

Syllabus for Computer Based Test (CBT)

As per pattern of online CBT mentioned in Advertisement No. NIRRCH/12/T/07/2023 published on 16.10.2023 [Pt. 6. (iv)] syllabus of the exams will be as follows. Please note that the syllabus mentioned against each category indicates broad categories and is not limited to terms mentioned.

Syllabus for Common Topics in All Posts:

Section A General Intelligence and Reasoning	Analogy, Classification, Word formation, Statement and conclusions Syllogism, Statement and assumptions, Statement and arguments, Coding-Decoding, Blood Relations, Passage and conclusions, Alphabet test, Series Test, Number, Ranking and time sequence, Direction sense Test, Decision-making test, Figure series, Input/output, Assertion and reasoning, Sitting Arrangement, Series test, Odd figure Out, Analogy, Miscellaneous Test etc.
Section B General Awareness	Current affairs, Indian History, Geography, Polity, Economics, ICMR-related questions etc.
Section C Quantitative Aptitude	Ratio and proportion, Averages, Time and work, Speed, Distance and time, Mixture and allegation, Stocks and shares, Percentages, Partnership, Clocks, Volume and surface Area, Bar & Graphs, Line charts, Tables, Height and Distances, Logarithms, Permutation and combinations, Simple and compound interest, Equations, Probability, Trigonometry, Profit, Loss and Discount, Mensuration, Elements of Algebra, Data Interpretation, Pie charts etc.
Section D General English	Homonyms, Antonyms, Synonyms, Word Formation, Spelling, Spotting Errors, Phrases and idioms, Direct and Indirect speech, Active/ Passive voice, Reading Comprehension: Theme, Detection, Passage completion, Topic rearrangement of passage, Deriving Conclusion etc.

Trade/Branch/Specialization related Syllabus (Section E):

Post	Technical Assistant (Social Worker)
Subject/ Topic	Subtopics
Introduction to social work	Social work concepts, Principles, History and Perspectives Of Social Work Global & India, Theories of Social Work, Social work ethics, NASW Code of Ethics and Standard Practise, Major Social Welfare Programs & Legislations in India, Major social issues in India & role of Social worker, etc.
Methods of Social work Practise	Generalistic Social work, Social case work, Social Group work, Community organisation, Working with family and children, Working with Women, Social Welfare administration, Social legislation, Social policy, etc.
Research Methodology	Definition of research, Types of research, Quantitative, Qualitative and Mixed methods, Types of data: Primary and secondary, Methods of data collection, Tools of Data collection, Data analysis, Report writing, Basic steps in research, Research ethics, ICMR guideline of Human studies, etc.

Post	Technical Assistant (Life Sciences)
Subject/ Topic	Subtopics
Zoology, Endocrinology, Molecular Biology, Laboratory Techniques	Basic principles of human and animal reproduction, endocrinology, molecular biology, genetic engineering, infection, disorder of male and female reproductive tract, immunological aspects, physiology and pathology during pregnancy, Transcription and translation, Biochemistry, Haematology, PCR, Immunology, Culture based techniques etc.

Post	Technical Assistant (Dietician)
Subject/ Topic	Subtopics
Energy and metabolism	Energy expenditure, Basal metabolic rate, Principals of diet planning, Food pyramid, etc.
Nutritive value	Nutritive value of grains, Legumes, Nuts, Vegetables, Oil, Animal products, etc.
Diet planning	Anaemia, Thyroid diseases, Pregnancy, Lactation, Diabetes, PCOS, Weight loss, etc.
Digestive system	Digestive enzymes, Micro and macronutrient absorption, Recommended daily allowance carbohydrates, Proteins and lipids, etc.

Post	Technical Assistant (Public Health)
Subject/ Topic	Subtopics
Epidemiology and Demography	Burden of disease, Population demographics, Surveys, Data analysis, etc.
National health programs	National Health policy, NHM, etc.
Biostatistics	Study designs, Sample size, Analysis Quantitative and Qualitative Data, etc.
Ethics and Project Management	Principles of Ethics, Monitoring and Evaluation, etc.
Health Economics	Health system costing OOPE, Economic evaluation, etc.

Post	Technical Assistant (Bioinformatics)
Subject/ Topic	Subtopics
Bioinformatics	Database management systems, Biological Databases, Protein structure, Sequence alignments, Systems biology, Molecular structure, docking and drug design, Genomics, Programming basic concept, Linux commands and shell programming, Machine learning algorithms, etc.

Post	Technical Assistant (Civil)
Subject/ Topic	Subtopics
Design of steel structures	Various IS Codes used for design of steel structures/members, Knowledge of strength & failure limits of various grades of steel, design of steel purlins, rafters, trusses, ties, design of steel staunchion, beam, builtup column, design of plate girder, lacings, bracings, design

	of various types of joints used in structure, design of various types of joints used in structure, failures of joints & remedial measures, Detection of Methods of protection of steel structure from fire incidence, etc.
Design of RCC Structures	Various IS Codes used for design of RCC structures/members, Knowledge of design of Lintel, Inverted Beam, Chajja, Canopy, design of one way slab, two way slab, cantilever slab, design of RCC columns, Footing, foundation, safe bearing capacity of various strata & factor of safety, Checking of steel reinforcement used in cantilever slabs, beams, Knowledge of design of UG Water tank & earth Retaining walls, allowable deflection in RCC member & remedies, Checking of grades & methods to determine strength of concrete, various types of cements & its uses in construction, various chemicals used in concrete & its purpose, Methods to repair old disintegrated/ deteriorated RCC Members, Cover, Lap Length, butt joint in steel reinforcement, pre-stressed, Precast, Post tensioned RCC member, Pile foundation & Raft foundation & its necessity, etc.
Construction Management	Knowledge of Land acquisition, Lease Agreement procedures, Statutory Approvals required for Development of Land/Plot, Building construction, obtaining water /electric / Drainage connection, Occupancy cert, CFO NOC, Forest NOC etc., Knowledge of CPM/PERT/ BAR Charts & its use in project management, Estimating requirement of skilled labours for various activities of Construction/ tools, equipment, machinery, etc, Checking of Good/Bad workmanship & remedial measures, Procurement of various building materials & its sources, rates, etc.
Contracts & Accounts	Knowledge of various types of Contracts & its drafting, contents, Various essential conditions of Contracts, Time limits,& execution, Various essential documents, registers to be preserved at site for account, Knowledge /procedure for cancellation of contract in part or full, Procedure for certification of Quality of work & Bill payments to Contractor, Knowledge of mobilisation advance, material advance, part payment, Penalty for delay in work, Risk & Cost procedure & its circumstances, Knowledge of security deposit, performance guarantee, retention money, etc.
Planning & Designing of Buildings	Knowledge of building byelaws, open spaces, RG Areas, service floors, FSI, Fungible FSI, TDR, Setback, IOD, CC, various zones, Importance of Plinth checking, obtaining building completion certificate, Permissions for establishing Dispensary, Pathlabs, Canteen, PHC, Permissions for Tree cutting, Shifting HT Lines, electric poles, Monsoon sheds, etc.
Surveying	Various types & instruments used for surveying land, Knowledge of landscaping & contour survey, Road survey, Measurement of Land & details shown on plane table survey drawing, Knowledge & Experience Of Using Dumpy Level & Theodolite, etc.

Water Supply & Sanitary Engineering	Estimating quantity of water required for various purposes , per capita Augmenting water by various sources & testing of water, parameters, Types & sizes of pipes used normally for distribution of water in building, Various types of valves & taps used in Building & its positions, Firefighting system- pipes, joints, fire hydrants, wet riser, & locations, Differentiate between ETP & STP, parameters to be checked , Various types of chambers used in drainage line of Building & its positions, Estimating number of wc pans/ bathrooms in commercial building/PHC. Quantity of water required for various purposes , per capita, Knowledge & use of Septic Tank, Soak pit, & its construction/diagram, Rain water harvesting & its use, Types of various pumps used in building during & after construction, etc.
Quantity surveying, Estimation/Tendering	Difference between Block Estimate & Detailed Estimate ,Job estimate, Types of Tenders & its evaluation, Conditional tender, List of Documents attached with tender & to be submitted by tenderer, Mode of measurements & specifications of various items in Building, Difference between General conditions & Special conditions of Contract, Drafting special specifications of contract, Knowledge of Rate Analysis, obtaining approval for Extra Item, Deviation, Why supervision charges & contingencies are added in estimate, etc.

Post	Technical Assistant (Computer Science/Information Technology)
Subject/ Topic	Subtopics
Hardware	Knowledge of Computer, server hardware devices and troubleshooting, etc.
Programming and Data Structure	Basic Programming, etc.
Web Designing	HTML(4.0 and 5.0), CSS, SQL, JavaScript, PHP, MySQL, python, VB, ASP.NET, CMS, framework, webserver and web application development, etc.
Operating system	Operating system and applications, etc.
Networking	Basics of computer network, OSI Model, Transmission Media, Networking devices Network Topology, Network terminology, protocols, protocols and its applications, etc.
Information security	Information security basics, IT act and its provisions, Intellectual property rights, firewall concept and network security, etc.

Post	Technical Assistant (Electrical)
Subject/ Topic	Subtopics
ELECTRICAL ESTIMATION AND CONTRACTING	Electric Installation and Safety, Estimation and Costing, Non-industrial installations, Industrial installation, public lighting installation, Distribution Lines and LT Substation, etc.
ILLUMINATION PRACTICES	Types of light fittings, Illumination Control and Control Circuits, Illumination for Interior Applications, Wiring fault, Earth leakage, Geyser, Fans, Tubelights Repairs and Installation, etc.

BUILDING ELECTRIFICATION	New point layout and wiring, Wiring Tools and Accessories, Electrical Wires and Underground Cables, Wiring Methods and wiring layout, Residential building electrification, etc.
SWITCHGEAR AND PROTECTION	Protective relays, Circuit interruption devices, Protection of Alternator and Transformer, Protection of Motors, Bus-bar and Transmission Line Motor, etc.
ELECTRIC MOTORS, GENERATORS AND TRANSFORMERS	DC-AC motors, DC-AC generators, Three phase generator, Three phase ac motors, Three phase transformers, Single phase transformers, etc.
ELECTRIC CIRCUITS	Single phase AC series circuits, single phase AC parallel circuits, Three phase circuits, Network Reduction and Principles of Circuit Analysis, Network theorems, etc.

Post	Technical Assistant (Mechanical)
Subject/ Topic	Subtopics
Refrigeration,, Heating Ventilation Air-conditioning(HVAC)	Refrigeration; refrigerant; COP; Air Refrigeration system: components, working & applications, Vapour Compression system/VRV components, working & Applications, Air conditioning: Classification of Air-conditioning systems; Comfort and Industrial Air-Conditioning; HVAC Heating ventilation and Air conditioning, window/Split Air-Conditioner; Cold rooms, -80 °C, -20 °C Deep freezers, etc.
INDUSTRIAL ENGINEERING & MANAGEMENT Material Management:	Objectives of good stock control system; ABC analysis of Inventory, Procurement and Consumption cycle, Minimum stock, lead time, reorder level-economic, Order Quantity problems, Supply chain, etc.
MATERIAL HANDLING SYSTEM: Hoisting Machinery & Equipment	Working & Maintenance of Elevating equipment such as Industrial lifts, Passenger lifts, Stackers, Freight elevators, Programmable Logic Controller (PLC), etc.
FLUID MECHANICS & HYDRAULIC MACHINERY	Properties of fluid, Fluid flow, Flow through pipes, Centrifugal pumps, Impact of jets, Hydraulic Turbines, etc.

Post	Technical Assistant (Electronics/Instrumentation)
Subject/ Topic	Subtopics
Microcontroller and Applications	Microprocessor board repairs, etc.
Digital Communication Systems	Block diagram and sub-system description of a digital communication system, Digital subscriber lines, etc.

Sensors and Bio-instrumentation	Sensors - resistive, capacitive, inductive, piezoelectric, Hall effect, electro-chemical, optical, Operating principle of medical equipment - sphygmomanometer, ventilator, cardiac pacemaker, defibrillator, pulse oximeter, hemodialyzer, Electrical Isolation (optical and electrical) and Safety of Biomedical Instruments, etc.
Consumer Electronics	Basic characteristics of sound signal, Audio level metering, Decibel level in acoustic measurement, Microphone & types, Sound recording principle & types, Digital tvs:- LCD, LED, PLASMA, HDTV, 3-D TV, projection TV, DTH receiver, Video interface, Digital video, CD and DVD player, Diagrams, operating principles, and controller for FAX and Photocopier, Microwave oven, etc.
Electronic Equipment Maintenance	Fundamental troubleshooting procedures inside an electronic equipment, Passive Components and Their Testing, Logic IC families, Packages in Digital Internal Circuits, IC identification, IC pin-outs, Handling ICs, Digital troubleshooting methods, Testing of Semiconductor Devices Types of semiconductor devices, Causes of failure in Semiconductor Devices, Service and repair of Analytical /biomedical Research equipment such as CO2 incubators, PCR machines, Microscopes, centrifuges, deep freezers etc., Types of failure Test procedures for Diodes, special types of Diodes, Bipolar junction transistors, field effect transistors, etc.

Post	Technical Assistant (Home Science)
Subject/ Topic	Subtopics
Fundamental of Nutrition	Understanding relationship between food, Nutrition and health, Dietary sources and clinical manifestations of deficiency/ excess carbohydrates, Proteins and fats, etc.
Biochemistry of Food Sciences	Nutritional contribution and changes during cooking of pulses, Cereals, Milk and milk products, Meat and meat products, Fruits and vegetables, etc.
Communication and Extension	Understanding human communication, Methods and Media of community outreach, Audio-Visual aids- concept classification, Characteristics and scope, etc.
Resources Management	Understanding meaning, Classification and characteristics of resources, Factors affecting utilization of resources, etc.

Post	Technician-1 (Laboratory)
Subject/ Topic	Subtopics
Zoology, Endocrinology, Molecular Biology, Laboratory Techniques	Basic principles of human and animal reproduction, endocrinology, molecular biology, genetic engineering, infection, disorder of male and female reproductive tract, immunological aspects, physiology and pathology during pregnancy, Transcription and translation, Biochemistry, Haematology, PCR, Immunology, Culture based techniques etc.

Post	Technician-1 (Electrical)
Subject/ Topic	Subtopics
ELECTRICAL ESTIMATION AND CONTRACTING	Electric Installation and Safety, Estimation and Costing, Non-industrial installations, Industrial installation, public lighting installation, Distribution Lines and LT Substation, etc.
ILLUMINATION PRACTICES	Types of light fittings, Illumination Control and Control Circuits, Illumination for Interior Applications, Wiring fault, Earth leakage, Geyser, Fans, Tube lights Repairs and Installation, etc.
BUILDING ELECTRIFICATION	New point layout and wiring, Wiring Tools and Accessories, Electrical Wires and Underground Cables, Wiring Methods and wiring layout, Residential building electrification, etc.
SWITCHGEAR AND PROTECTION	Protective relays, Circuit interruption devices, Protection of Alternator and Transformer, Protection of Motors, Bus-bar and Transmission Line Motor, etc.
ELECTRIC MOTORS, GENERATORS AND TRANSFORMERS	DC/AC motors, DC/AC generators, Three phase generator, Three phase ac motors, Three phase transformers, Single phase transformers, etc.
ELECTRIC CIRCUITS	Single phase AC series circuits, single phase AC parallel circuits, Three phase circuits, Network Reduction and Principles of Circuit Analysis, Network theorems, etc.
Post	Technician-1 (Mechanical)
Subject/ Topic	Subtopics
Refrigeration,, Heating Ventilation Air-conditioning(HVAC)	Refrigeration; refrigerant; cop; Air Refrigeration system: components, working & applications, Vapour Compression system/VRV components, working & applications, Air conditioning: Classification of Air-conditioning systems; Comfort and Industrial Air-Conditioning; HVAC Heating ventilation and Air conditioning, Window/Split Air-Conditioner; Cold rooms -80°C, -20° C Deep freezers, etc.
INDUSTRIAL ENGINEERING & MANAGEMENT Material Management:	Objectives of good stock control system; ABC analysis of Inventory, Procurement and Consumption cycle, Minimum stock, lead time, reorder level-economic, Order Quantity problems, Supply chain, etc.
MATERIAL HANDLING SYSTEM: Hoisting Machinery & Equipment	Working & Maintenance of Elevating equipment such as Industrial lifts, Passenger lifts, Stackers, Freight elevators, Programmable logic controller (PLC), etc.
FLUID MECHANICS & HYDRAULIC MACHINERY	Properties of fluid, Fluid flow, flow through pipes, Centrifugal pumps, Impact of jets, Hydraulic Turbines, etc.

Post	Technician-1 (Electronics/Instrumentation)
Subject/ Topic	Subtopics
Microcontroller and Applications	Microprocessor board repairs, etc.
Digital Communication Systems	Block diagram and sub-system description of a digital communication system, Digital subscriber lines, etc.
Sensors and Bio-instrumentation	Sensors - resistive, capacitive, inductive, piezoelectric, Hall effect, electro-chemical, optical operating principle of medical equipment - sphygmomanometer, ventilator, cardiac pacemaker, defibrillator, pulse oximeter, hemodialyzer, Electrical Isolation (optical and electrical) and Safety of Biomedical Instruments, etc.
Consumer Electronics	Basic characteristics of sound signal, Audio level metering, Decibel level in acoustic measurement, Microphone & types, Sound recording principle & types, Digital TVs:- LCD, LED , PLASMA, HDTV, 3-D TV, projection TV, DTH receiver, Video interface, Digital video, CD and DVD player, Diagrams, operating principles, and controller for FAX and Photocopier, Microwave oven, etc.
Electronic Equipment Maintenance	Fundamental troubleshooting procedures inside an electronic equipment, Passive Components and Their Testing, Logic IC families, Packages in Digital ICs, IC identification, IC pin-outs, Handling ICs, Digital troubleshooting methods, Testing of Semiconductor Devices Types of semiconductor devices, Causes of failure in Semiconductor Devices, Service and repair of Analytical /biomedical Research equipment such as CO2 incubators, PCR machines, Microscopes, centrifuges, -80°C, -20° C deep freezers etc. Types of failure Test procedures for Diodes, special types of Diodes, Bipolar junction transistors, field effect transistors, etc.

Post	Technician-1 (Computer Science/Information Technology)
Subject/ Topic	Subtopics
Hardware	Knowledge of Computer, server hardware devices and troubleshooting, etc.
Programming and Data Structure	Basic Programming, etc.
Web Designing	HTML(4.0 and 5.0), CSS, SQL, JavaScript, PHP, MySQL, python, VB, ASP.NET, CMS, framework, webserver and web application development, etc.
Operating system	Operating system and applications
Networking	Basics of computer network, OSI Model, Transmission Media, Networking devices Network Topology, Network terminology, protocols, protocols and its applications, etc.

Information security	Information security basics, IT act and its provisions, Intellectual property rights, firewall concept and network security, etc.
----------------------	---

Post	Technician-1 (Civil)
Subject/ Topic	Subtopics
Design of steel structures	Various IS Codes used for design of steel structures/members, Knowledge of strength & failure limits of various grades of steel, design of steel purlins, rafters, trusses, ties, steel stanchion, beam, built-up column, plate girder, lacings, bracings, various types of joints used in structure, Detection of failures of joints & remedial measures, Methods of protection of steel structure from fire incidence, etc.
Design of RCC Structures	Various IS Codes used for design of RCC structures/members, Knowledge of design of Lintel, Inverted Beam, Chajja, Canopy, one way slab, two way slab, cantilever slab, RCC columns, Footing, foundation, safe bearing capacity of various strata & factor of safety, Checking of steel reinforcement used in cantilever slabs, beams, UG Water tank & earth Retaining walls, allowable deflection in RCC member & remedies, Checking of grades & methods to determine strength of concrete, various types of cements & its uses in construction, chemicals used in concrete & its purpose, Methods to repair old disintegrated/ deteriorated RCC Members, Cover, Lap Length, butt joint in steel reinforcement, Restressed, Precast, Post tensioned RCC member, Pile foundation & Raft foundation & its necessity, etc.
Construction Management	Knowledge of Land acquisition, Lease Agreement procedures, Statutory Approvals required for Development of Land/Plot , Building construction, obtaining water /electric / Drainage connection, Occupancy cert, CFO NOC, Forest NOC etc., CPM/PERT/ BAR Charts & its use in project management. Estimating requirement of skilled labours for various activities of Construction/ tools, equipment, machinery, etc. Checking of Good/Bad workmanship & remedial measures, Procurement of various building materials & its sources, rates, etc.
Contracts & Accounts	Knowledge of various types of Contracts & its drafting, contents, conditions of Contracts, Time limits, & execution documents, registers to be preserved at site for account Knowledge /procedure for cancellation of contract in part or full Procedure for certification of Quality of work & Bill payments to Contractor, Knowledge of mobilisation advance, material advance, part payment, Penalty for delay in work, Risk & Cost procedure & its circumstances, Knowledge of security deposit, performance guarantee, retention money, etc.
Planning & Designing of Buildings	Knowledge of building byelaws, open spaces, RG Areas, service floors, FSI, Fungible FSI, TDR, Setback ,IOD,CC, various zones, Importance of Plinth checking, obtaining building completion certificate, Permissions for establishing Dispensary, Pathlabs,

	Canteen, PHC, Permissions for Tree cutting, Shifting HT Lines, electric poles, Monsoon sheds, etc.
Surveying	Various types & instruments used for surveying land, Knowledge of landscaping & contour survey, Road survey, Measurement of Land & details shown on plane table survey drawing, Knowledge & Experience Of Using Dumpy Level & Theodolite, etc.
Water Supply & Sanitary Engineering	Estimating quantity of water required for various purposes , per capita Augmenting water by various sources & testing of water, parameters Types & sizes of pipes used normally for distribution of water in building, Various types of valves & taps used in Building & its positions, Firefighting system- pipes, joints, fire hydrants, wet riser, & locations , Differentiate between ETP & STP, parameters to be checked , Various types of chambers used in drainage line of Building & its positions, Estimating number of wc pans/ bathrooms in commercial building/PHC. Quantity of water required for various purposes , per capita, Knowledge & use of Septic Tank, Soakpit, & its construction/diagram, Rain water harvesting & its use, Types of various pumps used in building during & after construction, etc.
Quantity surveying, Estimation/Tendering	Difference between Block Estimate & Detailed Estimate , Job estimate, Types of Tenders & its evaluation, Conditional tender, List of Documents attached with tender & to be submitted by tenderer, Mode of measurements & specifications of various items in Building, Difference between General conditions & Special conditions of Contract, Drafting special specifications of contract, Knowledge of Rate Analysis, obtaining approval for Extra Item, Deviation, Why supervision charges & contingencies are added in estimate, etc.

Note:

Difficulty level of Questions in CBT will be as per essential qualifications of respective posts mentioned in the Advertisement.