SYLLABUS OF SKILL TEST

POSITION: TECHNICIAN (ENGINEERING)

Full Marks-150 (03X50) **Duration: 3 HRS**

NOTE: Skill Test is only applicable to those candidates who qualify the Online Written Test scheduled on 26.06.2022

The Skill Test Question Paper will consist of three (03) following Sections

a) **MECHANICAL-Section A**
b) **ELECTRICAL- Section B**
c) **ELECTRONICS-Section C**

MECHANICAL-Section A
(50 Marks, Duration-01 Hr)

1. **Description of plumber tools and Equipment** - Ratchet brace, Threading die, Pipe wrench, Sliding wrench, Spanner set, Chain Wrench, Tube bender etc. and their safety.
2. **Fitting Section** - Perform flat filing, marking, punching, hack sawing, drilling, tapping, reaming, dieing to make a job as per drawing and check using precision measuring instruments Viz. Vernier caliper,Micrometer, etc.
3. **Common methods of joining tubes and necessary safety precautions to be followed** -
    - Flaring
    - Swaging
    - Brazing
    - Bending
4. **Cutting and Bending of Pipes** - Cutting of G.I Pipes of different Diameter and Sizes by cutting tools, Cutting of C.I Pipe of different Diameter and Sizes by cutting tools, Cutting of AC Pipe of different Diameter and Sizes by cutting tools, Cutting of all kinds of PVC Pipe of different Diameter and Sizes by cutting tools, Bending of G.I Pipe as per drawing using Tube bender, Bending of Steel Pipe as perdrawing using Tube bender.
5. **Joining of pipes** - Cutting different diameter of MS pipes in different angles, Joining of Pipe in same dia by gas welding, Joining of Pipes in different diameter by gas welding, Joining of Pipes at different degree angle, Joining of pipes for 90 degree bend by gas welding, repair work by welding.

ELECTRICAL-Section B
(50 Marks, Duration-01 Hr)

1. **Circuits and Principles**
   a. Maintain DC circuits
   b. Maintain single-phase AC circuits
2. **Installations and Testing**
   a. Install single-phase incoming supply system
   b. Install lighting circuits
   c. Install power circuits
   d. Install system wiring in a control panel
   e. Install Earthing System
   f. Maintain safety and health of the individual
3. **Machines and Control**
   a. Install DC motor and controller
   b. Maintain DC motor installation
   c. Maintain electrical motor starters and control circuits
   d. Maintain electrical drive systems
   e. Install AC motor and motor controller
   f. Maintain AC motor installation
4. **Drafting and Design**
   a. Electrical diagrams and drawings for residential premises;
   b. Electrical diagrams and drawings for commercial and industrial premises
   c. Switch-boards/Control Panel drawings

ELECTRONICS-Section C
(50 Marks, Duration-01 Hr)

1. **ELECTRONIC DEVICES**
   a. Basic Concept of Electronics and its application.
   b. Diode theory and applications :Principle of working and use of PN junction diode, Zener diode and Light Emitting Diode (LED)
   c. Integrated circuits (I.C) & its application.
2. **ELECTRONIC CIRCUITS**
   a. Principles of working of different types of Rectifiers with Basic idea about forward bias, reverse bias and VI characteristics and Calculation of various rectifier parameter.
   b. Testing of diode with multi-meter, half wave rectifier, full wave rectifier, bridge rectifier, RC and LC filters, Design of un-regulated DC power supply, Clipping circuit, Clamping circuit, voltage multiplier circuit, Reading datasheet of semiconductor diode
   c. Functions of filters and classification of simple Filter circuit (Capacitor, choke input and **π**)
3. **MEASURING INSTRUMENTS**
   a. Multimeter: Working Principle and Applications of Analog and Digital Multimeter and their differences
   b. Working principle and Application of Oscilloscope (CRO and DSO).
4. **DIGITAL CIRCUITS**
   a. Number system and codes: Binary, octal, hexadecimal and decimal Number systems and their inter conversion.
   b. Boolean Algebra: Basic logic circuits: Logic gates (AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR and their truth tables,), Universal Gates, Laws of Boolean algebra, De-Morgan's theorem, Min term, Max term, POS, SOP, K-Map, Simplification by Boolean theorems, don't care condition.
   c. Verify functionality of gates using AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR using Digital Trainer board.

Important Instructions:

a) All candidates have to appear the same question Paper consisting of questions from each of the 03 above sections.
b) The weightage of the three sections is mentioned below

Sl. No	Section Name	Weightage of each section
1	MECHANICAL-Section A	40%
2	ELECTRICAL- Section B	30%
3	ELECTRONICS-Section C	30%

c) The above weightage will be used to determine the total marks and the merit of the candidate.