Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

FOURTH SEMESTER B.TECH. (PME) DEGREE END SEMESTER EXAMINATION
JUNE 2019
SUBJECT: AUDIO AND VIDEO SIGNALS (ECE - 2231)

TIME: 3 HOURS **MAX. MARKS: 50**

Instructions to candidates

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

1A. What is QoS? Mention the 3 QoS Layers and its parameters.

1B. List and explain the important properties of multimedia system.

1C. Consider an audio signal with maximum frequency component of 6.2kHz, which is passed through a low pass filter (LPF) with cut off frequency of 4.1kHz. What is the minimum sampling frequency required to sample;
i) Signal at output of the filter ii) Signal at input of the filter

(4+3+3)

2A. Draw the block diagram of digital model of speech production and explain the function of each blocks.

2B. Obtain the Huffman code for set of symbols (a, b, c, d, e, f) which occur with probability (0.45, 0.12, 0.13, 0.5, 0.09, 0.16) respectively. What is the amount of compression achieved compared to binary codes?

(5+5)

3A. With a block diagram explain the MPEG video coding standard.

3B. Explain how data streams can be classified based on the amount of data in successive packets.

3C. Explain the working of condenser type microphone.

(4+3+3)

4A. Explain with the block diagram the multimedia distributed processing model.

4B. What is Run Length Encoding (RLE)? What is the disadvantage of RLE?

4C. Find the file size of a standard CD quality stereo audio file with sampling frequency 44.1KHz and bit depth of 16bits/sample and duration 20 minutes.

(4+3+3)

5A. Explain the working of Digital Audio Broadcasting with the help of block diagram.

5B. What are the limitations of normal work station operating system? How new OS support for multimedia systems overcome these limitations.

5C. How many bytes of memory is required to store the 512*512 sized:
(a) Binary image (b) 8-bit color image.

(4+3+3)