

GROUP-41

Plumber (Level- Matric+ ITI Diploma in Plumbing)

1) General awareness, Reasoning, Mathematics, Science, History including Haryana related history, current affairs, literature, Geography, Civics, Environment, Culture etc.- (Weightage 20%)

2) Computer terminology, Fundamentals, word software, excel software, Power point, internet, web browsing, Communication, emails, downloading and uploading data on websites etc. -

(Weightage 10%)

3) Subject related syllabus-

(Weightage 70%)

Professional Skill

Importance of safety and general precautions required for the trade, Types of services have to plan. • Basic Bench fitting, Plumber's common hand tools - names, description and material from which they are made, • Description, types and uses of holding device, hammers & cold chisels, cutting tools. • Description of simple fitting operations hack sawing, punching and filing. • Types of files used commonly. • Marking instruments and their use of simple drilling machine. • Method of using drills. • Description of simple bench drilling Machine. • Description of Grinding and Chisel. • Description of different types of locking and fastening devices.

Thread cutting on Metal, Studs and pipes fittings

About different types of pipes-GI, CI, DI, PVC/ CPVC, PPR and HDPE etc. • About different Types of Pipe Fittings: - Socket, Elbow, Tee, Union, Bend, Cap, Plug, Cross, Ferrule etc. • About different types of Thread cutting.

Gas Welding

Purpose of Gas welding. • Method of gas welding • Safety precautions to be observed -Methods of soldering and brazing - fluxes used & Types of fluxes precautions to be observed. • Hard & soft solders - their properties, composition and uses.

Mason's works

Names and description of Mason's hand tools and their uses. • Method of making holes in walls and floors. • Types of tools used and various Processes. • Concept of bricks, lime and cement. • Preparation of mortars with various materials of varying composition. • Common brick joints. • Description of bonds. • Scaffolding & plastering. • Define Plain cement concrete, RCC and its proportion, • Grades of coarse aggregate and fine aggregate, • Knowledge of waterproofing compound. • Knowledge of Building Plan and Cross section of wall. • Identify plumbing services required for each type of building according to usage.

Cutting and Bending of Pipes

Description of plumber tools and Equipment Ratchet brace, Threading die, Pipe wrench, sliding wrench, Spanner set, Chain Wrench etc. and their safety. • Care & use of tools. • Pipes of different kinds • Method of Pipe bending in different dia. • Plumbing Symbols and Code for Tools & Materials on water line.

Joining PVC pipe by heat process or Welding

Equipment and tools for hot gas welding and electric hot plate for PPR pipe joints, Different kinds of Joints, Fittings and Materials in joining pipes: - PVC/CPVC, PPR and HDPE etc., Description of pipe dies, their uses, care and precaution. • Metric specification of various pipes. • Standard pipe threads. • Method employed for bending, Joining and fixing PVC pipe. • Joining material for water and gas pipes. • Use of blow lamp.

Composition of Water

Sources of water • Hard & Soft water, temporary hardness & permanent hardness. • Impurities of water – organic and inorganic impurities. • Water purification stages and methods. • Static water pressures and measurement of pressures. Bursting pressure, • Expansion of water on freezing and heating. • Bernoulli's principles • Pascal's law. • Pressure of water on the sides of cistern or tank. • Water hammer in pipes. • Description and working of water hammer arrester.

Align and lay humid pipe line

Use of hummed pipes of different sizes. • Method of laying out pipes alignment and joining, Description of various pipe joints- straight, Branch, Taft and blow, Expansion joints. Solders and fluxes used in joints.

Installation and maintenance of different Electric pumps

Description of Plumber's materials Lead, tin, Zinc, solder, copper, red lead etc. and their uses. • Water supply system of a small town. • Description and types of pumps viz. suction pump, Centrifugal pump etc. Contamination of water in a well.

Construction of inspection chamber, manhole, gutter, septic tank, socket etc.

Inspection chamber, septic tank, description of drains, cesspools, soak pits etc. • Types of traps • layout of drainage system, Method of bending pipes by hot and cold process. • Method of testing drainage lines.

Removal of leakage in pipe line

Method of dismantling and renewal of the valves and pipes. Leaks in pipes and noises in plumbing. • Installation of water meters. Air lock in pipes and its removal, Description of cocks & valves-their types, materials & advantages for particular work. • Description of different type of diverts i.e., two way and three ways • Sensor system for urinals and wash basin etc., Erecting rain water and drainage pipe system, • Installation of sanitary fittings, inspection and testing of water supply system. • -Pipe alignment and slope. -Prevention of water hammer. • Storage tanks for general water supply propose. • Test for water supply pipes. • Description of sanitary fittings, • general points to be observed when choosing sanitary. • Description of concealed flushing cistern.

Domestic drainage system

General layout, one pipe system, specifications of Materials required. Method of testing leakage. Different types of traps, ventilation, anti-siphonage and sinks. About Fire hydrants and their fittings, Concept of heat and Temperature. Method of transmission of heat. Heating system by different thermal units. Domestic hot and cold water. General layout, specification of materials required and Connection of pipes to mains. Tracing leakage. Repairs to service main. Domestic boilers and Geysers. Method of ventilating pipe. Precaution against air Poisoning. Fixing of solar water system, Plumbing and sanitary symbols and plumbing codes for all tools and materials Corrosion - causes and remedies, prevention. Corrosion due to electrolytic action. Effect of water and frost on materials. Layout of pipes as per drawing. Analysis quantity measurement and abstract rate of plumbing and sanitary work.

Bill of Quantity and Estimation

Preparation of bill of quantity • Preparation of Estimation.

Engineering Drawing

Introduction to Engineering Drawing and Drawing Instruments– • Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument Free hand drawing of– • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the sketches. • Free hand drawing of hand tools and measuring tools. Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Reading of dimension and Dimensioning Practice. Symbolic representation– • Different symbols and Pipe joints used in the trade. Reading of layout plan drawing in piping.

WORKSHOP CALCULATION & SCIENCE

Unit, Fractions Classification of unit system Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units Measurement units and conversion Factors, HCF, LCM and problems Fractions - Addition, subtraction, multiplication & division Decimal fractions - Addition, subtraction, multiplication & division Solving problems by using calculator Square root, Ratio and Proportions, Percentage Square and square root, Simple problems using calculator Applications of Pythagoras theorem and related problems Ratio and proportion Ratio and proportion - Direct and indirect proportions Percentage - Changing percentage to decimal and fraction Material Science Types metals, types of ferrous and non-ferrous metals Physical and mechanical properties of metals Properties and uses of insulating materials Mass, Weight, Volume and Density Mass, volume, density, weight and specific gravity. Related problems for mass, volume, density, weight and specific gravity Heat & Temperature and Pressure Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature Basic Electricity Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC, DC their comparison, voltage, resistance and their units Mensuration Area and perimeter of square, rectangle and parallelogram Area and perimeter of Triangles Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels Trigonometry Measurement of angles Trigonometrical ratios.

Important Note: The Weightage as mentioned against the syllabus is tentative & may vary.