

The Maharaja Sayajirao University of Baroda Polytechnic Diploma in Electronics & Communication Engg. (HPP)			ACADEMIC YEAR 2023-24		
Year	III	TELEVISION ENGINEERING (ELE3519)	Lecture/Lab Hrs per week	4/2	
Semester	I		Max marks	100	
Pre-Requisite: Basic Electronics					
CO1	Explain the fundamentals of television scanning, image formation, camera tubes, composite video signal, and picture transmission principles.				
CO2	Analyze monochrome TV transmitters and receivers including RF tuning, IF stages, AGC, sync processing, deflection circuits, and EHT generation.				
CO3	Describe colour television essentials including colour perception, three-colour theory, camera systems, picture tubes, convergence, and chrominance formation.				
CO4	Evaluate NTSC, PAL, and SECAM colour TV systems with their coding methods, demodulation circuits, and system advantages/limitations.				
CO5	Summarize advanced television technologies such as satellite TV, cable TV, VCR, video disc, teletext, digital TV, projection displays, flat panels, stereo sound, and 3D/LED TV systems.				
BT	1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation				
COURSE CONTENT/SYLLABUS					
Unit	Unit Name		Hrs	Weightage	CO
1	FUNDAMENTALS OF TELEVISION Geometry form and Aspect Ratio - Image Continuity - Number of scanning lines - Interlaced scanning - Picture resolution - Camera tubes- Image orthicon - vidicon-plumbicon-silicon diode array vidicon-solid state image scanners- monochrome picture tubes- composite video signal-video signal dimension- horizontal sync. Composition- vertical sync. Details – functions of vertical pulse train – scanning sequence details. Picture signal transmission – positive and negative modulation – VSB transmission sound signal transmission – standard channel bandwidth.		15	25	CO1, CO2
2	MONOCHROME TELEVISION TRANSMITTER AND RECEIVER TV transmitter – TV signal propagation – Interference – TV transmission Antennas – Monochrome TV receiver – RF tuner – UHF, VHF tuner- Digital tuning techniques- AFT-IF subsystems - AGC – Noise cancellation- Video and sound inter carrier detection- vision IF subsystem- video amplifiers requirements and configurations - DC re-insertion - Video amplifier circuits- Sync separation – typical sync processing circuits- Deflection current waveform – Deflection Oscillators – Frame deflection circuits – requirements- Line Deflection circuits – EHT generation – Receiver Antennas.		10	20	CO2
3	ESSENTIALS OF COLOUR TELEVISION Compatibility – colour perception- Three colour theory- luminance, hue and saturation-colour television cameras- values of luminance and colour difference signals- colour television display tubes- delta – gun-precision – in-line and Trinitron colour picture tubes- purity and convergence- purity and static and dynamic convergence adjustments- pincushion correction techniques- automatic degaussing circuit- grey scale tracking – colour signal transmission- bandwidth- modulation of colour difference signals –		10	20	CO3

	weighting factors- Formation of chrominance signal.			
4	COLOUR TELEVISION SYSTEMS NTSC colour TV system- NTSC colour receiver- limitations of NTSC system – PAL colour TV system – cancellation of phase errors- PAL –D colour system- PAL coder – Pal-Decolour receiver- chromo signal amplifier- separation of U and V signals- colour burst separation – Burst phase Discriminator – ACC amplifier- Reference Oscillator- Ident and colour killer circuits- U and V demodulators- Colour signal matrixing – merits and demerits of the PAL system – SECAM system – merits and demerits of SECAM system.	10	20	CO3, CO4
5	ADVANCED TELEVISION SYSTEMS Satellite TV technology- Cable TV – VCR- Video Disc recording and playback- Tele Text broadcast receiver – digital television – Transmission and reception- projection Television – Flat panel display TV receiver – Sterio sound in TV – 3D TV – LEDTV – Digital equipments for TV studios.	10	15	CO5
		55	100	

REFERENCE BOOKS:

1.	R.R.Gulati, “ Monochrome Television Practice, Principles, Technology and servcing , Second edition, New age International Publishes, 2004 (Unit I,II,IV and V)
2.	A.M Dhake, “Television and Video Engineerign”, Second edition, TMH, 2003.
3.	S.P.Bali, “ Colour Television, Theory and Practice”, TMH, 1994