

1	Name of Syllabus	C.C. IN TAPE RECOPDER MECHANIC CUM OPERATOR. (301107)																																									
2	Max.Nos of Student	25 students.																																									
3	Duration	6 Month																																									
4	Type	Part Time																																									
5	Nos Of Days / Week	6 Days																																									
6	Nos Of Hours /Days	4 Hrs																																									
7	Space Required	Workshop = 200 Sq feet Class Room = 200 Sq feet TOTAL = 400 Sq feet																																									
8	Entry Qualification	S.S.C. Appeared																																									
9	Objective Of Syllabus/ introduction	INTRODUCTION:- Industries & its auxiliary unit come up into different parts of country which shows increased demand of skilled man power in appropriate field. To meet demand of skilled man power training in appropriate field is essential further due to liberalization living standard of common people improved. Purchasing power of citizen also increased. Hence people fascinating with most sophisticated instruments such as VCR, TV, TAPES, WASHING MK. VACCUM CLEANCER, etc. Repairing and maintenance of such items introduces self employment to the youth. OBJECTIVES :- 1. Introduction of Audio system & Tape Recorders. 2. Maintenance & Repairing of Different Types of Tape Recorder. 3. Introduction to cassette recording by different method.																																									
10	Employment Opportunity	A) Self-Employment :- Trainee can be work individually by establishing his own shop OR Repairing Centre as well as recording house. B) Wage-Employment :- In Tape Manufacturing Industries he can obtain wage employment.																																									
11	Teacher’s Qualification	Diploma in Electronics / NCTVT Certificate of General Electronics. Or Mech. Radio & T. V., C. T. I. Pass, & 2 Years Practical experience in the field.																																									
12	Training System	<table><tr><th colspan="7">Training System Per Week</th></tr><tr><td colspan="2">Theory</td><td colspan="2">Practical</td><td colspan="3">Total</td></tr><tr><td colspan="2">6 Hours</td><td colspan="2">18 Hours</td><td colspan="3">24 Hours</td></tr></table>							Training System Per Week							Theory		Practical		Total			6 Hours		18 Hours		24 Hours																
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13	Exam. System	<table><tr><th>Sr. No.</th><th>Paper Code</th><th>Name of Subject</th><th>TH/PR</th><th>Hours</th><th>Max. Marks</th><th>Min. Marks</th></tr><tr><td>1</td><td>30110711</td><td>Basic Electronics & Audio System</td><td>TH-1</td><td>3 hrs</td><td>100</td><td>35</td></tr><tr><td>2</td><td>30110721</td><td>Basic Electronics</td><td>PR-1</td><td>3 hrs</td><td>100</td><td>50</td></tr><tr><td>3</td><td>30110722</td><td>Recording, & Operating Audio System</td><td>PR-2</td><td>6 hrs</td><td>200</td><td>100</td></tr><tr><td></td><td></td><td>Total</td><td></td><td></td><td>400</td><td>185</td></tr></table>							Sr. No.	Paper Code	Name of Subject	TH/PR	Hours	Max. Marks	Min. Marks	1	30110711	Basic Electronics & Audio System	TH-1	3 hrs	100	35	2	30110721	Basic Electronics	PR-1	3 hrs	100	50	3	30110722	Recording, & Operating Audio System	PR-2	6 hrs	200	100			Total			400	185
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CURRICULUM :- TAPE RECORDER MECHANIC CUM OPERATOR.

Sr. no.	THEORY - Basic Electronics & Audio System
1	Introduction of training & institute, Familiarization with the institute, type of work & responsibility of trainees, syllabus, safety precautions, elementary first aid, and symbols related to the theory Han- Tools & equipments identification, uses and maintenance.
2	Introduction to electricity, batteries, voltage, current, resistance & power ohm's law. Alternating current A. C. induced voltage, current. Direct current simple leclanche cell, lead acid accumulator, battery charger, Battery is an electric.
3	RESISTORS: - Construction of carbon resistor wire wound resistors, wire wound resistors potentiometer, thermostat, series & parallel connection of resistors colour code of resistors, unit for resistance.
4	Capacitors :- what is capacity & capacitance parallel & series connection of capacitor in electric circuit unit of capacitor different, types of capacitor variable & fixed value trimmers, mica ceramic, paper polyester electrolytic etc value of capacitor.
5	Inductor & transformer-coil concept, mutual induction series & parallel connection of inductors Types of coils air core, Gron core, Powdered iron core etc. unit for inductance Transformers, turns ration types of transformer, step-up & step down transformer, power transformer etc.
6	Simple Meters: - Moving coil meter voltmeter, ammeter, ohm meter multimeter (Moving o=coil and digital).
7	Semiconductor: - difference between semiconductor & conductor, Germanium & Silicon. Type semiconductor 'P' type & 'N' type semiconductor, P.N. junction diode, junction diode types of diodes, Zenerdiode, LED, etc.
8	Transistor: - PNP and NPN transistor pin configuration, CB, CE, CC connection function of transistor Heat sink, use of heat sink. P C B (printed circuit Board).
9	Rectification & fitter – Half wave full wave rectifier, uses of diode as rectifier, use of filters L. C. filter, R. C. Filters etc. voltage doublers CKT.
10	Regulated power supply with Zener diode, transistors and regulator IC's 741, 7806, 7906, 7812, 7912, etc.
11	ACCOUSTIC :- Wave, sound wave conversion of sound wave & electric wave by use of speaker & microphone, principal, construction& working of speaker & microphone, Types of speaker, head phones types of mic stereo sound Echo sound, Reverse sound P-A system , equalizer system.
12	Amplifier: - AN F amplifier Range of audio amplifier frequency use of amplifier, types of amplifier transistor as an amplifier, coupling of amplifier pre-amplifier.
13	AF power amplifier: - Use of transformer matching, push-pull amp. Transformer less amplifier, differential amplifier, feedback circuit.
14	INTEGRATED CIRCUITS :- What is IC? Use of IC's in cassette tape recorder, IC based AF power amplifiers with different no's IC's.
15	Cassette tape recorder & payers Block diagram of tape recorder & player principal of magnetic sound, recording, play back, magnetic tapes magnetic heads, erasing head, Bias equalization, types of heads, mono and stereo head, Practical recording & play recorder to recording mode.
16	Recording amplifier, Bias eraser oscillator function of stages in tape recorder to play back mode, magnetic tape audio pre amplifier, audio power amplifier audio power amplifier controls volume, tone, bass treble balance control & equalizer.

17	<p>Mechanical part of tape recorder :-</p> <ol style="list-style-type: none"> 1. Recording switch 2. Rewind 3. Fast forward 4. Play back 5. Stop switch 6. Cassette eject 7. Pinch Roller assembly 8. Pinch Roller assembly 9. Cassette door 10. Capstan shaft 11. Auto stop assembly 12. Take-up wheel 13. Supply wheel 14. Fly wheel 15. Motor, pulley & belts 16. R. P Head 17. Erasing head 18. Counter assembly 19. Auto reverse system.
18	<p>Study of different types mechanism front load mechanism, auto reverse mechanism etc. Study of various commercial audio system recording decks, stereo system.</p>
19	<p>Alignment in cassette tape recorder and player. Replacement, motor, Belts, Pulley, tyer Bush, Pinch roller, heads, wheel etc.</p>
20	<p>Study the different types of cassette tape recorder and players.</p> <ol style="list-style-type: none"> 1. General tape recorder. 2. Stereo tape recorder. 3. Car tapes. Other audio system.
21	<p>Assembling of cassette tape recorder mechanism fitting in cabinet head connection to P C B, volume bass treble balacr connections. Transformer fitting speaker connection L E KD circuit, vu meter connection and fitting.</p>
22	<ol style="list-style-type: none"> 1. Maintenance 2. General faults 3. Fault finding 4. Electrical Faults 5. Electronic Faults 6. Mechanical Faults
23	<ol style="list-style-type: none"> 1. Tape dead 2. HO sound tape more 3. Speed Faults. 4. Defective rewind. 5. Defective forward 6. Defective system.
24	<p>RECORDING :- Recording system, perpendicular or transverse recording, long itudinal magnetic recording, single truck Dual tract, Quarter track recording Echo recording, Revere sound system, cassette to cassette recording L P to cassette recording.</p>

PRACTICAL - I Basic Electronics
Introduction to work- shop & equipments care. Introduction to electricity supply system. Uses of Tools, measuring instruments soldering & disordering.
Identification of conductors, insulator voltage, current power. Test measure of A. C. Voltage current... Test of measure of D. C. Voltage and current.
To study differ. Types of resistors. Colour code reading value of resistors calculation of series & parallel resistance Testing of resistance by multimeter.
Checking of capacitor, testing by multimeter. Function and uses of capacitor.
Checking of coil by multi meter. Checking of differ. Type of transformer hot checking & cold checking To study their uses.
Operation, Rules and use of multimeter, voltmeter, ammeter.
Testing of P N junction diode by multimeter Identify their poles (A & K.)
Transistor testing by multimeter Identification of lead, Build a c B, CC & C E circuits. Design the PCB.
Assembled various rectifier circuits with R.C. & L. C. filter CKT. Voltage doublers circuit.
POWER SUPPLY - Build Zener diode regulator circuit Build a transistor regulator circuit Build a regulator circuit Build a regulator IC power supply.
PRACTICAL - II Recording, & Operating Audio System
To study the construction of mic's & speakers.
Recording Repairing of microphone & speaker, headphones.
Build an audio pre-amplifier with transistor. Coupling two transistor amplifier stages.
To build A. F. power amplifier with different transistors. Use of heat-sink.
To Build a A F power amplifier with diff. IC's TDA 810, 1230, 2030, 4440 etc.
To study magnetic tapes & cassettes. To study recording and playback system.
How to operate the controls in tape recorder.
To study the mechanism of tape recorder. To study the auto stop and auto reverse system.
To study the different types of mechanism study construction, assembling of different type audio system.
To align the play back heads. To align the speed of d C motor.
To study and trace the circuit. To study the mechanical section of cassette tape recorder and pl player.
Assembled the cassette tape recorder.
Fault finding in tape recording. Repair cassette tape recording.
To detect the faults Repair cases of tape recorder.
Practice the recording system recorded cassette (mono & stereo) with echo & reverb effect.

LIST OF TOOLS AND EQUIPMENT :-

SR. NO.	DESCRIPTION OF TOOLS EQUIPMENT.	NO. REQUIRED
1	Combination pliers 15 cm insulated.	16
2	Long none pliers 15 cm insulated.	16
3	Diagonal cutter 15 cm insulated.	16
4	Tweezers 10 cm insulated.	16
5	Heat sink pliers.	16
6	Neon tester 250 V	16
7	Knob screw driver 10 cm.	16
8	Screw driver set of 6 Taparia No.	16
9	Philips alignment kit.	16
10	Wire stripper.	16
11	Disordering Pump & soldering irons.(25 W)	16+16
	WORKSHOP TOOLS & EQUIPMWNTS	
12	First aid kit.	1
13	Work benches 120X 400 X 75 cm.	4
14	Rubber gloves pair.	1
15	Stared rule 300 mm.	2
16	Scriber 15 cms.	2
17	Centre punch 10 cm.	2
18	Hammer cross peen 110 gm with handle.	1
19	Hammer ball peen 220 gm	1
20	Spanners double ended 6 mm to 20 mm by 1.6 mm.	1 set
21	Hack-saw 300 mm fix with handle.	1
22	Instrument files set of l-12 piece.	1
23	Vice bench 10 cm jaws.	1
24	Tape & Die set 0 to 10 mm.	1 set.

● REFERENCE BOOKS :-

1. Elementary electronics - engineering by M. L. Gupta New Heights Publications.
2. A textbook on Radio & Television.
By Dr. N. C. Goyal & S. K. Mukherjee.
Khanna publications.
3. Basic electronics.
By, Bernard Grob.
McGraw-Hill publications.
4. Electronics and Radio Engineering.
By, M. L. Gupta.
Dhanpat Raj & Sons.
5. Transistor date book.
6. I C date book.
