

Final Control Questions for Systems and Signal Processing

1. Explain the sphere of application of the system concept with examples.
2. Explain the sphere of application of general-purpose systems with examples.
3. Explain the sphere of application of specialized systems with examples.
4. Define the software of the system. Provide a broader explanation with examples.
5. Define the hardware of the system. Provide a broader explanation with examples.
6. Explain system drivers. Provide a broader explanation with examples.
7. Explain the methods of using sensors. Provide a broader explanation with examples.
8. Explain the composition and structure of signal processing systems. Provide a broader explanation with examples.
9. Explain the main components and functions of signal processing devices.
10. Explain the operating principle of an analog-to-digital converter. Provide a broader explanation with examples.
11. Explain the operating principle of a digital-to-analog converter. Provide a broader explanation with examples.
12. Provide information about analog signals. Provide a broader explanation with examples.
13. Provide information about digital signals. Provide a broader explanation with examples.
14. Explain signal amplitude. Provide a broader explanation with examples.
15. Explain signal frequency. Provide a broader explanation with examples.
16. Explain one-dimensional signals. Provide a broader explanation with examples.
17. Explain two-dimensional (image) signals. Provide a broader explanation with examples.
18. Define types of images and their main features. Provide a broader explanation with examples.
19. Explain the application of signal processing in different spheres. Provide a broader explanation with examples.
20. Explain the application of image processing in different spheres. Provide a broader explanation with examples.

21. Explain the expression of signals in the time domain. Provide a broader explanation with examples.
22. Explain the expression of signals in the frequency domain. Provide a broader explanation with examples.
23. Explain the Nyquist theorem. Provide a broader explanation with examples.
24. Describe the local characteristics of signals. Provide a broader explanation with examples.
25. Describe the integral characteristics of signals. Provide a broader explanation with examples.
26. Explain the difference between the integral and local characteristics of signals. Provide a broader explanation with examples.
27. Explain the process of discretizing signals. Provide a broader explanation with examples.
28. Explain the process of quantizing signals. Provide a broader explanation with examples.
29. Explain the process of encoding signals. Provide a broader explanation with examples.
30. Explain the process of segmenting one-dimensional signals. Provide a broader explanation with examples.
31. Explain the process of segmenting two-dimensional (image) signals. Provide a broader explanation with examples.
32. Explain the process of framing one-dimensional signals. Provide a broader explanation with examples.
33. Explain the process of framing two-dimensional (image) signals. Provide a broader explanation with examples.
34. Explain the difference between segmentation and framing of signals. Provide a broader explanation with examples.
35. Explain the short-time energy characteristics of signals. Provide a broader explanation with examples.
36. Explain the zero-crossing points characteristics of signals. Provide a broader explanation with examples.
37. Explain the basic operations of signals in the time domain. Provide a broader explanation with examples.
38. Explain the stages of accepting sequential values. Provide a broader explanation with examples.

- 39.Explain the sequence of basic operations for signals. Provide a broader explanation with examples.
- 40.Define the process of sampling one-dimensional signals. Provide a broader explanation with examples.
- 41.Define the process of sampling two-dimensional (image) signals. Provide a broader explanation with examples.
- 42.Define the process of correlating one-dimensional signals. Provide a broader explanation with examples.
- 43.Define the process of correlating two-dimensional (image) signals. Provide a broader explanation with examples.
- 44.Define the concept of filtering one-dimensional signals. Provide a broader explanation with examples.
- 45.Define the concept of filtering two-dimensional (image) signals. Provide a broader explanation with examples.
- 46.Explain analog filters. Provide a broader explanation with examples.
- 47.Explain digital filters. Provide a broader explanation with examples.
- 48.Provide information about the application of LowPass filters. Provide a broader explanation with examples.
- 49.Provide information about the application of HighPass filters. Provide a broader explanation with examples.
- 50.Provide information about the application of BandStop filters. Provide a broader explanation with examples.
- 51.Provide information about the application of Bessel filters. Provide a broader explanation with examples.
- 52.Provide information about the application of Butterworth filters. Provide a broader explanation with examples.
- 53.Provide information about the application of Chebyshev filters. Provide a broader explanation with examples.
- 54.Provide information about the application of adaptive filters. Provide a broader explanation with examples.
- 55.Provide information about finite impulse response filters. Provide a broader explanation with examples.
- 56.Provide information about infinite impulse response filters. Provide a broader explanation with examples.
- 57.Explain morphological processing methods for images. Provide a broader explanation with examples.

- 58.Explain interpolation of signals. Provide a broader explanation with examples.
- 59.Explain approximation of signals. Provide a broader explanation with examples.
- 60.Explain spline interpolation of signals. Provide a broader explanation with examples.
- 61.Define the spectrogram of signals. Provide a broader explanation with examples.
- 62.Provide information about the spectral power density (PSD) of signals. Provide a broader explanation with examples.
- 63.Explain spectral processing of signals. Provide a broader explanation with examples.
- 64.Explain the Fast Fourier Transform (FFT) algorithm. Provide a broader explanation with examples.
- 65.Explain the Short-Time Fourier Transform (STFT) algorithm. Provide a broader explanation with examples.
- 66.Explain the Discrete Cosine Transform (DCT) algorithm. Provide a broader explanation with examples.
- 67.Explain the Wavelet Transform algorithm. Provide a broader explanation with examples.
- 68.Explain the Adamard spectral transform algorithm. Provide a broader explanation with examples.
- 69.Explain the Sawtooth wave spectral transform algorithm. Provide a broader explanation with examples.
- 70.Explain the Haar wavelet spectral transform algorithm. Provide a broader explanation with examples.
- 71.Explain the Discrete Wavelet Transform (DWT) algorithm. Provide a broader explanation with examples.
- 72.Explain the Continuous Wavelet Transform (CWT) algorithm. Provide a broader explanation with examples.
- 73.Provide information about spectral processing systems for signals. Provide a broader explanation with examples.
- 74.Explain the architecture of signal processors. Provide a broader explanation with examples.
- 75.Explain the memory organization in signal processors. Provide a broader explanation with examples.

76. Provide information about addressing methods used in signal processors. Provide a broader explanation with examples.
77. Provide information about system processing systems for signal processors. Provide a broader explanation with examples.
78. Provide information about practical processing systems for signal processors. Provide a broader explanation with examples.
79. Explain real-time processing systems with examples. Provide a broader explanation with examples.
80. Provide information about the VxWorks operating system. Provide a broader explanation with examples.
81. Provide information about the Mbed OS operating system. Provide a broader explanation with examples.
82. Provide information about the BlackBerry operating system. Provide a broader explanation with examples.
83. Explain the stages of digital signal processing in real-time. Provide a broader explanation with examples.
84. Explain hardware tools for signal processing with examples. Provide a broader explanation with examples.
85. Explain the data representation of signals in signal processors. Provide a broader explanation with examples.
86. Explain data processing of signals in signal processors with examples. Provide a broader explanation with examples.
87. Provide information about biosignals. Provide a broader explanation with examples.
88. Explain electromyography (EMG) signals. Provide a broader explanation with examples.
89. Explain electrocardiography (ECG) signals. Provide a broader explanation with examples.
90. Explain electroencephalography (EEG) signals. Provide a broader explanation with examples.
91. Explain thermography signals. Provide a broader explanation with examples.
92. Explain speech signals. Provide a broader explanation with examples.
93. Explain the stages of processing speech signals. Provide a broader explanation with examples.
94. Provide information about the hardware tools for processing medical signals. Provide a broader explanation with examples.

- 95.Explain the file types of audio signals. Provide a broader explanation with examples.
- 96.Explain audio signal processing systems. Provide a broader explanation with examples.
- 97.Provide information about modern software tools for signal processing.
Provide a broader explanation with examples.
- 98.Explain the extraction of informative features from signals with examples.
- 99.Provide examples of extracting informative features from speech signals.
Provide a broader explanation.
100. Provide examples of extracting informative features from biosignals.
Provide a broader explanation.

Authors:

K.Shukurov