Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
A Constituent Institution of Manipal University

VII SEMESTER B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

MAKE UP EXAMINATIONS, DEC. 2017/JAN. 2018

SUBJECT: MULTIMEDIA APPLICATIONS [CSE 4004]

REVISED CREDIT SYSTEM
(02/01/2018)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1.A Define the term Multimedia.
What is multimedia authoring? Explain any two multimedia authoring tools. **3**

1.B Explain the signal encoder design with a neat diagram along with its associated waveform set. **3**

1.C Derive the bit rate and the memory requirements to store each frame that results from the digitization of both a 525-line system and a 625-line system assuming a 4:2:2 format. Also find the total memory required to store a 2 hour movie/video assuming 60 frames per second for 525-line system and 50 frames per second for a 625-line system.
(525-line system: The number of samples per line is 720 and the number of visible lines is 480. Line sampling rate is 13.5 MHz for Y component and 6.75 for Cb and Cr components, all with 8 bits per sample
625-line system: The number of samples per line is 720 and the number of visible lines is 576. Line sampling rate is 13.5 MHz for Y component and 6.75MHz for Cb and Cr components, all with 8 bits per sample) **4**

2.A Given the following table of frequency counts, probabilities and probability ranges for the following characters:

Character	Frequency	Probability	Range
A	2	0.5	[0.0, 0.5)
B	1	0.25	[0.5, 0.75)
C	1	0.25	[0.75,1.0)

.

What is the 4 character sequence for the arithmetic coding: 0.59375? **2**

2.B With a neat diagram explain the operation of DPCM audio coder. **4**

2.C Explain the various steps in the entropy encoding stage of JPEG Encoder. **4**

3.A	What are P and B frames? Explain the principle of encoding of P, and B frames in video compression.	**5**
3.B	Explain the ways in which synchronization in distributed environment could be achieved, with reference to the following. Also discuss the advantages and the disadvantages of various methods. (i) Transport of synchronization specification (ii) Location of Synchronization Operation	**3**
3.C	Distinguish between open and closed Logical Data Units (LDUs), by giving examples.	**2**
4.A	Explain the operations performed by the various layers in the four layer Synchronization Reference model.	**4**
4.B	Explain the various steps in the establishment of audio video conference with (i)Centralized Control (ii) Distributed Control	**4**
4.C	With the aid of diagrams, explain the following operational modes of a communication channel (i) Simplex (ii) Half Duplex	**2**
5.A	What is Real-time Transport Protocol (RTP)? Explain the parameters contained in the RTP header.	**3**
5.B	Explain with an example scenario, the Resource Reservation Protocol commonly used for multicast.	**4**
5.C	Explain any one broadcast schemes for video on demand, with suitable diagrams.	**3**