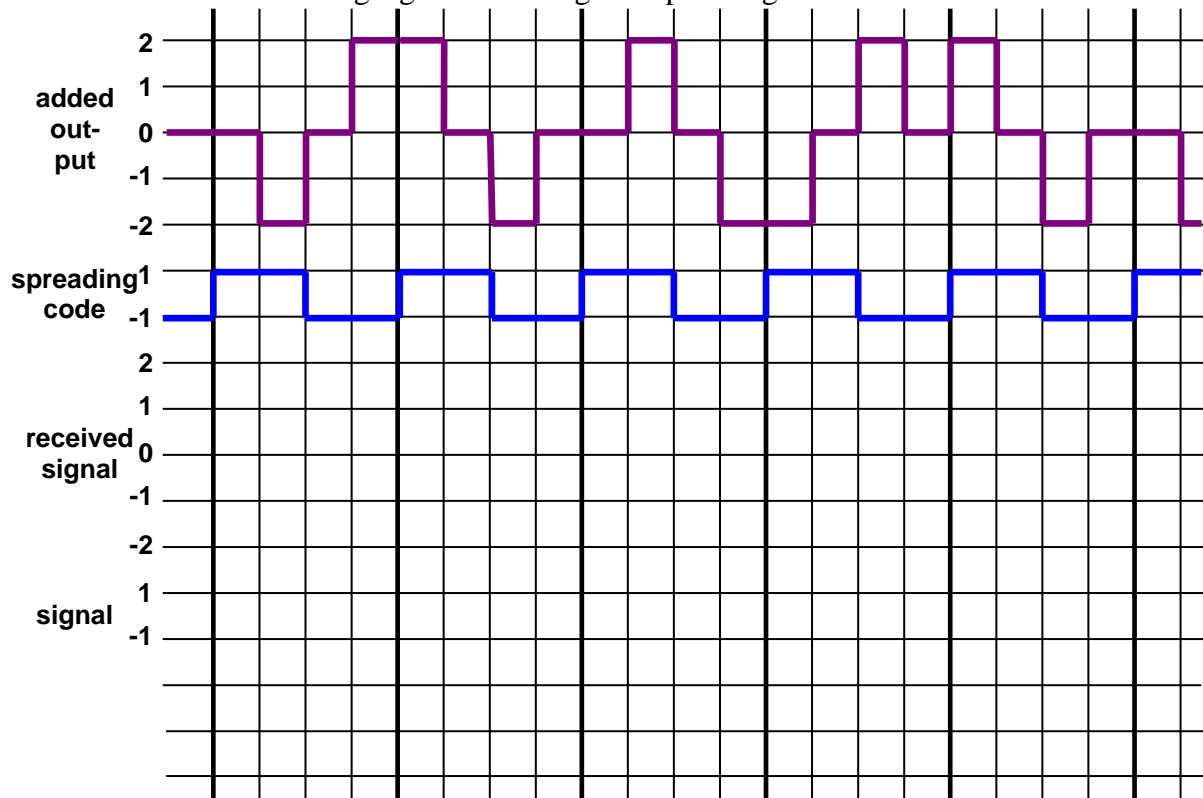
1. On the following figure the decisional values (0-7) of a quantiser are given.
 - a.) Draw the output of the quantiser for the drawn voice, if the samples are taken at the points marked by black circles, and the quantised (output) values are always in the middle of the decisional intervals!
 - b.) Can you give a modified characteristic that is better for noise suppression at low input values?
 - c.) Can you give a modified characteristic that has less decisional intervals but whose precision will be the same for the human's ear?



2. Describe the steps of the voice digitalisation
3. What is the cellular concept? On which factors depends the size of a cell?
4. Describe the FDM+TDM access!
5. Draw the structure of the GSM network!
6. Draw the structure of the GPRS network!
7. Encode the following signal with the given spreading code!



8. Decode the following signal with the given spreading code!



9. Draw the structure of the UMTS network!

10. What is a hard and soft handover? (Description, advantages, disadvantages)

11. Why is it so important to control the power of the UEs in the UMTS networks?
Describe the process!

12. What is the common channel signalling concept? (Description, advantages, disadvantages)

13. Draw the SS7 protocol stack! Explain the tasks of the different protocols briefly!

14. Describe the tasks of the 3 levels of MTP!

15. Draw the ISUP signal sequence of a successful call setup and release!

16. Draw the DSS1 signal sequence of a successful call setup and release!

17. Draw the DSS1+ISUP signal sequence of a successful call setup and release!

18. What are the protocols used in the mobile core network (NSS)? Describe them briefly!

19. What are the protocols used at the A interface? Describe them briefly!

20. Describe the functionality of the SCCP!