Suppose that the sensitivity of an analog microphone is 10mV/Pa. When the microphone measures a sound wave of 2 Pa in amplitude, what will be the amplitude of the measured voltage signal? 5 점수

- 5 mV
- 10 mV
- 20 mV
- 40 mV

Sensitivity is defined as output (mV) per unit input (Pa).
For 2 Pa input, the output becomes 10mV/Pa x 2 Pa = 20 mV

Which of the following clocks contain the actual content of a data stream in the I2S format? 5 점수

- Serial clock (SLK) or Bit clock (BLCK)
- Word select (WS) or LRCLK (L/R clock)
- Serial data (SD)

The content of a data stream is delivered through Serial Data

For a 4-bit quantizer, the peak-to-peak input range is given by 16 V. What is the quantization step (in V)? 5 점수

- 1 mV
- 2 mV
- 50 mV
- 1 V

The 4-bit quantizer has 2^4 = 16 quantization steps.
For the input range of 16 V, the size of a single quantization step is 16V/16 = 1V

When a signal is amplified by 100 times in amplitude, what will be the increasement in a dB scale? 5 점수

- 10 dB
- 20 dB
- 40 dB

20 log10 (100) = 20 log10 (10^2) = 40 dB

What is the option flag of `cmdline.txt` to set the Raspberry Pi as a USB network adapter? 5 점수

- [x] modules-load=dwc2,g_ether
- [ ] modules-load=dwc2,g_serial
- [ ] modules-load=dwc2,googlevoicehat-soundcard
- [ ] dtoverlay=dwc2

When a time-domain analog signal of 2-seconds length is sampled at a sampling rate of 2000 Hz, what will be the frequency resolution of its discrete Fourier transform?
- Assume that the whole signal is transformed at once.
- Frequency resolution: the interval between two adjacent frequency components. 5 점수

- [ ] 0.1 Hz
- [x] 0.5 Hz
- [ ] 1 Hz
- [ ] 10 Hz
- [ ] 1000 Hz

Suppose that a discrete-time sequence x[n] with 1000 sampled points is transformed by discrete Fourier transform. When `numpy.fft.fft(x, n=2000)` is applied to this signal, what is the frequency resolution? The sampling rate is given by 2000 Hz.
- Frequency resolution: the interval between two adjacent frequency components. 5 점수

- [ ] 0.1 Hz
- [ ] 0.5 Hz
- [x] 1 Hz
- [ ] 10 Hz
- [ ] 100 Hz

Please refer to the lab instruction 1.

The frequency resolution after DFT is given by

$$\Delta f = \frac{f_s}{N} = \frac{1}{N\Delta t} = \frac{1}{2\ sec} = 0.5\ Hz$$

The frequency resolution after DFT is given by

$$\Delta f = \frac{f_s}{N_{FFT}} = \frac{2000}{2000} = 1\ Hz$$

What is the output of the following syntax in Python with Numpy?

```
A = np.array([[1,2],[3,4]])
B= np.array([[5,6],[7,8]])
print( np.multiply(A,B) )
```

5 점수

- [x] [[5 12] [21 32]]
- [ ] [[19 22] [43 50]]

np.multiply is the element-wise multiplication operator.

What is the output of the following syntax in Python with Numpy?

```
x = np.array([1 2 3 4 5 6])
print( x[-2:] )
```

5 점수

- [ ] [4 5 6]
- [x] [5 6]
- [ ] [6]

x[-1] corresponds to the last element.
So, x[-2:] indicates the range from the 2nd last to the last.

정답을 선택하세요.

Which part of UDP datagram contains the information related to Port ?

5 점수

- [ ] IP header
- [x] UDP header ✓
- [ ] UDP payload

Port information is carried in the UDP header.

답변 관련 의견 추가

완료