(6 pages) **Reg. No. :** .....

Code No. : 6069 **Sub. Code : KCAE 54/ PCAE 51**

M.C.A. (CBCS) DEGREE EXAMINATION, NOVEMBER 2020.

Fifth Semester

Computer Application

Elective — DIGITAL IMAGE PROCESSING

(For those who joined in July 2016 and afterwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Command window history is a set of _____ for task success running MATLAB commands.

   (a) Graphic tools

   (b) Workspace

   (c) MATLAB Desktop

   (d) None of these

2. An _____ may be defined as a two-dimensional function, $f(x, y)$ where x and y are called coordinates.

(a) Spatial (b) Amplitude

(c) Plane (d) Image

3. Restoration attempts to reconstruct or recover an image that _____ by using a prior knowledge.

(a) Degraded (b) Convolution

(c) Correlation (d) Both (a) and (b)

4. The expression $z = a + \sqrt{-b/n(l-w)}$ is also called as equation.

(a) Random number generator

(b) Sequential number generator

(c) Binary number generator

(d) None of the above

5. An RGB color image is an _____ array of color pixels.

(a) MxNX2 (b) MXNX3

(c) MXNX4 (d) MXNX5

6. The _____ is used extensively in Digital Video.

   (a) Analog video

   (b) Noise video

   (c) YCbCr color space

   (d) Both (a) and (b)

7. The gray levels of the images are not equally proble, variable- length coding can be used to redundancy, then it is called _____

   (a) Spatial Redundancy

   (b) Gray redundancy

   (c) Coding Redundancy

   (d) Virtual redundancy

8. Arithmetic Coding is a _____ procedure is designed to reduce coding redundancy.

   (a) Logic Coding

   (b) Variable length coding

   (c) Predictive Coding

   (d) None of these

9. The ———————— Computes the gradient by using the discrete difference between rows and columns.

(a) Sobel Edge Detector

(b) Precoitt edge Detector

(c) Canny Edge Detector

(d) Roberts Edge Detector

10. A Video is a sequence of images called ————————

(a) Video Split

(b) Video Hitl

(c) Video Transmission

(d) Video Frames

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write about MATLAB save and retrieve work session.

Or

(b) Discuss about Digital Image Representation.

12. (a) Write about 2D- Discrete Fourier Transform.

Or

(b) Discuss about Wiener Filtering.

13. (a) Write the basics of colour image representation in MATLAB.

Or

(b) Explain FWTS without the wavelet Toolbox.

14. (a) Discuss the importance of image compression in image processing.

Or

(b) Enumerate the Hit - Or Miss Transformation.

15. (a) Discuss about thresholding.

Or

(b) What is Watershed transformation? Discuss it.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain about MATLAB Desktop with example Program.

Or

(b) Discuss Histogram Processing and Function Plotting using MATLAB.

17. (a) Discuss the model of image degradation / restoration process.

Or

(b) Discuss the following (i) Wiener Filtering Iterative Non Linear (ii) Restoration.

18. (a) Write the various steps of Color Transformation.

Or

(b) What is FWT? Discuss it.

19. (a) Discuss about Redundancy Methods with any one example.

Or

(b) Enumerate about Morphological Reconstruction.

20. (a) Discuss the algorithm of Line detection.

Or

(b) Explain Polygonal approximations using Minimum perimeter polygons.

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