Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY, MANIPAL 576104
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SEVENTH SEMESTER B.Tech (IT) DEGREE END SEMESTER EXAMINATION, NOV/DEC– 2015
SUBJECT: ELECTIVE IV: MULTIMEDIA COMMUNICATION – ICT 435
(REVISED CREDIT SYSTEM)

TIME: 3 HOURS **03/12/2015** **MAX. MARKS: 50**

Instructions to candidates

- **Answer any FIVE FULL questions.**
- **Missing data, if any, may be suitably assumed.**

1A. Apply JPEG (lossy sequential DCT based mode) entropy encoding technique for the data unit given below:

5	5	-5	2	0	0	0	0
0	0	0	3	0	0	0	0
-4	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	6	0	0	0	0
0	0	0	0	0	0	0	8

1B. Does KL transformation optimally de correlates the input vectors? Justify your answer.

1C. Explain different properties of multimedia system.

[5 + 3 + 2]

2A. With a neat diagram, explain the major components of Quick Time system architecture.

2B. i)What is the entropy of the image given below, where numbers (0, 20, 50, 99) denote the gray level intensities?

99	99	99	99	99	99	99	99
20	20	20	20	20	20	20	20
0	0	0	0	0	0	0	0
0	0	50	50	50	50	0	0
0	0	50	50	50	50	0	0
0	0	50	50	50	50	0	0
0	0	50	50	50	50	0	0
0	0	0	0	0	0	0	0

ii) Calculate the Huffman code for each intensity value.

iii) What is the average number of bits required for each pixel, using your Huffman code? How does it compare to entropy?

2C. Discuss the various QoS parameters that are considered during wireless transmission.

[5 + 3 + 2]

3A. Explain VOP based coding in MPEG 4. Also differentiate between VOP based coding used in MPEG 4 with the frame based coding used in H.261, H.264 and MPEG 1.

3B. With a suitable example, explain the earliest deadline first algorithm.

3C. State Nyquist theorem. How is it applied in digitization of sound?

[5 + 3 + 2]

4A. Using DPCM, compress the following PCM samples:

100, 200, 250, 305, 320, 400, 350, 400

[Use quantization function $Q(e_n)= e_n \bmod 10$]

4B. Explain error concealment techniques used for approximating the lost macroblocks and motion vectors in wireless video communication.

4C. Explain any four characteristics of MDBMS.

[5 + 3 + 2]

5A. Compress the following data using LZW compression technique.

ababbabcababba

5B. With a neat diagram, explain the working of speech synthesis system.

5C. RTP does not ensure real-time delivery. Why is it called a real-time protocol? Explain the need of RTCP.

[5 + 3 + 2]

6A. Given that 1D DCT coded values F(u) of the signal as follows:

F(0)= 283 F(1)=F(2)=F(3)=F(4)=0

Find the original values f(u) of the signal using 1D inverse DCT. Based on f(u) values specify the type of electrical signal.

6B. With a suitable example explain a possible scenario of RTSP operations.

6C. Differentiate between HDTV and conventional television system.

[5 + 3 + 2]