GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE GENERAL OF TRAINING

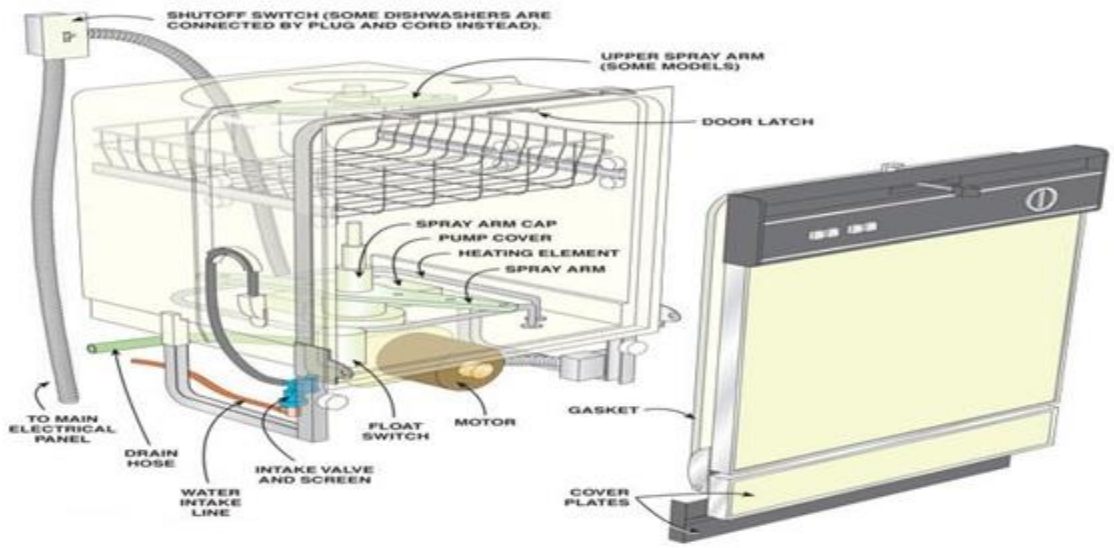
COMPETENCY BASED CURRICULUM

MECHANIC CONSUMER ELECTRONIC APPLIANCES

(Duration: Two Years)

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 5



SECTOR –ELECTRONICS & HARDWARE

Directorate General of Training

MECHANIC CONSUMER ELECTRONIC APPLIANCES

(Engineering Trade)

(Revised in 2019)

Version: 1.2

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 5

Developed By

Ministry of Skill Development and Entrepreneurship

Directorate General of Training

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1. COURSE INFORMATION

During the two years duration of Electronics Mechanic trade, a candidate is trained on Professional Skill, Professional Knowledge, Engineering Drawing, Workshop Calculation & Science and Employability Skillrelated to job role. In addition to this, a candidate is entrusted to undertake project work and extracurricular activities to build up confidence. The broad components covered under Professional skill subject are as below: -

FIRST YEAR: In this year, the trainee learns about safety and environment, use of fire extinguishers, artificial respiratory resuscitation to begin with. He gets the idea of trade tools & its standardization, familiarize with basics of electricity, test the cable and measure the electrical parameter. Skilling practice on different types & combination of cells for operation and maintenance of batteries being done. Identify and test passive and active electronic components. Construct and test unregulated and regulated power supplies. Practice soldering and de-soldering of various types of electrical and electronic components on through-hole PCBs. Assemble a computer system, install OS, Practice with MS office. Use the internet, browse, create mail IDs, download desired data from internet using search engines.

The candidate will be able to construct and test amplifier, oscillator and wave shaping circuits. Testing of power electronic components. Construct and test power control circuits. Identify and test optoelectronic devices. Able to achieve the skill on SMD Soldering and De-soldering of discrete SMD components. Verifying the truth tables of various digital ICs by referring Data book. Practice circuit simulation software to simulate and test various circuits. Identify various types of LEDs, LED displays and interface them to a digital counter and test. Construct and test various circuits using linear ICs 741 & 555.

SECOND YEAR: In this year, the trainee will be able to operate DSO and perform various functions like testing of signal Generator etc. Trainee will gain the skill by practicing SMD Soldering and De-soldering of various types of IC Packages. Able to identify the defects and do rework of PCB. Construct and test simple electrical control circuits and various electrical protective devices. Identify, prepare, terminate and test various types of electronic cables used in various electronic systems. Identify various functional blocks and I/O Ports of an8051-microcontroller system, familiarize with the instruction set of 8051 micro controller. Interface a model application with the Microcontroller kit and run the application. Construct and test various modulation/demodulation circuits. The trainee will identify, and test various types of sensors used in electronic industries and, construct and test circuits using various sensors system. They can construct and test analog and digital IC based application circuits as a part of project work.

The candidate will be able to prepare Fiber optic set up and execute transmission and reception. He is also required to coordinate activities for installation and commissioning of

Optical fiber cable (OF) as per the route plan.Trainees will be able to identify the defects & faults, and troubleshoot SMPS, UPS & inverter, replace modules of the LCD/LED TV and its remote. The trainee will be identifying the parts, control circuits, sensor of various domestic appliances. Install/ configure various control adjustment of the display, troubleshoot and secure LCD/LED projector, printer. Identify different accessories of DTH, site selection and installation and performtroubleshooting.Trainees will be able to install a CCTV system and configure the system for surveillance function. Identify various controls play switches, troubleshoot and replace faulty board of a home theater. They will plan and carry out the selection of aproject, assemble the project and evaluate its performance fordomestic/commercial appliances.

5. LEARNING OUTCOME

Learning outcomes are a reflection of total competencies of a trainee and assessment will be carried out as per the assessment criteria.

5.1 LEARNING OUTCOMES (TRADE SPECIFIC)

FIRST YEAR:

1. Perform basic workshop operations using suitable tools for fitting, riveting, drilling etc. observing suitable care & safety following safety precautions.
2. Select and perform electrical/ electronic measurement of single range meters and calibrate the instrument.
3. Test & service different batteries used in electronic applications and record the data to estimate repair cost.
4. Plan and execute soldering & de-soldering of various electrical components like Switches, PCB & Transformers for electronic circuits.
5. Test various electronic components using proper measuring instruments and compare the data using standard parameter.
6. Assemble simple electronic power supply circuit and test for functioning.
7. Install, configure, interconnect given computer system(s) and demonstrate & utilize application packages for different application.
8. Plan and carry out the selection of a project, assemble the project and evaluate performance for domestic/commercial applications.
9. Construct, test and verify the input/output characteristic of various analog circuits.
10. Plan and construct different power electronic circuits and analyse the circuit functioning.
11. Select the appropriate opto-electronics components and verify the characteristics in different circuit.
12. Assemble, test and troubleshoot various digital circuits.
13. Simulate and analyze the analog and digital circuits using Electronic simulator software.
14. Identify, place, solder and desolder and test different SMD discrete components and IC's package with due care and following safety norms using proper tools/setup.
15. Construct and test different circuits using ICs 741 Operational amplifiers & ICs 555 linear integrated circuits and execute the result.

SECOND YEAR :

16. Measure the various parameters by DSO and execute the result with standard one.

17. Rework on PCB after identifying defects from SMD soldering and de-soldering.
18. Construct different electrical control circuits and test for their proper functioning with due care and safety.
19. Prepare, crimp, terminate and test various cables used in different electronics industries.
20. Assemble and test a commercial AM/FM receiver and evaluate performance.
21. Test, service and troubleshoot the various components of different domestic/ industrial programmable systems.
22. Execute the operation of different process sensors, identify, wire & test various sensors of different industrial processes by selecting appropriate test instruments.
23. Plan and carry out the selection of a project, assemble the project and evaluate performance for domestic/ commercial applications.
24. Prepare fibre optic set up and execute transmission and reception.
25. Detect the faults and troubleshoot SMPS, UPS and inverter.
26. Identify, operate various controls, troubleshoot and replace modules of the LCD/LED TV and its remote.
27. Install/configure, various control adjustment of the display, troubleshoot and secure LCD/LED projector/ printer.
28. Install a DTH system by proper selection of site, assembling of different parts/ accessories and troubleshoot the system.
29. Dismantle; identify the parts, control circuits, sensors of a various domestic appliance. Estimate and troubleshoot.
30. Install a CCTV system and configure the system for surveillance function.
31. Identify, operate various controls play switches, troubleshoot and replace faulty boards of a home theatre and its remote.