



**GOVERNMENT OF TAMILNADU**  
**DIRECTORATE OF TECHNICAL EDUCATION, CHENNAI**  
**STATE PROJECT COORDINATION UNIT**  
**(Established under Canada India Institutional Cooperation Project)**  
**CURRICULUM**

Course Name	<b>PLUMBING</b>
Course Code	ME/2020/025
Course Duration	60 Hours
Minimum Eligibility Criteria	10 <sup>th</sup> Std
Pre-requisites (if any)	-
Course Objectives	Training module has been designed for the participants to <ul style="list-style-type: none"> <li>• Understand the use of various tools.</li> <li>• Understand the various valves using plumbing.</li> <li>• Understand the various fittings.</li> <li>• Understand the causes for damage in plumbing system.</li> <li>• Understand the different sanitary fitting, wash basin, sinks.</li> </ul>
Course Outcomes	At the end of training, the participants will be able to <ul style="list-style-type: none"> <li>• Prepare the Plumbing system as per layout.</li> <li>• Install wash basin, sinks and sanitary fittings.</li> <li>• Diagnose the faults in the plumbing system.</li> <li>• Carry out maintenance.</li> </ul>
Expected Job Roles	Plumbing Technician (Plumber)

TEACHING AND SCHEME OF EXAMINATION						
Course Code	Course Name	Hours		Assessment Marks		Duration of the Examination
				Min	Max	
ME/2020/025	<b>PLUMBING</b>	Theory	20	10	20	3 hours
		Practical	40	40	80	
		Total	60	50	100	

**ME/2020/025 - PLUMBING**DETAILED SYLLABUS

Unit No.	Modules	No. of Hours	
		Theory	Practical
<b>I</b>	<b>Plumbing fundamentals</b>	<b>8 Hours</b>	
1.1	Familiarization of the trade, types of works to be done plumbing - Use of hand tools, names of the tools, power point presentation on tools - Description of soil waste pipe, vent pipe and its importance, siphon pipe and its importance - Types of traps and its uses - Slow sand filters and mechanical filters, impurities in water pipes.	4	
1.2	<b>Practical:</b> Importance of the trade, safety precautions to be taken while doing plumbing works - First aid, usage of tools and determine the materials from which they are made - Cutting of pipes, fixing of waste pipe with bends, junction, jointing, fixing of vent pipe - Fixing of floor taps, Nandi tap in bath and kitchen.		4
<b>II</b>	<b>Valves and fittings</b>	<b>6 Hours</b>	
2.1	Valves used in plumbing, Sluice valve, reflux valve, scour valve, pressure relief valve - Free system, grid iron and radial system. Description of C.I. pipes and fittings.	2	
2.2	<b>Practical:</b> Simple pipe connection using G.I - Laying water pipe connection to the sanitary fittings. Types of valves and fittings - Laying and joining of cast iron pipes with lead pouring and lead caulking C.I. socket pipe heavy, duty joining molten lead - Practice on cutting and shaping PVC pipes to sizes, use and fixing of PVC pipes - Installing hand pump, finding out the defects and rectifying the same.		4
<b>III</b>	<b>Drainage system, tanks and bathroom fittings</b>	<b>16 Hours</b>	
3.1	Water main in street water storage as well as soil pipe and drainage system - PVC description of ISI specifications - Methods applied for lift pump valves and taps used in service connection, air lock in the pipes and its removal -Storage tanks for general water supply purpose, Steel tanks, masonry tanks automatic float switch underground tanks - Causes for damage in taps, valves and water meter and tank, etc. methods of rectification and modification.	4	

3.2	<b>Practical:</b> Fixing of showers in the toilets - Erecting simple water supply system as per layout. Introducing valves wherever necessary and connecting to the storage tanks - Reconditioning of taps, valves, flushing tanks, testing for correct functioning - Installing a bath tub with hot and cold connection with shower water connections and connecting the outlet to the drainage line or inspection chamber.		12
<b>IV</b>	<b>Sanitary fittings</b>	<b>18 Hours</b>	
4.1	Description of sanitary fitting. General points to be observed when choosing sanitary fitting - Description of Indian style W.C. and R.W.C. standard sizes, types precautions to be observed while installing - Types of urinal, description of flushing, devices, Lipper automatic tanks, Principle of siphon ball valves in a flushing system .Description of wash basin, its standard sizes and accessories required for installing wash basin, sizes of mirror, towel rail, glass shelf, precautions to be observed while installing - Description sink types of sink, sizes of kitchen, sink pantry, laundry sink, sizes of waste outlets - Description of bath tub, accessories required for installing a bath tub -Importance of introducing the trap of the sanitary fittings. Deep seal traps and low seal traps - Conservancy system and water carriage system Combined system.	6	
4.2	<b>Practical:</b> Installing Indian and western WC -, cistern with flush pipe connection, fixing of double flap seat, connecting the outlet to the drainage line- Installing a urinal with automatic flushing system connecting the same to the inspection chamber - Installing of wash basin with lead washer or PVC waste pipe, connecting of the pillar tap to service connection, soap dish, connect the waste to the gully trap or floor trap- Installing a sink with drain board, waste outlet connecting the waste outlet with all fitting water service connection the sink , over flow and connection the sink - Method of arranging the waste outlets for urinals.		12
<b>V</b>	<b>Sewage system, hot water system</b>	<b>12 Hours</b>	
5.1	Standard length of store ware pipes, sizes, self cleaning velocity, sewage system - Earth work excavation and laying drain pipes - Precautions to be observed - Description of vent pipes its necessity - Traps used in drainage line, man holes, cess pool, soak pits, septic tanks, size of septic tank according to the users -Preparation andfixing up hot water supply as per layout. Prevention of corrosion.	4	

5.2	<b>Practical :</b> Flushing arrangements - Laying and jointing of store ware pipe with help of sight rail and bonding rod, jointing of stone ware pipes- Laying and jointing of store connecting the same to a chamber -Provide vent pipe from a starting chamber construction of soak pits, and septic tanks - Fixing up hot water supply. Domestic boilers, geysers, installation of hot water system. Cleaning of fittings, leakage and repairs.		8
<b>Total Theory and Practical hours</b>		<b>20</b>	<b>40</b>
<b>Total hours</b>		<b>60</b>	

#### HARDWARE REQUIREMENT

S. NO.	LIST OF TOOLS / EQUIPMENTS
1.	Open End, Closed end , combination Spanners.
2.	Adjustable Spanner.
3.	Socket set, Tubular Spanner.
4.	Cutting Pliers, Circlip Pliers.
5.	Screw Driver set, Files, Hacksaw frame and Hacksaw.
6.	Torque Wrench.

#### REFERENCE BOOKS

S.NO.	NAME OF THE BOOK	AUTHOR	PUBLISHER
01	The Complete Guide to Plumbing	Black & Decker	Cool Springs Press,UK
02	Ultimate Guide: Plumbing	----	Fox Chapel Publishing,USA
03	Plumber Trade- Theory and Practicals	----	National Instructional media institute, Chennai

### 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 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 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) Aim and Procedure	20
	b) Demonstration / Execution	25
	c) Result & Viva Voce	15
	d) Record	20
Total Marks		100

## THEORY MODEL QUESTION PAPER

ME/2020/025 – PLUMBING

(Maximum marks: 20)

(N.B: Answer any **Twenty** questions)

**20x1=20 Marks**

1. What is plumbing?
2. What is the use of hand tools?
3. Write any two importance of siphon pipe.
4. Write any two types of traps.
5. What is the use of vent pipe?
6. Name any two valves used in plumbing.
7. Write any two difference between free and grid system
8. Write any two types of fittings.
9. What is the use of PVC pipes?
10. Write any two advantages of CI pipes.
11. Name any two parts of lift pump.
12. How to remove of air lock in pipes?
13. Write any two causes for damage in taps.
14. Write any two difference between steel tanks and masonry tanks
15. Write any two causes for damage in valves.
16. Write advantages of sanitary fittings.
17. What is the principle used in siphon ball valves in a flushing system?
18. What is the size of mirror?
19. Write any two difference between deep seal and low seal traps.
20. What is the size of towel rail?
21. What is the standard length of store ware pipes?
22. What is use of soak pits?
23. Write any two parts of hot water supply.
24. What is meant by corrosion?
25. What is self cleaning velocity?