Code: **17ECMC2T2**

**I M.Tech - II Semester – Regular Examinations – AUGUST 2018**

# SIGNAL PROCESSING FOR COMMUNICATIONS
### (MICROWAVE & COMMUNICATION ENGINEERING)

Duration: 3 hours                                   Max. Marks: 60

Answer the following questions.

1. a) Define the following terms:                                   8 M
    i) Inner product      ii) Norm      iii) Distance      iv) Bases

   b) What is signal space? Explain in detail.                 7 M

                                OR

2. a) Define DFS. State and prove the linearity and shifts
       property of DFS.                                        7 M

   b) Define DFT. State and prove the linearity & energy
      conservation  property of DFT.                           8 M

3. a) What is ideal lowpass filter? Derive the impulse response
       of ideal lowpass filter.                                7 M

   b) Explain the FIR filter design based on the minimax
      method.                                                  8 M

                              (OR)

4. a) Explain the properties of frequency response of LTI system. 5 M

b) Describe the various filter structures with neat diagrams. 10 M

5. a) What is PSD? Explain the PSD of a stationary process. 7 M

b) What is up sampling and Interpolation? Explain in detail. 8 M

(OR)

6. a) Describe Time domain analysis of stochastic signal processing. 7 M

b) Explain oversampled A/D conversion with neat waveforms. 8 M

7. a) Write short notes on: 8 M
    i) AM Radio channel       ii) Telephone channel

b) Explain the constraints related to the design of communication transmitter. 7 M

(OR)

8. a) Write short notes on:

    i) Noise                ii) Delay                         8 M

   b) Explain the adaptive synchronization in detail.      7 M