

PEL6D003 RADAR & TV ENGINEERING (4-0-0) (HONOR SUBJECT)

Objective

- To give the basic ideas & operating principles of different types of b/w as well as colour CTV and radar (both transmitter and receiver) and their uses.
- To create the awareness about the different standards of TV systems used in different countries and their basic principles.

Module I

Radar system- Simple form of radar equation- Radar block diagram- radar frequencies- Prediction of range performance- minimum detectable signal- receiver noise- pulse reception- frequency and range ambiguities- antenna parameter – Doppler effect- system losses and propagation effects.

Module II

CW Radar – Simple CW radar- Intermediate frequency CW radar- FM- CW radar- FM- CW altimeter- Multiple frequency CW radar- Pulse doppler MTI radars- Delay line canceller- blind speed tracking radar- A scope and PPI display

Module III

Colour TV Essentials:

Compatibility , Colour perception, Three Colour theory, Luminance, Hue and Saturation, Dispersion and Recombination of light, Primary and secondary colours, luminance signal, Chrominance Signal, Colour picture tube, colour TV Camera, Colour TV display Tubes, colour Signal Transmission, Bandwidth for colour signal transmission, Colour TV controls. Cable TV, Block Diagram and principle of working of cable TV.

Plasma and LCD:

Introduction, liquid crystals, types of LCD's, TN, STN, TFT, Power requirements, LCD working Principle of operation of TN display, Construction of TN display, Behaviour of TN liquid crystals, Viewing angle, colour balance, colour TN display, limitations, advantages, disadvantages, applications.

Module IV

LED and DMD :

Introduction to LED Television , comparison with LCD and Plasma TV's, schematic of DMD, introduction to Digital Micro Mirror device, Diagram of DMD, principle of working, emerging applications of DMD.

ADVANCED TOPICS IN TV. ENGINEERING :

Introduction, & working and block diagram of the Projector TV, 3D-TV, HDTV, Digital TV, Camcorders.

TELEVISION APPLICATIONS: Cable television, CCTV, picture phone & facsimile, television via satellite, Remote Control (Electronic control system), Introduction to Digital TV Technology and their merits.

Text Books

1. Gulati R.R., Modern Television Engineering ,Wiley Eastern Ltd.
2. Consumer Electronics by S. P. Bali(Pearson Education)
3. Michael Robin& Michael Poulin, Digital Television Fundamentals, Mc Graw Hill
4. Complete Satellite and Cable T.V by R.R Gulati(New Age International Publishers)
5. Bernard Grob& Charles E. Herndon,Basic Television and Video Systems,
6. Skolnik Introduction to Radar Systems,Mc Graw Hill,Kogakusha Ltd.

Reference Books

1. Dhake A.M.,Television Engineering,Tata Mc Graw Hill
2. Monochrome and Colour Television by R. R. Gulati
3. Damacher P. Digital Broadcasting ,IEE Telecommunication Series

COURSE OUTCOMES:

- Students will be familiar with blocks, applications and operation of monochrome TV, color TV.
- Students will be able to understand the specifications enlisted with various consumer products.
- The students will come to know about the current state of art of digital imaging.