Damietta University Faculty of Science Total Grade: Max. 50 marks No. of pages: 1 page (2 faces).	Final Exam	Academic Year: 2023/2024 Course Name: Image Processing Grade: Level 04 – Physics&CS Time Allowed: 2 Hours Jun 3, 2024

Choose the correct answer: (45 Marks)

1-) Let R represent a subset of pixels in an image. We call R a region of the image if R is a connected set.
a) adjacent b) region c) disjoint d) nothing

2-) the regions that are not adjacent are said to be:
a) disjoint b) disconnect c) both disjoint & disconnect d) nothing

3-) What is defined by the total number of pixels within the region?
a-) Area b-) Brightness c-) Intensity d-) Perimeter

4-) _____ is the principal factor, which helps in determining an image's spatial resolution.
a-) Dynamic range b-) Quantization c-) Sampling d-) Contrast

5-) What is the sum of all components of a normalized histogram?
a-) 1 b-) -1 c-) 0 d-) None of the above

6-) ..... expands the range of intensity levels in an image so that it spans the ideal full intensity range of the recording medium.
a) Contrast stretching b) brightness
c) both contrasts stretching &brightness d-) None of the above

7-) 2D Fourier transform and its inverse are infinitely
a-) aperiodic b-) periodic c-) linear d-) non linear

8-) The phase angle is represented by the formula
a-) sine(x/y) b-) arcsine(x/y) c-) tan(x/y) d-) arctan(x/y)

9-) What are the categories of digital image processing?
a-) Image Enhancement b-) Image Classification and Analysis
c-) Image Transformation d-) All of the mentioned

10-) Which of the following is the first and foremost step in Image Processing?
a-) Image acquisition b-) Segmentation
c-) Image enhancement d-) Image restoration

11-) Approaches to image processing that work directly on the pixels of incoming image work in .....
a-) Spatial domain b-) Inverse transformation
c-) Transform domain d-) None of the Mentioned

12-) From the concepts that must be understood when performing linear spatial filtering:
a) correlation b) variance c) both correlation& variance d-) None of the above

13-) From the types of lowpass filters:
a) Butterworth b) Gaussian c) both Butterworth, and Gaussian. d-) Nothing

14-) The shape of a Butterworth filter is controlled by a parameter called
a) filter order. b) ideal filter c) both filter order and ideal filter d-) Nothing

15-) For large values of this parameter, the Butterworth filter approaches like:
a) Ideal filter. b) Gaussian filter c) Ideal filter & Gaussian filter d-) Nothing

16-) Let S represent a subset of pixels in an image. For any pixel p in S, the set of pixels that are connected to it in S is called a ..... of S.
a) connected b) connected component c) connected set d) nothing

17-) Let S represent a subset of pixels in an image. Two pixels p and q are said to be ..... in S if there exists a path between them consisting entirely of pixels in S.
a) connected b) connected component c) connected set d) nothing

18-) Let S represent a subset of pixels in an image. If it only has one component, and that component is connected, then S is called .....
a) connected b) connected component c) connected set d) nothing

19-) Which of the following operations is used in homographic filtering for converting the input image to discrete Fourier transformed function?
a-) Exponential Function b-) Logarithmic Function
c-) Negative Function d-) None of the above

20-) In general, the log transformation can be represented by _____
a-) $s = c.\log(1 - r)$ b-) $s = c - \log(1 - r)$