Image processing Quiz 2017

Score: _____

1. one image of a HD video (1920x1080 pixels) contains 2073600 pixels.

(A) True

(B) False

2. one color image of size SD (720x576) can be stored as 1 matrix containing 576 rows and 720 columns.

(A) True

(B) False

3. one color image of size SD needs about 4.22 Mbits to be stored uncompressed.

(A) True

(B) False

4. which transformations have been applied to the original image to get image a?

(A) rotation

(B) translation

(C) symmetry with the first diagonal

5. which transformations have been applied to the original image to get image b?

(A) rotation

(B) translation

(C) symmetry with the first diagonal

6. What is the Matlab code of these transformations?

_____

_____

_____

7. What is the transformation for the negative? Will be used in TP

_____

_____

_____

8. Changing the size of the image by omitting every other row, changes the histogram.

(A) True

(B) False

9. Flipping the image horizontally, changes the histogram.

A True

B False

10. Adding a constant value to all pixels, changes the histogram.

A True

B False

11. Find a and b. Will be used in TP! Hint: F(min)=0, F(max)=255.

12. What is the cdf of a uniform distribution?

13. Are MPEG, JPEG lossy or lossless?

A lossless

B lossy

14. How many steps in the quantizer for an output image coded on 4 bits?

15. How many steps in the quantizer for an output image coded on 1 bit?

16. Which a or b is the eroded image?

A a

B b

17. Which a or b is the dilated image?

A a

B b

18. The pixels of the edge in a all belong to the object.

A True

B False

19. The pixels of the edge in b all belong to the object.

A True

B False

20. The pixels of the edge in c all belong to the object.

A True

B False

21. The Medianfilter is linear.

A True

B False

22. The Median filter better preserves the edges than the mean filter because it blurs less.

A True

B False

23. The median filter can well remove impulse noise (add strong values)

A True

B False

24. The median filter can well remove impulse noise (add strong values) but only if the noisy pixels occupy less than one half of the neighborhood area.

A True

B False

25. LP filtering keeps low frequencies of an image.

A True

B False

26. image a (below) contains higher frequencies than image b.

A True

B False

27. High Spatial Frequencies represent abrupt spatial changes in the image, such as edges, and generally correspond to fine detail.

A True

B False

28. We need to discretize the Gradient because the image is digital.

A True

B False

29. We need to discretize the Gradient because the computation is performed on a PC than can only handle finite precision number.

A True

B False

30. the vertical gradient detect horizontal edges? (justify your answer)

A True

B False

31. The Prewitt filter computes the mean of the image and then the gradient.

A True

B False

32. The Prewitt filter computes the mean of 3 gradients.

A True

B False

33. the number of passes in the algorithm depends on the shape of the objects.

A True

B False

34. the number of passes in the algorithm depends on the number of the objects.

A True

B False

35. if the object is a square, 2 iterations are sufficient.

A True

B False

36. the DCT decomposition of a (constant) gray color: all the coefficients are non zero

A True

B False

37. the DCT decomposition of a (constant) gray color: only X(0,0) is non zero

A True

B False

38. the DCT decomposition of an image that contains mainly horizontal lines: strong coefficients are
in the first column X(k,0), k > 0

A True

B False

39. the DCT decomposition of an image that contains mainly vertical lines: strong coefficients are in
the first row X0;k; k > 0

A True

B False