

Society for Applied Microwave Electronics Engineering and Research
IIT-B Campus, Hillside Powai, Mumbai 400-076

Dated: 23.04.2026

Pattern of Question paper & Broad topics for Written Test for Advt. No. 10/2025 :-

Composition of the question paper:-

Question paper will be divided into three parts A,B and C.

Part A - Comprising of General Knowledge, Logical Reasoning/Mental Ability, Arithmetic with a weightage of 20% (20 questions of each 1 Mark)

Part B - General Technical questions with weightage of 30%

(30 Questions of each 1 Mark)

(SSC Level Mathematics 50%, Physics 40%, Chemistry 10% approximately)

Part C - Specialization of the candidate in the qualifying examination (Broad topics given below*)

(50 questions of each 1 Mark)

* The questions for the written examination of “Technical and Scientific Assistant Cadre – REGULAR” will be along the lines of (but not necessarily limited to) the broad topics given below.

Note: SAMEER may suitably decide to opt for Computer based test (CBT) or pen-and-paper test depending upon the number of candidates.

Part C - The broad topics are given below:-

I. Broad topics for Diploma Level Candidates (SA and SO-A)

Sr. No.	Branch	Broad topics
1	Electronics Engineering	Applied Mathematics, Electronic Components and Devices, RF and Microwave Engineering, Digital Electronics, Electronic Devices and Circuits, Microprocessor and Peripheral devices, Electronics Instrumentation and Measurement, C Programming, Control Systems, Optical Fibre and Satellite Communication, Principles of Analog and Digital Communication, Microcontrollers and Embedded System and relevant topic from branch.
2	Electrical Engineering	Electrical Machine, Generation, Transmission and Distribution of Electrical Power, Electrical Circuit and Analysis, Electrical and Electronics Instrumentation and Measurement, Industrial Electronics and Control, Electrical and Electronics Engineering Materials, Maintenance and Repair of Electrical & Electronics Equipment, Electricity and Magnetism, Electrical Engineering Drawing, Estimation & Costing, Electrical Circuit Analysis, Electrical Machines, Electrical Power Engineering and relevant topic from branch.
3	Civil Engineering	RCC Design, Steel Design, Concrete Technology, Construction Material, Building Construction, Structural Mechanics, Transportation Engineering, Surveying, RS & GIS, Quantity Surveying, Geo-Technical Engineering, Hydraulics, Water Resources Engineering, Environmental Studies, Public Health Engineering, Construction Management and relevant topic from branch.

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II. Broad topics for ITI Level Candidates (TECH A, B, C and D)

Sr. No.	Trade	Broad topics
1	Turner	Introduction to Trade, Occupational Safety and Energy Conservation, System of Measurements, Tools and Equipment, Lubricant and Coolant, Limit, Fit and Tolerance, Lathe, Jigs & Fixtures and Surface Finish, Screw Threads, Taper Turning and Gauges, Welding, Grinding and Abrasives, CNC Machines and Automation and Quality Tools, Basic Science, Heat treatment, Non-destructive testing, Workshop Calculations, Engineering Drawing, Projection, Symbolic Representation and Free Hand Sketching and relevant topic from trade.
2	Fitter	Marking, Tools and Measurements, Material (Iron, Steel and other metals), Drilling, Instruments, Bearings, Lathe and other processes, Nut and Bolts, Pipes and Pipefitting, Welding, Power Transmission, Lubricants and Lubrication, Pneumatics and hydraulics and relevant topic from trade.
3	Machinist	Workshop Safety, Tools Fundamentals, Measurement and Marking Tool and it's applications, Drilling Machine and Slotting Machine, Types of Keys, Jigs and Fixtures, Lathe Machine, Maintenance of Machine, Coolant and Lubricant, Milling Machines & Indexing heads, Metals and Heat Treatment, Grinding Machine, Gauges, Gears, CNC Lathe, Vertical Machining Centre, Engineering Drawing and relevant topic from trade.
4	Welder (Gas & Electric)	Introduction to Trade, Occupational/Workshop Safety and Energy Conservation, System of Measurements, Common Tools and Equipment in Welding Workshop, Metal Joining Methods, Heat treatment, Workshop Calculations, Basic Science, Electric Arc Welding, CO2 Welding, TIG Welding, MIG Welding, Gas welding and cutting, Inspection method and cost estimation, Advanced welding process, Weld joints and symbols, Properties of Metals, Projection, Symbolic Representation and Free Hand Sketching, Engineering Drawing and relevant topic from trade.
5	Draughtsman (Mechanical)	Basic Safety and importance of trade, Basic Drawing Instruments, Basic Geometrical Shapes, Dimensioning, Projections, Interpenetration of Shapes, Development of surfaces, Isometric projections and drawings, Fasteners and their Applications, Power Transmission, Engineering Scales, Bearing, Hangers and Brackets, Fundamental of Computers and Hardware Basics, CAD-2D, CAD-3D and relevant topic from trade.
6	Electroplater	Introduction to Trade, Occupational Safety and Environmental Protection, Basics of Electrochemistry, Surface Preparation (Cleaning, Degreasing, Pickling), Electroplating Processes (Copper, Nickel, Chromium, Zinc, Silver, Gold), Anodes and Cathodes, Plating Bath Composition and Control, Current

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		Density and Voltage Control, Barrel Plating, Electroplating on Plastics, PCB Plating and Etching, Defects in Electroplating and Remedies, Thickness Measurement and Testing (Adhesion, Corrosion), Anodizing and Electroless Plating, Waste Treatment and Pollution Control, Maintenance of Plating Shop, Workshop Calculation, Engineering Drawing and relevant topics from trade.
7	Electronics Mechanic	Introduction to Trade, Occupational Safety and ESD Protection, Electronic Components (R, L, C, Semiconductor Devices), Analog and Digital Electronics, Power Supply (Linear and SMPS), PCB Design, Soldering and Desoldering Techniques, Testing and Measuring Instruments (Multimeter, CRO/DSO, LCR Meter), Amplifiers and Oscillators, Microcontroller Basics, Embedded Systems and IoT Basics, Consumer Electronics (UPS, Inverter), Troubleshooting and Maintenance Techniques, Optical Fiber Basics, Engineering Drawing and relevant topics from trade.
8	Instrument Mechanic	Introduction to Trade, Industrial Safety Practices, Basics of Measurement and Instrumentation, Sensors and Transducers (Temperature, Pressure, Flow, Level), Calibration Techniques, Process Control Instruments, Control Valves and Actuators, Pneumatic and Hydraulic Systems, PLC, SCADA and DCS Basics, Loop Diagrams and P&ID, Signal Conditioning, Data Acquisition Systems, Electronic and Digital Instruments, Industrial Process Control Systems, Installation and Maintenance of Field Instruments, Troubleshooting Techniques, Engineering Drawing and relevant topics from trade.
9	Plumber	Introduction to Trade, Occupational Safety and Health, Tools and Equipment, Types of Pipes (PVC, GI, Copper, HDPE), Pipe Fittings and Joints, Plumbing Materials and Accessories, Water Supply Systems, Sanitary Fittings Installation, Drainage and Sewerage Systems, Blueprint Reading, Pipe Bending and Threading, Installation of Pumps, Tanks and Valves, Domestic and Industrial Plumbing Systems, Leak Detection and Repair, Rainwater Harvesting Systems, Water Conservation Techniques, Maintenance and Troubleshooting, Workshop Calculation and Engineering Drawing and relevant topics from trade.
