

NATIONAL REMOTE SENSING CENTRE
ADVERTISEMENT NO.NRSC/RMT/3/2017 DATED 20.05.2017
Name of the Post : Technician – B (Instrument Mechanic)
Post Code : TB 4

SYLLABUS – WRITTEN TEST

Type of Examination	:	Objective Type (Multiple Choice Questions)
No. of Questions	:	80 Questions
Apportionment of marks	:	Each Question carries one mark.
Duration of Examination	:	02 Hours

Qualification Requirement : ITI/NTC/NAC in Instrument Mechanic Trade.

(Examination will broadly comprise of below mentioned topics as covered in ITI/NTC/NAC in Instrument Mechanic Trade.)

1. Electrical components, Ohm's law & Kirchhoff's laws
2. Magnet and magnetism
3. Principles of alternating current
4. Introduction of AC and DC generators
5. Transformer
6. Basics of electrical measuring instruments
7. AC instruments and DC instruments Meter range extension
8. Ohm meters
9. Semi conductor Devices, Rectifiers, Filters, Voltage regulators, Power Supply units, Oscillators, Operational Amplifier.
10. Number systems, Logic Circuits
11. Digital meters, CRO, A/D and D/A converters
12. Introduction to Computers and microprocessor
13. Instrument characteristics & Statistical analysis
14. Principle of Pressure in Liquids & Gases.
15. Electrical pressure transducers, Low Pressure Measurement, Pressure Instrument
16. Principles of level measurement, Pressure head instruments, Electrical method conductivity, Solid level measurement, Temperature measurement, Bimetallic and fluid filled temperature instruments, Electrical temperature instrument.
17. Pyrometry, Recorders, Control valves.
18. Introduction to controllers, types of controller and their operation.
19. Digital control systems, Networking protocols, Fundamentals of SCADA and DCS.
20. Identification of symbols of switches and relays, electrical motors, various types of transformers, electrical measuring instruments, transmitter and sensors, pressure sensors. Functional block diagram of pressure indicator and transmitter, temperature sensors, indicators and transmitter, various types of recorders,

Syllabus for Skill Test:

1. Measuring current, voltage & resistance. Resistance by color code. Soldering by temperature controlled soldering station. Soldering and de soldering of various components in Printed Circuit boards.

2. Verification of ohm's law. Measurement of Resistance & Voltage in series and parallel circuits.
3. Construct circuits with SPST, SPDT, DPDT switches.
4. Calculate series and parallel combination Resistance, Inductance and Capacitance. Calculate Q factor of Inductance and capacitance.
5. Experiments on transformer. Measuring current & Voltage in primary & secondary windings. Testing auto transformer in its various tapping.
6. Explain how to extend the range of measurement of ammeter using shunt and series resistances, multipliers for voltmeter. Finding meter resistance.
7. Measurement of three phase and single phase power by voltmeter and ammeter.
8. Making half wave & full wave rectifiers, center tap & bridge full wave rectifiers. Study of ripple factor in half wave & full wave rectifier with various filter circuits.
9. Explain different types of PCBs, Soldering techniques. Soldering and de-soldering of Surface mounting device(smd).
10. Explain the truth tables of various logic gates, Flip-Flops, adders and subtractors.