Вопросы к экзамену по учебной дисциплине
Теория обработки информации (осенний семестр)
для студентов, обучающихся на английском языке

1. Surprise and entropy. Units of entropy. Minimum and maximum values of entropy.
2. Joint Probability Distribution Functions.
3. Conditional Probability Distributions and Conditional Entropy.
4. Bayes' Theorem.
5. Information Sources. Basic concepts. Classification.
6. Markov Sources and its representations.
7. The Entropy of Markov Sources.
8. Infinite Sample Spaces. Differential entropy.
9. Information channels. Definitions. Classification.
10. Channel matrix. Noiseless and noisy channels. Binary symmetric channel. Binary erasure channel.
11. Channel probabilities. A priori and a posteriori probabilities of the information channel.
12. Definition of mutual information. Channel estimations using mutual information.
13. Properties of the Mutual Information.
14. Mutual Information of BSC and BEC.
15. Maximum Mutual Information. Channel Capacity.
16. Channel Capacity of BSC and BEC.
17. Channel Capacity of Weakly Symmetric Channels.
18. Continuous Channels and Gaussian Channels.
19. Information Capacity Theorem.
20. Importance of the Information Capacity Theorem. Examples.