1. Which of the followings are digital signals? Check all that apply. **1 point**

- [x] text messages received on a cellphone
- [x] videos streamed from online sources
- [x] sound tracks stored on a CD
- [ ] pencil drawing made on a piece of paper
- [ ] an x-ray film image

2. Functional magnetic resonance imaging (fMRI) is a technology where volumetric scans of the brain are acquired while the subject is performing some cognitive tasks over time. Based on this description, what is the dimensionality of fMRI output signals? **1 point**

- ( ) 1D
- ( ) 2D
- ( ) 3D
- (•) 4D
- ( ) More information is needed to answer this question

3. True or false: All digital images are visible, i.e., they are all captured with visible light. **1 point**

- ( ) true
- (•) false

4. Digital videos are signals that are discrete in time. **1 point**

- (•) true
- ( ) false

5. Which of the following are examples of electromagnetic (EM) waves? Check all that apply. **1 point**

- [x] microwave
- [ ] ripples in a lake
- [ ] sound wave
- [x] light from the sun

6. True or false: Digital image processing is a subject distinctly different from computer vision. **1 point**

- ( ) true
- (•) false

7. Approximately, how many different 100x100 binary digital images exist? How many 24bit-RGB color images of the same size exist? (Hint: for binary images each pixel can assume one of two values; for 24bit-RGB color images each pixel has three color channels and each color channel can assume one of 256 values.) **1 point**

- (●) 2^{10000} for binary images and $2^{24\times10000}$ for 24bit-RGB color images
- ( ) 2^{100} for binary images and $2^{24\times100}$ for 24bit-RGB color images
- ( ) 100^2 for binary images and 100^{24} for 24bit-RGB color images
- ( ) 10000^2 for binary images and 10000^{24} for 24bit-RGB color images
- ( ) Infinitely many for both binary and 24bit-RGB color images

8. Suppose your smart phone has a 10-megapixel camera (1 megapixel = 10^6 pixels). Without any form of compression, how big would a 24bit-RGB color image be? (Hint: 1 byte = 8 bits) **1 point**

- (●) 30 megabytes
- ( ) 10 megabytes
- ( ) 300 kilobytes
- ( ) more information is needed to answer this question