

TV- Repairing course – PCP (Theory & Practical) Training Schedule

Total course duration (400 hrs)			
PCP (140 hrs)		Self learning (260 hrs)	
Practical (90 hrs)	Theory (50 hrs)		

Week	Schedule		PCP- Topic				Learning outcome- After attending the PCP learner would be able to-:
	Topic	Day	Duration (Hr)	Theory	Duration (Hr)	Practical	
Week 1	Concept of television system	DAY 1	2 hrs	<ul style="list-style-type: none"> Block diagram of complete television system. Concept of electromagnetic waves 	3 hrs	<ul style="list-style-type: none"> Demonstration of various parts of T.V. 	<ul style="list-style-type: none"> identify the important parts of t.v. correlate electromagnetic wave with t.v transmission and reception.
	Use of instruments	DAY 2	2 hrs	<ul style="list-style-type: none"> Analog & Digital multi meter. Frequency counter CRO (cathode ray oscilloscope) Pattern generator 	3hrs	<ul style="list-style-type: none"> Demonstration and hand use of all the instruments. 	<ul style="list-style-type: none"> measure the different electrical parameters and generate audio and video signal to check the t.v. condition.

Week 2	V.H.F Propagation & T.V standards	DAY 1	2 hrs	<ul style="list-style-type: none"> • The frequency for video and audio T.V transmission • Dipole antenna. • Folded dipole • Practical TV Antenna. • Balun transformer. 	3 hrs	<ul style="list-style-type: none"> • Fixing of antenna w.r.t. proper orientation for maximum signal. 	<ul style="list-style-type: none"> • identify the significance of antenna. • properly set antenna with respect to direction for maximum signal. • demonstrate various frequency ranges.
	Scanning and pulse generation	DAY 2	2 hrs	<ul style="list-style-type: none"> • Types of scanning • Blanking • Synchronisation • Composite video signal. 	3hrs	<ul style="list-style-type: none"> • The analysis of video and audio signals by changing the setting of pulse generator. • Analysis of video signal 	<ul style="list-style-type: none"> • demonstrate the process of conversion of picture in to video signal. • differentiate between various type of scanning, blanking & synchronization process. • control the scanning blanking & synchronization.
Week 3	Picture tube & yoke assembly	DAY 1	2 hrs	<ul style="list-style-type: none"> • Picture tube (CRT) • Electron gun and florescent screen. • Horizontal and vertical electromagnetic deflection process. 	4 hrs	<ul style="list-style-type: none"> • Disassemble of picture tube. • Physical inspection for identification of different parts. • Assemble the picture tube 	<ul style="list-style-type: none"> • dismantle & assemble crt. • use different controls to improve the picture quality

						<ul style="list-style-type: none"> • Analysis of output on screen by varying the controls like horizontal and vertical deflection control. 	
	Power supply	DAY 2	2 hrs	<ul style="list-style-type: none"> • Different type of power supply circuit used in T.V. • Main transformer in power supply. • Silicon control rectifier power supply. 	3hrs	<ul style="list-style-type: none"> • Physical inspection of range of power supply. • Identification of components used in power supply. 	<ul style="list-style-type: none"> • identify a range components used in power supply of t.v. • identify and record the ratings of different components used in power supply of t.v.
Week 4	Fault finding in Power supply	DAY 1	2 hrs	<p>Fault in :</p> <ul style="list-style-type: none"> • Main transformer in power supply. • Silicon control rectifier power supply 	3 hrs	<ul style="list-style-type: none"> • Discrimination between healthy and faulty components with the help of measuring instruments. • De soldering the faulty components and there replacement of healthy component of same ratings. 	<ul style="list-style-type: none"> • locate faulty components in power supply system. • diagnose the fault in pcb. • rectify the faults by replacing faulty components.

	Tuner section	DAY 2	2 hrs	<ul style="list-style-type: none"> • Different type of Tuners. • Circuit diagram of Tuner section. 	3hrs	<ul style="list-style-type: none"> • Practical on checking of voltage at the output of different sections to ensure healthy working of Tuner section. 	<ul style="list-style-type: none"> • identify different types of tuner. • measure the various parameters with precision with help of appropriate instruments required for a tuner section.
Week 5	Tuner section.	Day 1	2 hrs	<ul style="list-style-type: none"> • Working of R.F Tuner Section. • Different types of trap circuits. 	3 hrs	<ul style="list-style-type: none"> • Variation of different controls and analysis of output on the screen. 	<ul style="list-style-type: none"> • identify different trap circuits. • demonstrate the working of rf tuner section of tv
	I.F and video detector stage	Day 2	2 hrs	<ul style="list-style-type: none"> • I.F and video detector stage • Working of VIF section. • Circuit diagram of VIF and detector stage. 	4hrs	<ul style="list-style-type: none"> • Measurement of signal at different pins. • Identification of various pins with their functions. • Analysis of wave form of I.F signal with the help of C.R.O. 	<ul style="list-style-type: none"> • demonstrate the function of i.f section along with different pins of integrated circuit
Week 6	Audio Section	Day 1	2 hrs	<ul style="list-style-type: none"> • Detection of Audio from inter carrier IF • FM detection 	4hrs	<ul style="list-style-type: none"> • Detection of audio output • Connection of speakers at the output of audio section 	<ul style="list-style-type: none"> • connect the audio section to the speakers. • identify & use soldering wire

	Video Section	Day 2	2 hrs	<ul style="list-style-type: none"> • Working of video section • Study of circuit diagram • Various controls used in video section 	4hrs	<ul style="list-style-type: none"> • Demonstration of video section PCB • Identification of various components. • CRT biasing and brightness control. 	<ul style="list-style-type: none"> • identify the various components in video section. • control the brightness, contrast and blanking of video.
Week 7	Automatic gain control system	Day 1	2 hrs	<ul style="list-style-type: none"> • Use of AGC • Delayed AGC system. • Circuit of AGC sections. 	4 hrs	<ul style="list-style-type: none"> • Identify the various components in transistorized AGC sections. • Measurement of voltages at different points using service manual of T.V. 	<ul style="list-style-type: none"> • demonstrate the functions of agc system. • make connections with agc rectifier. • handle transistorized agc system along with the various controls.
	Synchronous separation section	Day 2	2 hrs	<ul style="list-style-type: none"> • Synchronous pulse. • Synchronous separator circuit. • Circuit of integrator and differentiator. 	3hrs	<ul style="list-style-type: none"> • Physical inspection of synchronous separation system integrator and differentiator. • Study of output by varying the input. 	<ul style="list-style-type: none"> • handle synchronous separation system. • differentiate between integrator & differentiator network. • read the connections of integrator & differentiator circuits.

Week 8	Vertical section	Day 1	2 hrs	<ul style="list-style-type: none"> Vertical oscillator Vertical amplifier Different controls. Function of different pins of IC-TDA1044. 	4 hrs	<ul style="list-style-type: none"> Analysis of output using height, vertical hold and vertical linearity control. Read study and draw the complete vertical section diagram. 	<ul style="list-style-type: none"> identify the components of complete vertical section & its significance. control the height of vertical hold and vertical linearity control in vertical section. read, draw & interpret the circuit diagram of vertical section.
	Horizontal section.	Day 2	2 hrs	<ul style="list-style-type: none"> Circuit diagram of horizontal oscillator. Working of IC CA 920. Circuit EHT section. Working of EHT section. Boost voltages. Auxiliary power supply. 	4 hrs	<ul style="list-style-type: none"> Read study and draw the complete Circuit diagram of horizontal oscillator. Practical on IC soldering on the IC Base. Measurement of input & output voltage of an EHT coil. Interpretation of auxiliary supply circuit diagram. Measurements of different voltages at various points of auxiliary power supply 	<ul style="list-style-type: none"> demonstrate working of horizontal oscillator make connections of ic circuit. demonstrate working of eht section. make connections of eht coil by taking proper precautions. connect various section of t.v to the auxiliary power supply.
Week 9	Typical faults	Day 1	2 hrs	<ul style="list-style-type: none"> Common fault 	4hrs	<ul style="list-style-type: none"> Identification of fault diagnosis by observation. 	<ul style="list-style-type: none"> locate the fault by observation.

				<ul style="list-style-type: none"> • Selection of testing of T.V receiver section as per symptoms. 		<ul style="list-style-type: none"> • Diagnose the faulty sections by using proper equipment and observing the symptoms like-: for no sound faulty section is audio section e.t.c. 	<ul style="list-style-type: none"> • diagnose the fault by using proper testing methods. • trouble shoot the fault. • adjust the values of different parameters to obtain optimal performance of the television • carry out dismantling & assembling operation of t.v for replacing the faulty component.
	Typical faults	Day 2	2 hrs	<ul style="list-style-type: none"> • Component replacement. • Remedial actions. 	4 hrs	<ul style="list-style-type: none"> • Component replacement as per trouble shooting table. • Identification of dry soldering /readjustment by varying the value of resistor, capacitor & inductor. 	
WE EK 10	Colour T.V & Light & color	Day 1	2 hrs	<ul style="list-style-type: none"> • History of color T.V. • Compatibility with black & white T.V. • Important terms for achieving compatibility. • Introduction to different colour systems. • Visible spectrum of electromagnetic wave. 	4 hrs	<ul style="list-style-type: none"> • Analysis of switching NTSE System to PAL and SECAM system and NTSC. • Analysis of visible spectrum in the workshop and draw the spectrum 	<ul style="list-style-type: none"> • differentiate between the principle of black & white t.v.& color t.v. • differentiate between pal and secam system and ntsc. • distinguish all the colors of the visible spectrum w.r.t. wavelength .

				<ul style="list-style-type: none"> • Primary color and there mixing. • Different color characteristics. 		<p>specifying the color and wavelength</p> <ul style="list-style-type: none"> • Mixing of primary colours to get different colours by using experimental setup. • Read, study and write the different color characteristic. 	<ul style="list-style-type: none"> • identify different color characteristics. •
	Color T.V system & Block diagram of colour T.V.	Day 2	2 hrs	<ul style="list-style-type: none"> • CTV camera • Luminance and chrominance signals. • Understand PAL color Burst Pulses. • Color Burst Pulses. • Working of colour television. • Function of delay line in colour television. • Chroma band pass amplifier. • Block diagram of color T.V. 	4 hrs	<ul style="list-style-type: none"> • Handling of a typical color T.V camera. • Demonstration of interior parts of colour television and block diagram. • Demonstration of function of colour T.V. • Practice of representing block diagram. 	<ul style="list-style-type: none"> • operate color t.v camera. • identify luminance and chrominance signals. • demonstrate function of delay line & chroma band pass amplifier • operate a colour television. • read, draw & interpret the block diagram of colour t.v.

Week 11	Colour picture tube	Day 1	2 hrs	<ul style="list-style-type: none"> • Shadow mask or delta gun tube. • Precision in line tube. • Trinitron picture tube 	4 hrs	<ul style="list-style-type: none"> • Demonstration of shadow mask & delta gun tube. • Demonstration of various parts and function of a picture tube. • Demonstration of Trinitron picture tube. 	<ul style="list-style-type: none"> • identify different parts of a picture tube. • identify different parts of trinitron tube. • identify the materials of construction of tube. • demonstrate the function of tube in a television. • carry out dismantling of tube for fault finding & repair.
	T.V. controls Switch mode power supply (SMPS)	Day 2	2 hrs	<ul style="list-style-type: none"> • Different operator controls • Adjustment of different controls and tuning of different channels on different band. • Advantage of SMPS. • Working of SMPS. • Different type of SMPS. 	4 hrs	<ul style="list-style-type: none"> • Demonstration of different operator controls. • Practice of adjustment of different controls. • Demonstration of different switch Mode power supply systems. 	<ul style="list-style-type: none"> • identify different operation control system of a colour t.v. • adjust different operation control system for desired performance. • rectify the control system in case of fault. • demonstrate the working of switch mode power supply. • use different smps for different television system.
Week 12	Tuner section & Common I.F sections	Day 1	2 hrs	<ul style="list-style-type: none"> • RF tuner section of colour TV. • Working of different pins of RF tuner. • Working of RF tuner section • Complete circuit study 	4 hrs	<ul style="list-style-type: none"> • Demonstration of tuner section display of various terminals of tuner section. • Demonstration of complete circuit of I.F section. 	<ul style="list-style-type: none"> • demonstrate the function of tuner section. • identify all the terminals of a tuner section. • interpret the circuits of a i.f section. • carry appropriate

				of common I.F Section.			rectification procedure in case of fault in tuner & i.f section.
	Sound section & Video amplifier section	Day 2	2 hrs	<ul style="list-style-type: none"> • Function of sound section in color T.V. • Study of circuit of sound section of a colour T.V. • Working of video amplifier. • Complete working of video amplifier. • Chroma section (function , working & circuit) 	4 hrs	<ul style="list-style-type: none"> • Demonstration of functioning of sound section of colour television. • Demonstration of complete circuit of sound section. • Demonstration of functions of video section. • Demonstration of circuit of video amplifier. • Demonstration of chroma section. 	<ul style="list-style-type: none"> • demonstrate the function & interpret the circuit of sound section, video section and chroma section of a color television. • carry appropriate rectification procedure in case of fault in these sections.
Week 13	Colour output section & Sweep section	Day 1	2 hrs	<ul style="list-style-type: none"> • working of colour output section • Circuit of colour output section. • Functions of sweep section. • Vertical oscillator and amplifier. • Horizontal oscillator Driver and horizontal stage. • EHT stage. 	4 hrs	<ul style="list-style-type: none"> • Demonstrate the function & circuit of colour output section. • Demonstration of EHT section. • Demonstration of synchronizer separator circuit. • Demonstration of vertical & horizontal oscillator, vertical amplifier. 	<ul style="list-style-type: none"> • demonstrate the function of color output section. • demonstrate the function of sweep section. • interpret the circuits of color output section & sweep section. • identify the faults in the circuits. • carry out appropriate procedure for repairing these circuits in case of fault.

	Study of complete circuit	Day 2	2 hrs	<ul style="list-style-type: none"> • Overall view of T.V circuits used in Indian Television. • ITT color Television Circuit. • Toshiba color Television Circuit. 	4 hrs	<ul style="list-style-type: none"> • Demonstration of complete circuits of different models of television. • Dismantling and assembling of different models. 	<ul style="list-style-type: none"> • study and interpret the complete circuits of various television models. • carry out dismantling and assembling of various television models. • diagnose faults in various models. • carry out repair of faults in various models.
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