G.R. No.	

MARCH 2020 INSM (T1)
S. Y. B.TECH. (E & TC) (SEMESTER – IV)

COURSE NAME: Analog and Digital Communication
COURSE CODE: ETUA22183

(PATTERN 2018)

Time: [1 Hour]   [Max. Marks: 20]

(*) Instructions to candidates:

5. Attempt Q.1 **OR** Q.2, Q.3 **OR** Q.4, Q.5 **OR** Q.6
6. Figures to the right indicate full marks.
7. Use of scientific calculator is allowed.
8. Assume suitable data wherever required.

Q.1 Explain the terms orthogonal and orthonormal. What is the importance [8] in communication? Explain Gram-Schmidt procedure to express the signal into the orthonormal components with three input signals to be represented (s, s2 and s3).

OR

Q.2 Explain the importance of power spectral density in communication. [8] Write the expression of PSD. If input signal is periodic pulse train of fundamental frequency of 1kHz and channel having bandwidth of 15 kHz. What are the frequency components (Cn) will be available at the output of the system with bandwidth of 15 kHz.

Q.3 Explain Amplitude Modulation process in Time domain and in [8] Frequency domain (spectrum). If input signal is a combination of 4 sinusoidal components with frequencies 700, 1000, 1250 and 1500 Hz with corresponding peak amplitude as 0.2, 0.3, 0.5 and 0.8 respectively and carrier of 550 kHz with 2.0 volts peak amplitude. Plot DSB full Carrier AM spectrum.

OR

Q.4 Explain DSB full Carrier AM generation using switching modulator. [8] Explain demodulation process using diode demodulator. Comment on the selection of R and C values.

Q.5 Explain TRF radio receiver. What are the drawbacks?   [4]

OR

Q.6 Draw block diagram and explain the principle of superheterodyne [4] radio receiver.