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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

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

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14EC3010** | **Duration :** | **3hrs** |
| **Sub. Name :** | **DATA COMPRESSION TECHNIQUES** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | Course  Outcome | Marks |
| 1. | a. | Discuss the specific characteristic features of different multimedia data. | CO1 | 10 |
| b. | With neat diagram, illustrate the methodology of vector quantization techniques. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Encode the sequence A=[f, g, h, k, m, n] with the probability values [0.3, 0.1, 0.1, 0.2, 0.15, 0.15] respectively using Huffman coding approach. | CO2 | 10 |
| b. | Repeat the problem given in the previous question [2(a)] using minimum variance Huffman coding approach. Analyze the differences between both approaches in terms of the length of the code word. | CO2 | 10 |
| 3. | a. | Differentiate lossy and lossless compression techniques. | CO1 | 10 |
|  | b. | How will you judge the performance of any compression techniques? Validate your answer with necessary mathematical equations. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Encode the sequence A=[a, b, c, d, e, f] with the probability values [0.2, 0.1, 0.05, 0.2, 0.15, 0.3] using Shannon Fano coding method. | CO2 | 10 |
|  | b. | The tag value of an encoded dataset A= {1,2,3} is given by 0.765625. Using this tag value, decode the sequence which consists of 4 numerals. Assume the interval as [0, 0.8] for ‘1’, [0.8, 0.82] for ‘2’ and [0.82, 1] for ‘3’. | CO2 | 10 |
| 5. | a. | Encode the sequence ‘dabracacabradabracacabracabradabraca’ using digram coding technique. Assume a sample dictionary with any 5 entries and the corresponding code. | CO2 | 10 |
|  | b. | Encode the sequence ‘….cabracadababbaraca….’ using the LZ77 approach. Choose a suitable size for search buffer and look ahead buffer. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Encode the sequence ‘wabbawabbawabbawabbawooxwooxwoox’ using the LZ78 algorithm. | CO2 | 10 |
|  | b. | With neat block diagram, explain the subband coding method for audio compression applications. | CO2 | 10 |
| 7. | a. | With a numerical example, illustrate the EZW coding methodology in still images. | CO3 | 10 |
|  | b. | How will you compress a still image using JPEG compression technique? Support your answer with necessary mathematical equations | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | With a numerical example, illustrate the SPIHT coding methodology in still images. | CO3 | 10 |
|  | b. | With neat block digram, explain the MPEG methodology of compression of video data | CO3 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Comment briefly on the different types of frames available for video compression. | CO3 | 5 |
|  | b. | With neat block digram, explain the H.261 methodology of compression of video data. | CO3 | 15 |

ALL THE BEST