20EC2601B - TV ENGINEERING

Offering Branch	ECE		
Course Category:	Open Elective -II	Credits:	3
Course Type:	Theory	Lecture-Tutorial-Practical:	3-0-0
Prerequisites:	NIL	Continuous Evaluation:	30
		Semester End Evaluation:	70
		Total Marks:	100

Course Outcomes

Upon successful completion of the course, the student will be able to:

CO1	**Compare** Digital TV transmission standards and performance parameters	K2
CO2	**Analyse** channel coding, errors, interfrences and modulation techniques for Digital TV	K4
CO3	**Make use** of RF amplifiers, modules and systems for Digital TV	K3
CO4	**Identify** Transmission lines for Digital TV	K3
CO5	**Test** for a Digital TV Transmitter	K4

Contribution of Course Outcomes towards achievement of Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2				2	1								
CO2		3			2									2
CO3		2			3									
CO4					2	2								3
CO5		2			2		1							
Avg.	2	2			2	2	1							3

1- Low **2-Medium** **3-High**

Course Content

UNIT-1	Digital Television Transmission Standards ATSC terrestrial transmission standard, vestigial sideband modulation, DVB-T transmission standard, ISDB-T transmission standard, channel allocations, antenna height and power, MPEG-2 Performance Objectives for Digital Television: System noise, external noise sources, transmission errors, error vector magnitude, eye pattern, interference, cochannel interference, adjacent channel interference, analog to digital TV, transmitter requirements	CO1, CO2
UNIT-2	Channel Coding and Modulation for Digital Television: Data synchronization, randomization/scrambling, forward error correction, interleaving, inner code, frame sync insertion, quadrature modulation, 8 VSB, bandwidth, error rate, COFDM, flexibility, bandwidth	CO1, CO2
UNIT-3	**Transmitters for Digital Television**: Precorrection and equalization, up conversion, precise frequency control, RF amplifiers, solid-state transmitters, RF amplifier modules, power supplies, cooling, automatic gain or level control, ac distribution, transmitter control, tube transmitters, performance quality.	CO1, CO3
UNIT-4	**Transmission Line for Digital Television:** Fundamental parameters, efficiency, effect of VSWR, system AERP, rigid coaxial transmission lines, dissipation, attenuation, and power handling, higher-order modes, peak power rating, frequency response, standard lengths, corrugated coaxial cables, wind load, waveguide, bandwidth, waveguide attenuation, power rating, frequency response, size trade-offs, waveguide or coax pressurization	CO1, CO4

UNIT-5	**Test and Measurement for Digital Television:** Power measurements, average power measurement, calorimetry, power meters, peak power measurement, measurement uncertainty, testing digital television transmitters.	CO1, CO5

Learning Resources

Text Books	1. 1. Gerald w. Collins, Fundamentals of Digital Television Transmission, John Wiley, 2001.
Reference Books	1. R. R. Gulati, Modern Television Practice, Principles, Technology and servicing, 2/e, New Age International Publishers, 2001. 2. John Arnold, Michael Frater, Mark Pickering, Digital Television Technology and Standards, John Wiley, 2007.
E-Resources & other digital material	1. https://www.youtube.com/watch?v=_nGnRvyHMEI&list=RDCMUCdlnqMpRrMcClK2fT6z8EEw&index=2 2. https://www.rfwireless-world.com/Tutorials/digital-television-DTV-basics.html