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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 :** | **12EC252** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **FUNDAMENTALS OF DIGITAL IMAGE PROCESSING** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | \_\_\_\_\_\_\_\_\_\_ gives a measure of the degree to which a pure color is diluted by white light. | (1) |
| 2. | The DFT and unitary DFT matrices are \_\_\_\_\_\_\_\_\_\_\_. | (1) |
| 3. | \_\_\_\_\_\_\_\_\_\_\_techniques are based on modifying the Fourier transform of an image. | (1) |
| 4. | What is Image Negative? | (1) |
| 5. | \_\_\_\_\_\_\_\_\_\_ subdivides an image into its constituent parts or objects. | (1) |
| 6. | \_\_\_\_\_\_\_\_\_\_\_is a quantitative or structural description of an object | (1) |
| 7. | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_seeks to reduce the number of bits used to store or transmit information. | (1) |
| 8. | JPEG stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | (1) |
| 9. | Write the mathematical equation used for representing the dilation operation. | (1) |
| 10. | Why do you perform erosion operation on an input image | (1) |

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| **PART B(5 X 3= 15 MARKS)** | | |
| 11 | Define Resolutions. | (3) |
| 12 | Define Histogram. | (3) |
| 13 | Write about linking edge points. | (3) |
| 14 | What are the different Compression Methods? | (3) |
| 15 | Differentiate opening and closing morphological operations. | (3) |

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| **PART C(5 X 15= 75 MARKS)** | | | | |
| 16. |  | | Write short notes on i) Fundamental steps of digital image processing and  ii) Image Sampling and Quantization | (15) |
| (OR) | | | | |
| 17. |  | | Discuss RGB color model and The HSI color model. | (15) |
| 18. | a. | | With an example, illustrate how contrast enhancement of an image is achieved using histogram equalization. | (10) |
| b. | | Write notes on Image Subtraction. | (5) |
| (OR) | | | | |
| 19. |  | With necessary mathematical equations, explore the application of second order derivatives for image enhancement. | | (15) |
| 20. |  | Discuss how to detect the points, lines and edges in an input image. | | (15) |
| (OR) | | | | |
| 21. |  | | Explain region growing, region splitting and merging with suitable algorithms. | (15) |
| 22. |  | | Explain the LZW coding with an example. Discuss its merits and demerits. | (15) |
| (OR) | | | | |
| 23. |  | | Illustrate the methodology of JPEG compression with necessary mathematical equations. | (15) |
| 24. |  | | Explain the operations Erosion and Dilation with necessary sketches. Show that Erosion and Dilation are duals of each other. | (15) |
| (OR) | | | | |
| 25. |  | | Explain the following morphological operations with necessary equations:  i)Thinning. ii)Thickening. | (15) |