SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar-388120
B.Sc. (Semester – 3)
Subject: Signal Processing
Course: US03CELC21 (Theory)
(Four Credit Course – 4 Hours per week)
(Effective from June-2019)

Unit 1. Signals and their Terminology

Introduction of signals, Classification of Signals: Continuous and District time signals, Periodic and non-periodic signals, Deterministic and random signals, Symmetrical and Anti-symmetrical signals, Energy and power signals, Pulse characteristics and pulse terminology, Examples related to signals.

Unit 2. Signal Generation

Introduction, Sine wave generator, Hartley oscillator, Colpitts oscillator, Attenuator: Pi- attenuator, Piston type attenuator, Frequency synthesized signal generator, Function generator.

Unit 3. Fourier Series

Periodic function, Fourier series, Euler's formula, Formulae for determining Fourier co-efficient, Fourier series of discontinuous functions, change of interval, expansions of odd & even periodic function, half range Fourier series

Unit 4. Laplace Transform

Definition of Laplace transform, properties of Laplace transform, Laplace transform of derivatives and integral, multiplication by T^n

References:-

1. Higher Engineering Mathematics: B.S.Grewal.
2. Advanced Engineering Mathematics: E. Kreyzig.
3. Applied Engineering Mathematics (VOL 1): Stroud.
4. Higher Engineering Mathematics: K.R.Kachot
5. Instrumentation and Measurement Techniques: Cooper and Helfrick

SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar-388120
B.Sc. (Semester – 3)
Subject: Analog Communication
Course: US03CELC22 (Theory)
(Four Credit Course – 4 Hours per week)
(Effective from June-2019)

UNIT 1 Principles of Communication system:

General communication system, Basic constituents of the communication system, Information source, transmitter, channel, receiver, Need for using high carrier frequency, classification of RF spectrum, Band width requirement, Classification of Noise, Types of Noise, Signal to Noise Ratio, Noise figure.

Expression and Wave forms of Amplitude modulated Voltage, Definition, Expression and Wave forms of Frequency modulated Voltage, Definition, Expression and Wave forms of Phase modulated Voltage, Side bands of AM and FM wave.

UNIT 2 Method of Amplitude modulation and Demodulation:

Classification of Amplitude modulation methods, Collector modulation, Square law diode modulation, Classification of Amplitude demodulation methods, Square law diode detector, Linear diode Detector, Choice of time constant RC in the Detector circuit.

UNIT 3 Method of Frequency modulation and Demodulation:

Classification of Frequency modulation methods, Reactance Tube frequency modulator, Reactance FET, Reactance FET Frequency modulator, Frequency modulation using Varactor diode, Classification of FM detectors, Slope detector, balanced slope detector, Ratio detector.

UNIT 4 Antennas and wave propagation

Introduction, Antenna Action, Short electric doublet, electric doublet, Thin linear Antenna, Types of Radio wave Propagation, Ground wave Propagation, Surface wave Propagation, Ionospheric Propagation, Space wave Propagation, Range of space wave propagation.

Reference Books:

1. Radio Engineering, (Applied Electronics Vol-2) by G.K.Mithal.
2. Electronics Communication by Danis Roddy and Jhon Coolen.
3. Electronics Communication Systems by Kennedy.

SARDAR PATEL UNIVERSITY
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B.Sc. (Semester – 3)
Subject: Practicals
Course: US03CELC22 (Practical)
(Two Credit Course – 4 Hours per week)
(Effective from June-2019)

- Astable multivibrator using transistor
- Colpitts oscillator
- Hartley oscillator
- Phase shift oscillator
- Wein bridge oscillator
- Examples related to Euler's formulae.
- Examples related to Fourier series for odd and even function
- Examples related to Half range sine series and cosine series
- Examples related to Fourier series of periodic function
- Examples related to elementary function of Laplace Transform.
- Example related to First shifting theorem of Laplace Transform.
- Example related to multiplication by T^n of Laplace Transform.
- Example related to Division by T of Laplace Transform.
- Example related to Laplace of Integration.

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B.Sc. (Semester – 3)
Subject: Practical's
(Practical)
(Two Credit Course – 4 Hours per week)
(Effective from June-2019)

- Frequency Response of a Common Emitter Amplifier.
- Study of RC Phase Shift Oscillator Using BJT.
- Study of LC Oscillator (Hartley Oscillator).
- Amplitude Modulation and Demodulation.
- Modulation Index.
- Study of Diode Detector.
- Frequency Modulation and Demodulation.
- Phase Modulation and Demodulation.
- Voice Transmission Using AM Communication System.
- Study of Radio Receiver.
- Amplitude and Audio Frequency Range Calibration.