

University of Mumbai			
CLASS: T.E. (Electronics & Telecommunication Engineering)			Semester – VI
SUBJECT: Television & Video Engineering			
Periods per week (each of 60 min.)	Lecture	4	
	Practical	2	
	Tutorial	-	
		Hours	Marks
Evaluation System	Theory Examination	3	100
	Practical examination	-	-
	Oral Examination	-	25
	Term Work	-	25
	Total		150

Module	Contents	Hours
Objective	The objective of this course is to introduce to the students the basics of picture transmission and reception.	-
Pre-requisite	Basic concepts of Communication Engineering	-
1	Elements of Basic Television System: Introduction to video system, sound and picture transmission, scanning process, video signal, aspect ratio, horizontal and vertical resolution, video bandwidth and interlaced scanning, composite video signal for monochrome TV, video signal standards, sound and video modulation, VSB transmission and reception, (CCIR – B standards).	10
2	TV camera tubes: Basic principle, image orthicon, vidicon, plumbicon, solid-state image scanners.	5
3	Color TV: Compatibility considerations, Colour theory, chromaticity diagram, generation of colour TV signals, luminance signal, chrominance signal, frequency interleaving process, colour sub-carrier frequency, colour picture tubes, colour picture tube requirements, degaussing, purity convergence, circuit colour receivers set up procedure.	10
	Colour TV systems NTSC encoder and decoder, SECAM encoder and decoder. PAL encoder and decoder.	7

4	Television Receiver and its Testing: Block schematic, VSB correction, Choice of IF's, RF tuner, AGC, video IF section, sync separation, AFC, sound section, SMPS. Troubleshooting–Procedure of troubleshooting, television test charts, introduction to various test instruments. Colour TV receivers, antenna, RF tuner, AFT, video IF amplifier, video detector sound section, first video amplifier delay line colour burst circuit, AGC amplifier, phase discriminator, phase identification amplifier and colour killer, reference oscillator, vertical deflection system, horizontal deflection system, EHT.	9
5	Advanced TV Systems: CCTV, Cable TV, Direct Broadcasting Satellites, Digital TV.	7
6	IPTV Multicasting, RTSP, RTCP	5

Theory Examination:

1. Question paper will comprise of total 7 questions, each of 20 marks.
2. All questions must be analytical.
3. Only 5 questions need to be solved.
4. Question number 1 will be compulsory and covering the all modules.
5. Remaining questions will be mixed in nature. (e.g.- suppose Q.2 has part (a) from, module 3 then part (b) will be from any module other than module 3.)
6. In the question paper, weightage of each module will be proportional to number of respective lecture hours as mentioned in the syllabus.
7. No question should be asked from **pre-requisite module**.

Oral Examination:

Oral Examination will be based on any experiment performed from the list of experiment given in the syllabus and the entire syllabus.

Term work:

Term work shall consist of minimum Six experiments and a written test.

The distribution of marks for term work shall be as follows,

Laboratory work (Experiments and Journal) : 15 marks.

Test (at least one) : 10 marks.

The final certification and acceptance of term-work ensures the satisfactory performance of laboratory work and minimum passing in the term-work.

Practical list

1. Waveform analysis at different points in a color TV receiver kit.
2. Different video patterns using test pattern generator.
3. Video IF and detector section
4. Sound IF and output section
5. Horizontal and Vertical Section.

6. Chroma section.
7. Fault finding
8. Alignment of monochrome and color TV receivers.

Recommended Books:

1. Monochrome and Color Television-Gulati R.R, Wiley Eastern Limited publication.
2. Television and video engineering- R.G.Gupta, Tata Mc-Graw Hill publication.
3. Television and video engineering- Dhake A.M, Tata Mc-Graw Hill publication.
4. Video Demystified, 4e, Keith Jack, Elsevier