

MAHARASHTRA STATE BOARD OF VOCATIONAL EDUCATION EXAMINATION, MUMBAI -51

1	Name of Syllabus	C.C. IN HOME THEATER MECHANIC CUM OPERATOR (301132)																																								
2	Max. Nos of Student	25 students.																																								
3	Duration	6 Month																																								
4	Type	Full Time																																								
5	Nos Of Days / Week	6 Days																																								
6	Nos Of Hours /Days	7 Hrs																																								
7	Space Required	Laboratory = 1000 Sq feet <u>Class Room = 200 Sq feet</u> TOTAL = 1200 Sq feet																																								
8	Entry Qualification	S.S.C.																																								
9	Objective Of Syllabus/ introduction	OBJECTIVES :- 1. Introduction of Audio system & Home Theater. 2. Maintenance & Repairing of Different Types of Players. 3. Introduction to ACD/DVD/Blue Ray recording by different method.																																								
10	Employment Opportunity	The trainee will either to be able to take up jobs with Concern Industries/agencies which maintain and repair such equipments or with working experience will be in a position to start his own independent Business.																																								
11	Teacher's Qualification	Diploma/Certificate in concern subject																																								
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">12 Hours</td><td colspan="2">30 Hours</td><td colspan="3">42 Hours</td></tr></table>						Training System Per Week							Theory		Practical		Total			12 Hours		30 Hours		42 Hours																
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Theory - I - Radio, Audio, Video System and Appliances.

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 lead 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, Iron core, Powdered iron core etc. unit for inductance Transformers, turns ratio types of transformer, step-up & step down transformer, power transformer etc.
6. Simple Meters: - Moving coil meter voltmeter, ammeter, ohm meter, multimeter (Moving 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, Zener diode, 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. Rectifiers, filters, Regulated power supply with Zener diode, transistors and regulator IC's 741, 7806, 7906, 7812, 7912, etc.
10. ACOUSTICS :- 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.
11. Amplifier: - Range of audio amplifier frequency use of amplifier, types of amplifier transistor as an amplifier, coupling of amplifier pre-amplifier.
12. AF power amplifier: - Use of transformer matching, push-pull amp. Transformer less amplifier, differential amplifier, feedback circuit.
13. What is IC? Use of IC's in Home Theater, IC based AF power amplifiers with different no's IC's.
14. Working principle of Radio/CD/VCD/DVD/ Blue ray Player, CD/DVD/Blue Ray mechanism & power supply. Types of ACD/VCD/DVD/Blue ray & their writing procedure on ACD/VCD/DVD/ Blue ray. Five in one system, MP3 formats/ Flash memory recording.

15. Difference between ACD & VCD players & DVD players, Single CD & 3CD Changer. Fault finding procedure in different stages including CD drive Mechanism. Laser Fundamentals, optical pickup units, laser beam, CD recording standards.
16. Study the different types of ACD/DVD recorder and players.
 - a. General ACD/DVD recorder.
 - b. Stereo ACD/DVD recorder.
 - c. Car ACD/DVD players. Other audio system.
17. Assembling of Radio/ACD/DVD Player mechanism fitting in cabinet head connection to P C B, volume bass treble balance connections. Transformer fitting speaker connection LED circuit, vu meter connection and fitting.

Practical - I - Basic Electronics

1. Introduction to work- shop & equipments care. Introduction to electricity supply system. Uses of Tools, measuring instruments soldering & disordering.
2. Identification of conductors, insulator voltage, current power. Test measure of A. C. Voltage current. Test of measure of D. C. Voltage and current.
3. To study differ. Types of resistors. Colour code reading value of resistors calculation of series & parallel resistance testing of resistance by multimeter.
4. Checking of capacitor, testing by multimeter. Function and uses of capacitor.
5. Checking of coil by multimeter. Checking of differ. Type of transformer hot checking & cold checking To study their uses.
6. Operation, Rules and use of multimeter, voltmeter, ammeter.
7. Testing of P N junction diode by multimeter Identify their poles (A & K.)
8. Transistor testing by multimeter Identification of lead, Build a CB, CC & CE circuits. Design the PCB.
9. Assembled various rectifier circuits with R.C. & L. C. filter CKT. Voltage doublers circuit.
10. Build Zener diode regulator circuit, Build transistor regulator circuits, Build a regulator circuit, and Build a regulator IC power supply.
- 11 To study the construction of mic's & speakers. Recording Repairing of microphone & speaker, headphones.
- 12 Build an audio pre-amplifier with transistor. Coupling two transistor amplifier stages.
- 13 To build A. F. power amplifier with different transistors. Use of heat-sink.
- 14 To Build a A F power amplifier with different IC's TDA
 - 810,
 - 1230,
 - 2030,
 - 4440 etc.
- 15 Identify & study the various parts & control of ACD Player.
- 16 Identify & study the various parts & control of VCD Player.
- 17 Identify & study the various parts & control of DVD Player.
- 18 Identify & study the various parts & control of Blue ray Player.
- 19 Identify & study the various parts & control of Home Theater
- 20 Identify & check various connections of all players.

Practical - II - Fault Finding

1. Circuit study of audio, RF, Encoder etc. Rectify the fault in the given circuit.
2. To study the different types of mechanism study construction, assembling of different type audio system
3. To study and trace the circuit. To study the mechanical section of ACD/DVD recorder and player.
4. Assembled the ACD/DVD/Home theater/Blue ray player
5. Fault finding of given VCD player
6. Fault finding on given ACD/VCD drive mechanism
7. Study & fault finding of optical pickup units, and drive mechanism, to wire up ACD to VCD conversion card.
8. Repairing in ACD/DVD players.
9. Repairing in Home theater/ Blue Ray players.
10. Practice the recording system recorded CD/DVD(mono & stereo) with echo & reveal effect.

● LIST OF TOOLS AND EQUIPMENT :-

SR. NO.	DESCRIPTION OF TOOLS EQUIPMENT.	NO. REQUIRED
1	Combination pliers 15 cm insulated.	06
2	Long none pliers 15 cm insulated.	06
3	Diagonal cutter 15 cm insulated.	06
4	Tweezers 10 cm insulated.	06
5	Heat sink pliers.	06
6	Neon tester 250 V	06
7	Knob screw driver 10 cm.	06
8	Screw driver set of 6 Taparia No.	06
9	Philips alignment kit.	06
10	Wire stripper.	06
11	Disordering Pump & soldering irons.(25 W)	06
	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 1-12 piece.	1
23	Vice bench 10 cm jaws.	1
24	Tape & Die set 0 to 10 mm.	1 set.
25	ACD/DVD/Home Theater/ Blue Ray player	2 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. Principal of Electronics By V. K. Mehata
4. Basic electronics. By, Bernard Grob. McGraw-Hill publications.
5. Electronics and Radio Engineering.
By M. L. Gupta.
Dhanpat Raj & Sons.
6. Transistor date book.
7. I C date book.
