

SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar-388120
B.Sc. (Semester – 4)
Subject: Electromagnetic
Course: US04CELC21
(Four Credit Course – 4 Hours per week)
(Effective from June-2019)

Unit 1. Vector Analysis

Vector algebra, dot product, cross product, differentiation of vectors, velocity & acceleration, gradient, divergence, curl & their application, Integration of vector, line integral.

Unit 2. Coulomb's Law and Electric Field Intensity

The experimental law of coulomb, electric field intensity, field due to continuous volume charge distribution, field of a line charge, field of a sheet of charge.

Unit 3. Electric flux Density, Gauss's Law & Divergence

Electric Flux density, Gauss's law, application of Gauss's law: for symmetrical charge distribution and differential volume element, Divergence, Maxwell's First Equation, Vector operator and Divergence theorem

Unit 4. Energy and Potential

Energy expended in moving a point charge in an electric field, line integral, definition of potential difference and potential, the potential field of a system of a charges, conservative property, dipole, energy density in the electrostatic field.

References:-

1. Engineering Electromagnetics: W.H.Hayt&J.A.Buck.
2. Theory & Problems of Electromagnetics: Joseph A.Edminister.

SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar-388120
B.Sc. (Semester – 4)
Subject: Radio and Television System
Course: US04CELC22
(Four Credit Course – 4 Hours per week)
(Effective from June-2019)

UNIT 1 Radio Transmitters and Receivers:

Classification of Transmitters (According to type of Modulation, Service involved and Carrier frequency), Constituent stages of the AM Radio Transmitter, Constituent stage of the AM Transmitter (high and low power levels), Classification of Radio Receivers, Salient Features of Radio Receivers, Basic functions of Radio Receiver, Straight Receivers, Principle of Super Heterodyne Radio Receiver, Constituent of Super Heterodyne Radio Receiver.

UNIT 2 Radio Receiver Circuits:

RF Amplifier, Frequency Mixer, Local Oscillator, IF amplifier, Detector stage, Simple Automatic Gain Control, Automatic Frequency Control.

UNIT 3 Principle of Television:

Introduction, Aspect Ratio, Rectangular switching, Interlaced Scanning, Composite Video Signal, Video modulation, Sound modulation, Camera Tube Characteristics, Image Orthicon camera tube, Vidicon camera tube, video processing unit.

UNIT 4 Television Receiver:

Block diagram of B/W television receiver, RF Tuner, RF Tuner Circuits, Balun, IF Traps, RF Amplifier, Frequency Mixer, Local Oscillator.

Reference Books:

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| 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. |
| 4. Basic Radio Television | by S.P.Shrma. |
| 5. Mono Chrome and Colour Television | by R.R.Gulati. |

SARDAR PATEL UNIVERSITY
B.Sc. (Semester – 4)
Subject: Practical's
Course: US04CELC23 (Practical)
(Two Credit Course – 4 Hours per week)
(Effective from June-2019)

- Examples related Cross product and Dot product of Vector Algebra
- Examples related to find unit vector and angle between two Vectors
- Examples related Differentiation of Vector
- Examples related on velocity and acceleration
- Examples related Gradient, Divergence and Curl
- Examples related on Coulomb's law
- Examples related Electric field intensity
- Examples related Electric Flux Density
- Examples related on relation between D and E
- Examples related to work
- Examples related on potential

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

- To study RF Amplifier.
- To study IF Amplifier.
- Automatic Gain Control.
- Automatic Frequency Control.
- Low Pass Filters.
- High Pass Filters
- Band Pass Filters
- To study AM Radio Transmitter.
- To study FM Radio Transmitter.
- Clipping Circuit.
- Clamping Circuit.
- To study Television Receiver

And other experiments based on syllabus.