



GOVERNMENT OF TAMILNADU

DIRECTORATE OF TECHNICAL EDUCATION, CHENNAI-25

STATE PROJECT COORDINATION UNIT

(Established under Canada India Institutional Cooperation Project)

CURRICULUM

Course Name	LED LIGHT ASSEMBLING AND TESTING
Course Code	EC/2020/029
Course Duration	60 Hours
Minimum Eligibility Criteria	10 th /+2/ITI/Diploma/Graduate
Pre-requisites (if any)	-
Course Objectives	Training module has been designed for the participants to • Understand the Parts and Functions of LED Lights • Learn the assembling of LED Lights • Learn the Testing of LED Lights
Course Outcomes	At the end of training, the trainees will be able to • Explain the function of Parts of LED Lights • Assemble LED Lights • Test the working of LED Lights
Expected Job Roles	LED Light Assembling Technician

TEACHING AND SCHEME OF EXAMINATION

Course Code	Course Name	Hours		Assessment Marks		Duration of Examination
				Min	Max	
EC/2020/029	LED LIGHT ASSEMBLING AND TESTING	Theory	20	10	20	3 Hours
		Practical	40	40	80	
		Total	60	50	100	

EC/2020/029– LED LIGHT ASSEMBLING AND TESTING

DETAILED SYLLABUS

Unit No	Modules	No.of.Hours	
		Theory	Practical
I	Introduction about LED	20 Hours	
1.1	What is an LED? – Indicator Lights – Illumination	10	10
1.2	Difference between indication and illumination		
1.3	Low Power requirement – High Efficiency		
1.4	Types of LEDs – Single color, High Power Led, Surface mount LEDs, Bi-Color LEDs, Multicolor LEDs , Flashing LEDS, Alphanumeric LEDS		
1.5	Handling of Tools needed for LED Manufacturing: Soldering Iron, De-soldering pump, Magnifying lamp with Lens, Mustimeter, Lux Meter, LED Testing Kit		
II	LED Bulb: Raw Materials	20 Hours	
2.1	LED Raw Materials: LEDs, Metal PCB, LED Housings and Casings, Plastic Cover and Diffuser, Heat sink, Thermal Paste, Teflon wire, Teflon Tape, Wire sleeve, Insulation Tape	10	10
2.2	Introduction about LED Driver – Functions of Driver – Components used in the Driver circuit – Block Diagram of LED Driver – Types of LED Driver		
2.3	SMPS block diagram – Sections and components used in the SMPS – Fault finding and trouble shooting		
2.4	Types of LED Fitting: Lock type, Indian Screw Type		
III	Assembling of LED Bulb	20 Hours	
3.1	3W and 5 W LED AC Lamp	-	20
3.2	3W Ceiling down light		
3.3	3W Spot Light		
3.4	12W Street Light		
3.5	10W Two feet Tube light Diffused Manufacturing		
Total Theory / Practical Hours		20	40
Total Hours		60	

HARDWARE REQUIREMENT

S.NO	LIST OF TOOLS /EQUIPMENTS
1	LED Light, PCB, Driver, Wires, Casing, Holder
2	Electrical Tools Set, LED Test Kit
3	Multimeter, Lux Meter

SOFTWARE REQUIREMENT

S.NO	NAME OF THE SOFTWARE
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REFERENCE BOOKS

S.NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1	Introduction to Light Emitting Diode Technology and Applications	Gilbert Held	CRC Press
2	LED Lighting	Sal Cangeloso	"O'Reilly Media, Inc."
3	Light Emitting Diodes for Agriculture: Smart Lighting	S Dutta Gupta	Springer

ASSESSMENT AND CERTIFICATION

S.No	Criteria for assessment
1.	A trainee will be assessed based on the performance in End Examination for Theory and Practical conducted internally in the CIICP Project Polytechnic College for a duration of 3 hours
2.	A trainee must have 75% of attendance to appear for End examination in Theory and Practical.
3.	The assessment for theory part will be based on the marks scored in the end examination on the knowledge bank of questions (1 word/objective type questions)
4.	The assessment for practical part will be based on the marks scored in the end examination conducted by the CIICP Project Polytechnic and assessed by the Examiners approved by Strategic Plan Implementation Committee (SPIC) of the project polytechnic.
5.	The passing criteria for successful completion of training is every trainee should score 50% of marks in theory and practical examination.
6.	On successful completion of training, certificate will be issued to the participants by the Directorate of Technical Education through the Project Polytechnics.

END EXAMINATION

ALLOCATION OF MARKS

S.NO	Description	Max. Marks
1.	Theory Examination	20
2.	Practical Examination	
	a)Objective and Circuit Diagram	20
	b)Procedure and Connections / Execution	20
	c)Result and Viva	20
	d)Record	20
Total Marks		100

THEORY MODEL QUESTION PAPER

EC/2020/029 – LED LIGHT ASSEMBLING AND TESTING

(Maximum Marks: 20)

(N.B: Answer any Twenty questions)

20x1= 20 Marks

1. What is LED?
2. Write any two differences between indication and illumination.
3. Write any two the types of LED.
4. What is the use of Flashing LED?
5. Define high power LED.
6. What is surface mount LED?
7. Define Alphanumeric LED.
8. Draw the structure of Bi-color LED.
9. What is the use of Soldering Iron?
10. What is Multimeter?
11. What is Luxmeter?
12. What are the parameters are used to measure the LED testing?
13. Write any two semiconductor materials used to manufacture LEDs.
14. What is metal PCB?
15. Define heat sink.
16. What is the use of thermal paste?
17. What is the use of insulation tape?
18. Write any functions of LED driver.
19. Write the types of LED driver.
20. What are the components used in LED driver circuit?
21. What are the sections are used in SMPS?
22. Write the components are used in SMPS.
23. Write the types of LED fitting?
24. Write any two types of LED Bulbs
25. Write any two steps to assemble the LED Lamp.