

Course name : Electronics & Video Engineering

Course Code : EV

Semester : Fourth

Subject Title : Television Transmission

Subject Code: 9077

Teaching And Examination Scheme:

Teaching Scheme			Examination Scheme						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	TW	TOTAL
02	01	--	3	80	20	--	--	25@	125

Rationale:

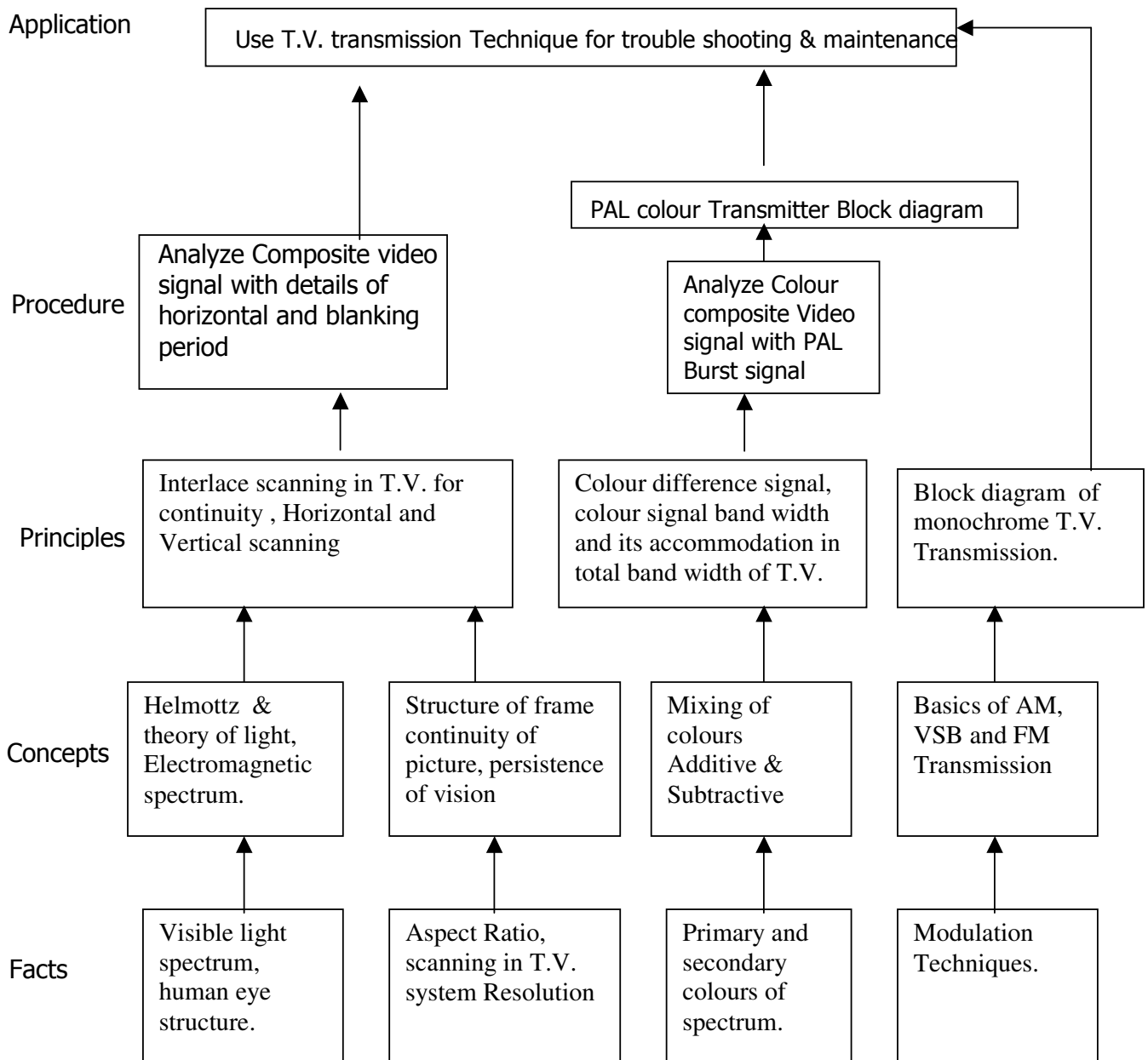
Video Transmission is core technology subject for this course. This subject will develop the understanding of monochrome and color transmission. This understanding is essential for applied technology subject – T.V. reception. In this subject students will learn different requirements of signals for video/ T.V. transmission.

Objectives:

Student will be able to:

1. Know basic concept of TV transmission
2. Explain details of CVS and CCVS signal.
3. Use basic concept of color theory.
4. Explain function of monochrome and color TV transmitters using PAL technique.

Learning Structure:



Contents: Theory

Chapter	Name of the Topic	Hours	Marks
01	T.V. Fundamentals 1.1 Nature of Visible light 1.2 Visible light spectrum 1.3 Construction of human eye, response of Human eye to different colors. 1.4 Perception of vision 1.5 Concept and explanation of following Aspect ratio, image continuity, Interlace scanning, scanning periods, horizontal resolution, vertical resolution, Kell factor. 1.6 Vestigial side band transmission for T.V. Band width for color signal, brightness, contrast, viewing distance, luminance	08	18
02	Composite Video Signal 2.1 Explain with wave form :- pedestal height, Blanking pulses (H & V) Colour Bust, Horizontal sync. Pulse details, vertical sync. Pulse details, equalization Pulses, D.C. Level. 2.2 CC IR- B standards for colour signal transmission and reception. 2.3 T.V. channel allocation for band- I and band- III.	04	12
03	Monochrome T.V. Transmitter 3.1 Audio and video signal transmission. 3.2 Positive and negative modulation. 3.3 Merits and demerits of negative modulation. 3.4 Introduction to camera tubes. 3.5 Block schematic and working of silicon diode array vidicon camera tube. 3.6 Block diagram and working of monochrome T.V. Transmitter.	04	12
04	Colour Theory 4.1 Color theory:- Primary and Secondary colors, grass man's Law, additive color Mixing, subtractive color mixing. Hue, saturation, compatibility, channel B.W. 4.2 Colour Difference signal. 4.3 Elimination of (G -Y) Signal. 4.4 Bandwidth of colour difference signal. 4.5 Frequency interleaving. 4.6 Choice of colour sub-carrier and factors influencing the choice of colour	06	18

	sub-carrier. 4.7 Weighted color vectors u and v. 4.8 Q. A.M. in PAL system. 4.9 wave forms and phases diagram for primary and secondary colours.		
05	PAL Transmitter: Theory 5.1 PAL – V switching; elimination of differential phase error. 5.2 Selection of exact PAL colour sub-carrier frequency. 5.3 Bandwidth for transmitted PAL colour resultant. 5.4 Suppressed colour sub-carrier transmission. 5.5 Colour burst signal for PAL.(Swinging colour burst with specifications.) 5.6 Colour composite video signal. 5.7 Block diagram of PAL colour and its working. 5.8 Block diagram of PAL Transmitter & its working.	10	20
	Total	32	80

List of Assignments for Tutorial:

Minimum 10 assignments should be covered.

1. Human eye structure and its response to visible spectrum.
2. Persistence of vision and its use for image continuity.
3. Horizontal and vertical resolution and their use in calculation of No. of lines and video bandwidth.
4. Total bandwidth of channel and its distribution in VSB.
5. Terms related to Monochrome and colour T.V. and their explanation. E.g. Brightness, luminance, Hue, contrast etc.
6. Concept of composite video signal for horizontal lines and explanation & functioning of each part of that.
7. Representation of composite video signal for one or two horizontal line for a given pattern of frame.
8. Vertical blanking details their requirements and need for serration and equalizing pulses.
9. Positive and negative modulation.
10. Camera functioning and working.
11. Block diagram level study of monochrome T.V.Transmissions.
12. Picture and sound transmission as AM & FM respectively Justify.
13. Mixing of colours and representation of colours in hue saturation level.

14. Concept & factors of compatibility.
15. Requirement & generation of weighted colour difference signals.
16. Camera output waveforms for standard color pattern
17. Generation of colour sub-carrier and on which factor choice of color sub carrier depends.
18. Visit to Doordarshan Kendra to understand the concept of C.T.V. transmission.
19. Block diagram level study of PAL Encoder and its working.
20. Assignment on PAL – D Transmission with Explanation & O/P waveforms.

Learning Resources:

Books:

Sr. No.	Author	Name of Book	Publisher
01	Dhake	Television & Video Engg.	Tata Mc grow Hill New Delhi
02	R.R.Gulati	Modern T.V. Practice.	Wiley Eastern Ltd. London.
03	R.R.Gulati	Colour T.V. Principle & Practices	New Age International Ltd. Delhi.
04	Barnad Grobe	Basic T.V. & Video System	Mac- gRaw Hill Ltd., New York
05	Maini	Colour T.V. & Video Technology	PHI Publication, New Delhi