1. **The resolution measures:**

   ✘ the audio quantity
   Wrong. Resolution is related to video.
   ✘ the audio quality
   Wrong. Resolution is related to video.
   ✔ **the video quantity**
   Correct.
   ✘ the video quality
   Wrong. It gives the horizontal and vertical size of the image in pixels.

2. **The sampling rate measures:**

   ✔ **the audio quantity**
   Correct.
   ✘ the audio quality
   Wrong. It gives the number of samples that are taken.
   ✘ the video quantity
   Wrong: Sampling is related to audio.
   ✘ the video quality
   Wrong: Sampling is related to audio.

3. **The quantisation measures:**

   ✘ the audio quantity
   Wrong. It gives the number of different values which can be encoded for each sample.
   ✔ **the audio quality**
   Correct.
   ✘ the video quantity
   Wrong: Quantisation is related to audio.
   ✘ the video quality
   Wrong: Quantisation is related to audio.

4. The bit depth measures:

✘ the audio quantity
Wrong. Bit depth is related to video.
✘ the audio quality
Wrong. Bit depth is related to video.
✘ the video quantity
Wrong. It gives the number of different values which can be encoded for each channel of each pixel.
✔ **the video quality**
Correct.

5. The file size reduction from 4:4:4 sampling to 4:2:0 subsampling is:

✘ 1/4
Wrong.
✘ 1/3
Wrong. This is actually 4:2:2 subsampling.
✔ **1/2**
Correct.
✘ 3/4
Wrong.

6. By choosing a sampling rate of 96 kHz rather than 48 kHz we get:

✘ same size and double information
Wrong. The size doubles.
✔ **double size and double information**
Correct.
✘ same size and same information
Wrong. Both doubles.
✘ double size and same information
Wrong. The information doubles.

7. By choosing a bit depth of 12 per channel rather than 8 we get:

- ✘ 50 % bigger files and 50 % better quality
  Wrong. The quality increase is 16 times (2 power 4 more values can be encoded).
- ✘ 1600 % bigger files and 50 % better quality
  Wrong. Both values are wrong.
- ✔ **50 % bigger files and 1600 % better quality**
  Correct.
- ✘ 1600 % bigger files and 1600 % better quality
  Wrong. The file size increases by 50 %, from 8 to 12 bit per element.

8. A typical lossless compression rate is:

- ✘ 1.5 : 1
  Wrong. Usually it’s more.
- ✔ **2 : 1**
  Correct. It depends of the image content and it varies but it’s a realistic mean value for video codecs such as JPEG 2000 and FFV1.
- ✘ 2.5 : 1
  Wrong. This is approximately the mathematically maximal value, but no video codec can reach it today.
- ✘ 3 : 1
  Wrong. Usually it's less.

9. The current Bayer sensors only generate an incomplete RGB image:

- ✘ 1/3 red, 1/3 green and 1/3 blue
  Wrong.
- ✘ 1/2 red, 1/4 green and 1/4 blue
  Wrong.
- ✔ **1/4 red, 1/2 green and 1/4 blue**
  Correct.
- ✘ 1/4 red, 1/4 green and 1/2 blue
  Wrong.

10. The steps for file format transformations are:

- ✘ decode → demultiplex → filter → multiplex → encode
  Wrong. You cannot decode before demultiplexing.
- ✘ demultiplex → decode → filter → multiplex → encode
  Wrong. You cannot encode after multiplexing.
- ✔ **demultiplex → decode → filter → encode → multiplex**
  Correct.
- ✘ decode → demultiplex → filter → encode → multiplex
  Wrong. You cannot decode before demultiplexing and you cannot encode after multiplexing.

11. Digital video is based on the following colour model:

- ✘ R′G′B′
  Wrong. This colour space is used in cinema, not in video.
- ✘ Y′UV
  Wrong. This colour space was used for analogue PAL television and video.
- ✘ Y′IQ
  Wrong. This colour space was used for analogue NTSC television and video.
- ✔ **Y′CbCr**
  Correct.

12. The raw video data format "rgb48le" can hold the same image quality as:

- ✘ yuv422p10le
  Wrong. The subsampling 4:2:2 reduces the data volume by 1/3. In addition, the bit depth per channel is 10 rather than 16.
- ✔ **yuv444p16le**
  Correct.
- ✘ bayer_bggr16le
  Wrong. Bayer sensors generate only 1/4 of the red information, 1/2 of the green and 1/4 of the blue. The missing data results from a digital blow-up.
- ✘ rgb24
  Wrong. The bit depth per channel is only 8 rather than 16.