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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_\_

**End Semester Examination – Nov/Dec - 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **12EC235** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **DIGITAL IMAGE PROCESSING** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | | **Marks** |
| **PART-A(10X1=10 MARKS)** | | | |
| 1. | Digitizing the amplitude values is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | | (1) |
| 2. | Two objects with different surroundings would have identical \_\_\_\_\_\_\_\_\_but different brightness. | | (1) |
| 3. | Highlighting a specific range of gray levels in an image is called as \_\_\_\_\_\_\_\_\_\_\_. | | (1) |
| 4. | The \_\_\_\_\_\_\_\_\_\_ filter replaces the value of a pixel by the median of the gray levels in the neighborhood of that pixel. | | (1) |
| 5. | A square matrix, in which each row is a circular shift of the preceding row and the first row is a circular shift of the last row, is called \_\_\_\_\_\_\_\_\_ matrix. | | (1) |
| 6. | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is defined as the rearrangement of pixels on an image plane. | | (1) |
| 7. | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_seeks to reduce the number of bits used to store or transmit information. | | (1) |
| 8. | JPEG stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | | (1) |
| 9. | \_\_\_\_\_\_\_\_\_\_\_\_\_ measures the properties such as smoothness, coarseness and regularity. | | (1) |
| 10. | \_\_\_\_\_\_\_\_\_\_\_\_\_ divides the feature space into several classes based on a decision rule. | | (1) |
| **PART B(5 X 3= 15 MARKS)** | | | |
| 11. | Define Mach band effect. | | (3) |
| 12. | Define Histogram. | | (3) |
| 13. | What are the three methods of estimating the degradation function? | | (3) |
| 14. | What are the different Compression Methods? | | (3) |
| 15. | Define region growing. | | (3) |
| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. | Write short notes on i)Elements of Digital Image Processing systems, ii)Elements of visual perception and iii) Image Sampling. | | (15) |
| (OR) | | | |
| 17. | Discuss the properties of 1D and 2D DFT in detail. | | (15) |
| 18. | a. | With an example, illustrate how contrast enhancement of an image is achieved using histogram equalization. | (8) |
| b. | Discuss various order statistical filters. | (7) |
| (OR) | | | |
| 19. | a. | Discuss the ringing effect in frequency domain filters. | (7) |
| b. | Discuss Un-sharp masking and high boost filtering in spatial and frequency domain. | (8) |
| 20. | a. | Explain the salient features of mean filters and its operation. | (7) |
| b. | Explain the methods for estimating the degradation function. | (8) |
| (OR) | | | |
| 21. | Explain the following image restoration filtering operation. i) Inverse Filtering and ii) Wiener Filtering. | | (15) |
| 22. | Explain the LZW coding with an example. Discuss its merits and demerits. | | (15) |
| (OR) | | | |
| 23. | a. | Briefly discuss the types of data redundancy. | (5) |
| b. | Highlight the concepts of run Length Coding. | (10) |
| 24. | a. | Elaborate on Edge linking and Heuristic graph searching. | (15) |
| (OR) | | | |
| 25. | Discuss Clustering and Decision based Classification | | (15) |