Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

III SEMESTER M.C.A.

END SEMESTER EXAMINATIONS, NOV - 2017

SUBJECT: MULTIMEDIA COMMUNICATIONS [MCA 5016]

REVISED CREDIT SYSTEM
(24/11/2017)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

1A. Explain audio coding by DPCM. **5**

Consider the following predictor and quantization table.

$$\tilde{f}_n = \text{trunc}\left((\tilde{f}_{n-1} + \tilde{f}_{n-2})/2\right)$$

$$\tilde{e}_n = Q[e_n] = 16 * \text{trunc}\left((255 + e_n)/16\right) - 256 + 8$$

Code the sequence f1…f5= 180,128,140,120,200 using DPCM.

1B. List out the various performance measures of data compression. Compare SNR and SQNR. **3**

1C. Compare with GIF & PNG image format. **2**

2A. Consider random variable X = (x_1, x_2, x_3, x_4, x_5, x_6, x_7) with its probabilities (0.48, 0.26, 0.12, 0.04, 0.04, 0.04, 0.02). **5**

(a) Find a binary Huffman code for X

(b) Find the expected code length for this encoding.

2B.	Explain general data compression model.	**3**
2C.	Calculate the bit-rate for video of 640 X 480 pixel color image of 24 bits depth and 60 images per second	**2**
3A.	Explain H.264 video coding with a neat block diagram.	**5**
3B.	List out different characteristics of sound and what each of them signifies?	**3**
3C.	Compare Hierarchical and Progressive DCT mode of JPEG image coding.	**2**
4A.	Consider the alphabet {a, b, c, d}, with probabilities {0.4, 0.3, 0.2, 0.1}. Encode the symbol 'aacad' using Arithmetic coding.	**5**
4B.	Explain intra and inter object synchronization.	**3**
4C.	Explain the different operations on data in MDBMS.	**2**
5A.	Code the following sequences of symbols using LZW coding. Show intermediate steps. AABABBABCABAABAA	**5**
5B.	Compare full search and fast search motion estimation techniques used in video coding. Explain subpixel motion estimation.	**3**
5C.	What is MIDI? Mention its advantage and disadvantages.	**2**