Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

SECOND SEMESTER M.TECH. (DEC) DEGREE END SEMESTER EXAMINATION
JUNE 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. Derive the alias cancellation condition in a QMF bank. How sub band coding is achieved using QMF bank? Explain.

1B. Explain the working of analog voice privacy system. How is the signal recovered at the receiver?

(6+4)

2A. Explain the followings:

i. DFT filter bank ii. Adjustable multilevel filter

2B. Explain Type I and Type 2 polyphase decomposition with examples.

(6+4)

3A. Using diagrams and mathematical expressions, explain the working of adaptive linear combiner. Mention its types and applications.

3B. Explain the working of digital/analog hybrid QMF bank in digital audio.

(6+4)

4A. With the help of neat diagram and mathematical expressions explain the working of Adaptive line enhancer.

4B. What is correlation canceller loop? Show its block diagram representation using basic DSP blocks. Explain its working.

(6+4)

5A. Derive the cepstrum of an exponential signal. Prove that only in the case of minimum or maximum phase input we can obtain complex cepstrum from the real cepstrum.

5B. Propose a homomorphic system where signals are combined using multiplication operation. How this can be applied to image processing?

(6+4)