Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

SECOND SEMESTER M.TECH. (DEC) DEGREE END SEMESTER EXAMINATION
APRIL/MAY 2019
SUBJECT: ADVANCED DIGITAL SIGNAL PROCESSING (ECE - 5202)

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

Instructions to candidates

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

1A. What are the benefits of Multirate systems? Using mathematical notations discuss the time domain and frequency domain interpretations of decimator and interpolator.

1B. Explain the working of transmultiplexer in detail.

(6+4)

2A. Explain the following:

i. Tunable filters

ii. IFIR method

2B. Explain the commutator model used to visualize the polyphase implementation.

(6+4)

3A. Using the diagrams and mathematical expressions derive the Widrow-Hoff LMS adaptation algorithm. Comment on the role of adaptation parameter.

3B. Explain the use of doubly complementary filters in digital audio.

(6+4)

4A. With the help of neat diagram and mathematical expressions explain the working of Adaptive channel equalizer.

4B. Using the basic DSP block sets draw the block diagram of adaptive linear combiner with two weights. Derive the equation used for this implementation.

(5+5)

5A. What is cepsrtal analysis? Explain the method of estimation of fundamental frequency from voiced speech segment by cepstral analysis.

5B. Propose a homomorphic system where signals are combined using convolution operation.

(6+4)