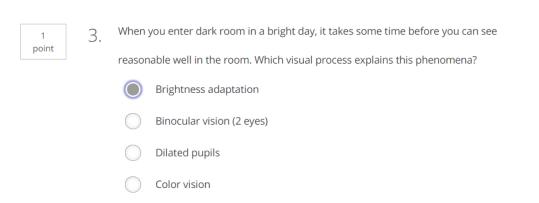


The answer is all the above since, as we have seen in the introductory videos, image processing has applications in consumer images, medicalimages, outerspace images, and much more.



The statement that images exist only in the visual spectrum is False, as we have seen in the early videos.



Brightness adaptation is the visual process that explains that when you enter dar k room in a bright day, it takes some time before you can seereasonable well in the room.

	1	4.	Conside	Consider an image with 100 lines and 1000 pixels per line. Each pixel can take 256			
	point		differer	nt values. The total amount of bits needed to store that image is			
				25,600,000			
				10,000			
				800,000			
				Larger than the hard drive in my computer.			
nee	ed 8 k		r pixe	100x1000 pixels in the image, and we el to represent 256 different values. The total number of bits is t			
	1 point	5.	Samp	oling refers to			
				Discretization of the spatial image domain.			
				Inversion of the pixel values			
				Testing the possible positions of an object in an image			
				Discretization of the values an image pixel can take			
Sar	mplin	g refe	rs to	discretization of the spatial image domain.			
		1 point	6.	Quantization refers to			
				Discretization of the spatial image domain.			
				Discretization of the values an image pixel can take.			
				Inversion of the pixel values.			
				Testing the possible positions of an object in an image.			

Quantization refers to discretization of the values an image pixel can take.

		1	7.	Going from a pixel with coordinate (1,1) to a pixel with coordinate (0,0) takes
		point		Two steps both for 4 and 8 adjacency neighborhoods.
				One step for 8 adjacency and 2 steps for 4 adjacency
				One single step both for 4 and 8 adjacency.
				Two steps for 8 adjacency and 2 steps for 4 adjacency.
While v				revel dispensity (and then a single etch) for A adispens
-		•		ravel diagonally (and then a single step), for 4 adjacer
can on	іу п	iove	aown	and then left (a total of 2steps).
n	1 point	8.	The d	eterminant of a scaling matrix is equal to 1.
Р	JOHN			True
				False
False.	The	dete	rmina	nt actually represents the scale
	1	9.	The d	eterminant of a rotation matrix is
	point		1	
The de	terr	ninan	nt of a	rotation matrix is equal to 1
				·
	1	10	ک Wher	we quantize an image, the amount of memory needed to store it
F	point		J.	Decreases
				Deci cases
				Increases

we

It decreases. As we will

see later, quantization is critical for compression, reducing the amount of storage needed while maintaining importantvisual characteristics

1 point	11. A video has 30 frames (images) per second. Considering that each image has $1000\times1000$ pixels, an hour of video will occupy			
		86400000000 bits		
		We can't know		
		All the memory in my mobile phone		
		864000000 bits		

## We can't know because the number of gray levels per pixel was not specified.

1 point	12. If we quantize an image with double resolution (meaning we use twice the number of bits per pixel) and sample it with half the resolution in each direction, then
	The total storage needed is reduced 4 times
	The total storage needed remains the same
	The image quality remains the same
	The total storage needed is reduced by half

## Since we

are reducing the resolution by 2 in each direction, the total number of pixels is re duced by 4. At the same time we are doubling thenumber of bits per pixel and therefore the total storage is only reduced by 2