

- The same scribe cannot be used by more than one candidate. In addition, the scribe arranged by the candidate should **not** be a candidate for current online recruitment for any post in CWC. If violation of the above is detected at any stage of the process, candidature for online examination of both the candidate and the scribe will be cancelled. Candidates eligible for, and who wish to use the services of a scribe in the examination should invariably and carefully indicate the same in the online application form. Any subsequent request may not be favourably entertained.

**(ii) Guidelines for candidates with benchmark disabilities**

Compensatory time of minimum of one hour for examination of three hours duration or otherwise advised shall be permitted for all the candidates with benchmark disabilities not availing the facility of scribe. The compensatory time shall be on pro-rata basis (not less than 5 minutes and in multiple of 5)

**(iii) Guidelines for Visually Impaired candidates**

- Visually Impaired candidates (who suffer from not less than 40% of disability) may opt to view the contents of the test in magnified font and all such candidates will be eligible for compensatory time of 20 minutes or otherwise advised for every hour of examination.
- The facility of viewing the contents of the test in magnifying font will not be available to Visually Impaired candidates who use the services of a Scribe for the examination.

**These guidelines are subject to change in terms of GOI guidelines/ clarifications, if any, from time to time.**

**C. ONLINE EXAMINATION**

**I. The structure of the Online examination will be as follows:**

**Management Trainee (General, Technical), Assistant Engineer (Civil/Electrical) and Accountant.**

Sr. No.	Name of the Tests (Not By sequence)	No. Of questions	Maximum Marks	Medium of Exam	Time allotted for each test (Separately timed)
1.	Reasoning and Computer Aptitude	40	55	Hindi and English	45 Minutes
2.	English Language	35	40	English	25 Minutes
3.	Data Analysis & Interpretation and Quantitative Aptitude	40	55	Hindi and English	45 Minutes
4.	General Awareness	20	20	Hindi and English	15 Minutes
5.	Professional Knowledge	65	65	Hindi and English	50 Minutes
	<b>Total</b>	<b>200</b>	<b>235</b>		<b>3 Hours</b>

**Superintendent (General)**

Sr. No.	Name of the Tests (Not By sequence)	No. Of questions	Maximum Marks	Medium of Exam	Time allotted for each test (Separately timed)
1.	Reasoning and Computer Aptitude	40	55	Hindi and English	45 Minutes
2.	English Language	35	40	English	25 Minutes
3.	Data Analysis & Interpretation and Quantitative Aptitude	40	55	Hindi and English	45 Minutes
4.	General Awareness	35	35	Hindi and English	25 Minutes
	<b>Total</b>	<b>150</b>	<b>185</b>		<b>2 Hours 20 Minutes</b>

**Junior Superintendent (Prelims)**

Sr. No.	Name of the Tests (Not By sequence)	No. Of questions	Maximum Marks	Medium of Exam	Time allotted for each test (Separately timed)
1.	English Language	30	30	English	20 Minutes
2.	Quantitative Aptitude	35	35	Hindi and English	20 Minutes
3.	Reasoning Ability	35	35	Hindi and English	20 Minutes
	<b>Total</b>	<b>100</b>	<b>100</b>		<b>1 Hour</b>

**Junior Superintendent (Mains)**

Sr. No.	Name of the Tests (Not By sequence)	No. Of questions	Maximum Marks	Medium of Exam	Time allotted for each test (Separately timed)
1.	Reasoning and Computer Aptitude	50	50	Hindi and English	45 Minutes
2.	English Language	50	50	English	30 Minutes
3.	Data Analysis & Interpretation and Quantitative Aptitude	50	50	Hindi and English	45 Minutes

4.	General Awareness	50	50	Hindi and English	30 Minutes
	<b>Total</b>	<b>200</b>	<b>200</b>		<b>2 Hours 30 Minutes</b>

#### **Junior Technical Assistant**

Sr. No.	Name of the Tests (Not By sequence)	No. Of questions	Maximum Marks	Medium of Exam	Time allotted for each test (Separately timed)
1.	Reasoning and Computer Aptitude	40	40	Hindi and English	35 Minutes
2.	English Language	35	35	English	20 Minutes
3.	Data Analysis & Interpretation and Quantitative Aptitude	40	40	Hindi and English	35 Minutes
4.	General Awareness	20	20	Hindi and English	10 Minutes
5.	Professional Knowledge	65	65	Hindi and English	50 Minutes
	<b>Total</b>	<b>200</b>	<b>200</b>		<b>2 Hours 30 Minutes</b>

#### **Hindi Translator**

Sr. No.	Name of the Tests (Not By sequence)	No. Of questions	Maximum Marks	Medium of Exam	Time allotted for each test (Separately timed)
1.	Reasoning and Computer Aptitude	30	30	Hindi and English	30 Minutes
2.	English Language	20	20	Hindi	15 Minutes
3.	Data Analysis & Interpretation and Quantitative Aptitude	30	30	Hindi and English	30 Minutes
4.	General Awareness	20	20	Hindi and English	15 Minutes
5.	Professional Knowledge (Objective)	50	50	Hindi and English	40 Minutes
6.	Professional Knowledge (Descriptive) (Translation from Hindi to English and vice versa) (Fully Online*)	2	50		50 minutes
	<b>Total</b>	<b>152</b>	<b>200</b>		<b>3 Hours</b>

\* Candidates shall be provided with a keyboard supported by iLEON OS for Hindi Typing for descriptive test. For Hindi typing, the candidates should have knowledge of the following key-board layout:

- i. Inscript
- ii. Remington (GAIL)

#### **II. Syllabus for Professional Knowledge test (wherever applicable) with weightage out of 65 Questions for Professional Knowledge Test (This is only a Broad/Indicative syllabus and it may slightly change in the examination):**

##### **Syllabus for Management Trainee (G)**

##### **A. Human Resource Management & IR (25)**

- i. Management of Industrial Relations & Labour Legislation
- ii. Recruitment and Selection
- iii. Employee Discipline
- iv. Organisation Behaviour, Organizational Change and Intervention Strategies
- v. Trade Unions
- vi. Compensation Management & Performance Management
- vii. Human Resource Development: Strategies and Systems
- viii. Manpower Planning
- ix. Management of Training and Development
- x. Interpersonal Processes and Counselling Skills for Managers
- xi. Change & Conflict Management
- xii. Dispute resolution and Grievance Management

##### **B. Marketing Management (20)**

- i. Marketing: Concept
- ii. Marketing of Services
- iii. Advertising and Brand Management
- iv. Segmentation and Positioning
- v. Rural and Social Marketing
- vi. Promotion Management and B2B Marketing

- vii. Customer Relationship Management
- viii. Consumer Behaviour
- ix. Marketing Research
- x. Internet as a Tool of Marketing
- xi. Pricing Theories

**C. Supply Chain Management (20)**

- i. Supply Chain Management: Concept
- ii. Total Quality Management
- iii. Logistics Management: National and International
- iv. Retail Management
- v. Transportation Management
- vi. Service Operations Management
- vii. Business Process Reengineering
- viii. Role of IT in Supply Chain Management
- ix. Emerging Issues in Supply Chain Management
- x. Aggregate Planning
- xi. Designing Supply Chain Network
- xii. Warehousing and Inventory Planning and Management
- xiii. Contract Management

**Syllabus for Management Trainee (Technical)**

- i. **Basic Agriculture (20)** – Principles of Crop Production, Crop Protection, Post-harvest care, Grain Protection, Agriculture Extension, Horticulture, Animal Husbandry, Distribution & Economic Scenario.
- ii. **Biotechnology (12)** – Microbes: Beneficial & Harmful, Genetic Engineering, Biotechnological Principles, Economic Biotechnology, Pathogens & Control, Recent trends
- iii. **Entomology (20)** – Basic Entomology, Economic Entomology, Beneficial & harmful Insects, IPM, Storage Entomology, Vertebrate Pests, Taxonomy
- iv. **Chemistry (13)** – Physical Chemistry, Inorganic Chemistry, Organic Chemistry.

**Syllabus for Accountant**

**a) Financial Accounting (20)**

- i. Accounting Standards
- ii. Accounting Process and Principles
- iii. Preparation of bank reconciliation statement
- iv. Rectification of errors
- v. Receipts and payment accounts
- vi. Single entry system
- vii. Amalgamation, Absorption and Reconstruction of Companies
- viii. Preparation and Presentation of company final accounts
- ix. Insurance Claims
- x. E-Banking, RTGS, NEFT etc.

**b) Cost Accounting (15)**

- i. Nature and functions of Cost Accounting
- ii. Cost Concepts
- iii. Methods of Costing
- iv. Techniques of cost control and cost reduction

**c) Taxation (15)**

- i. Income Tax: Concept and various provisions as per Act
- ii. Set off and carry forward of loss
- iii. Deductions from Gross Total Income
- iv. Salient features/ provisions related to VAT and Service Tax.

**d) Auditing (15)**

- i. Auditing: Concept
- ii. Company Audit
- iii. Audit reports and Audit Certificates
- iv. Vouching
- v. Internal Control
- vi. Audit of Banking/ Insurance/ Non-Profit Organisation/ Charitable Societies/ Trust/ Organisations

### **Syllabus for Assistant Engineer (Civil)**

#### **a) Structural Engineering (18)**

- i. Engineering Mechanics
- ii. Solid Mechanics
- iii. Structural Analysis
- iv. Construction Materials and Management
- v. Concrete Structures
- vi. Steel Structures

#### **b) Geotechnical Engineering & Geomatics Engineering (18)**

- i. Soil Mechanics
- ii. Foundation Engineering
- iii. Principles of surveying
- iv. Maps
- v. Distance and angle measurement
- vi. Traversing and triangulation survey
- vii. Horizontal and vertical curves
- viii. Basics of GIS and GPS

#### **c) Water Resources Engineering (10)**

- i. Fluid Mechanics
- ii. Hydraulics
- iii. Hydrology
- iv. Irrigation

#### **d) Environmental Engineering (11)**

- i. Water and Waste Water
- ii. Air Pollution
- iii. Municipal Solid Wastes
- iv. Noise Pollution

#### **e) Transportation Engineering (8)**

- i. Transportation Infrastructure
- ii. Highway Pavements  
Traffic Engineering

### **Syllabus for Assistant Engineer (Electrical)**

#### **A. Electric Circuits (8)**

- i. Network graph
- ii. KCL, KVL, Node and Mesh analysis
- iii. Transient response of dc and ac networks
- iv. Sinusoidal steady-state analysis
- v. Resonance, Passive filters, Ideal current and voltage sources
- vi. Thevenin's theorem, Norton's theorem, Superposition theorem, Maximum power transfer theorem
- vii. Two-port networks, Three phase circuits, Power and power factor in ac circuits.

#### **B. Electromagnetic Fields (7)**

- i. Coulomb's Law, Electric Field Intensity, Electric Flux Density
- ii. Gauss's Law, Divergence
- iii. Electric field and potential due to point, line, plane and spherical charge distributions

- iv. Effect of dielectric medium
- v. Capacitance of simple configurations
- vi. Biot-Savart's law, Ampere's law, Curl, Faraday's law, Lorentz force
- vii. Inductance, Magnetomotive force, Reluctance, Magnetic circuits
- viii. Self and Mutual inductance of simple configurations.

#### **C. Signals and Systems (7)**

- i. Representation of continuous and discrete-time signals
- ii. Shifting and scaling operations
- iii. Linear Time Invariant and Causal systems
- iv. Fourier series representation of continuous periodic signals
- v. Sampling theorem, Applications of Fourier Transform, Laplace Transform and z-Transform.

#### **D. Electrical Machines (7)**

- i. Single phase transformer: equivalent circuit, phasor diagram, open circuit and short circuit tests, regulation and efficiency
- ii. Three phase transformers: connections, parallel operation
- iii. Auto-transformer, Electromechanical energy conversion principles
- iv. DC machines: separately excited, series and shunt, motoring and generating mode of operation and their characteristics, starting and speed control of dc motors
- v. Three phase induction motors: principle of operation, types, performance, torque-speed characteristics, no-load and blocked rotor tests, equivalent circuit, starting and speed control
- vi. Operating principle of single-phase induction motors
- vii. Synchronous machines: cylindrical and salient pole machines, performance, regulation and parallel operation of generators, starting of synchronous motor, characteristics
- viii. Types of losses and efficiency calculations of electric machines.

#### **E. Power Systems (8)**

- i. Power generation concepts, ac and dc transmission concepts
- ii. Models and performance of transmission lines and cables
- iii. Series and shunt compensation
- iv. Electric field distribution and insulators
- v. Distribution systems, Per-unit quantities, Bus admittance matrix
- vi. Gauss-Seidel and Newton-Raphson load flow methods
- vii. Voltage and Frequency control, Power factor correction
- viii. Symmetrical components, Symmetrical and unsymmetrical fault analysis
- ix. Principles of over-current, differential and distance protection
- x. Circuit breakers, System stability concepts, Equal area criterion.

#### **F. Control Systems (7)**

- i. Mathematical modelling and representation of systems
- ii. Feedback principle, transfer function, Block diagrams and Signal flow graphs
- iii. Transient and Steady-state analysis of linear time invariant systems
- iv. Routh-Hurwitz and Nyquist criteria, Bode plots, Root loci
- v. Stability analysis, Lag, Lead and Lead-Lag compensators
- vi. P, PI and PID controllers
- vii. State space model, State transition matrix.

#### **G. Electrical and Electronic Measurements (7)**

- i. Bridges and Potentiometers
- ii. Measurement of voltage, current, power, energy and power factor
- iii. Instrument transformers, Digital voltmeters and multimeters, Phase, Time and Frequency measurement
- iv. Oscilloscopes, Error analysis.

#### **H. Analog and Digital Electronics (7)**

- i. Characteristics of diodes, BJT, MOSFET
- ii. Simple diode circuits: clipping, clamping, rectifiers

- iii. Amplifiers: Biasing, Equivalent circuit and Frequency response
- iv. Oscillators and Feedback amplifiers
- v. Operational amplifiers: Characteristics and applications
- vi. Simple active filters, VCOs and Timers, Combinational and Sequential logic circuits, Multiplexer, Demultiplexer, Schmitt trigger, Sample and hold circuits, A/D and D/A converters
- vii. 8085 Microprocessor: Architecture, Programming and Interfacing.

#### I. Power Electronics (7)

- i. Characteristics of semiconductor power devices: Diode, Thyristor, Triac, GTO, MOSFET, IGBT
- ii. DC to DC conversion: Buck, Boost and Buck-Boost converters; Single and three phase configuration of uncontrolled rectifiers, Line commutated thyristor-based converters
- iii. Bidirectional ac to dc voltage source converters, Issues of line current harmonics
- iv. Power factor, Distortion factor of ac to dc converters, Single phase and three phase inverters, Sinusoidal pulse width modulation.

#### Syllabus for Hindi Translator

- i. **Descriptive:** Translation of paragraph from Hindi to English and vice versa (1 each)
- ii. **Objective:** Questions related to Hindi and English grammar and usage (50)

#### Syllabus for Junior Technical Assistant

- i. **Basic Agriculture (20)** - Crop Production, Animal Husbandry, Plant Protection, Agriculture Extension, Horticulture, Agriculture Economics
- ii. **Botany (15)** – Cell Biology: Tissue, Organ & Organ System, Genetics, Plant Classification, Diversity, Ecology, Life Process: Photosynthesis, Respiration, Circulation, Movement etc.
- iii. **Zoology (15)** – Animal Cell & Tissue, Organ System, Heredity & Variation, Animal Classification, Micro Organisms, Insects & Rodents
- iv. **Chemistry & Physics (15)** – Chemical bonding, Organic Chemistry, Inorganic Chemistry, Chemistry in daily life, Motion, Force & Energy, Electricity, Magnetism, Light & Sound, Thermodynamics, Measurement.

**CWC reserves the right to modify the structure of the examination which will be intimated through its website. Other detailed information regarding the examination will be given in an Information Handout, which will be made available for the candidates to download along with the call letters from the authorised CWC website [www.cewacor.nic.in](http://www.cewacor.nic.in).**

**Please note that candidates will not be permitted to appear for the online examination without the following documents:**

1. Valid Call Letter for the respective date and session of Examination
2. Photo-identity proof (as specified) in original bearing the same name as it appears on the call letter/ application form and
3. Photocopy of photo-identity proof (as mentioned in (2) above)

**Candidates reporting late i.e. after the reporting time specified on the call letter for Examination will not be permitted to take the examination.**

The reporting time mentioned on the call letter is prior to the Start time of the test. Though the duration of the examination is 60 to 180 minutes according to the posts, the candidates may be required to be at the venue for up to 4 hours or more including the time required for completion of various formalities such as verification and collection of various requisite documents, biometric data capturing, logging in, giving of instructions etc. and including disruptions beyond control.

#### a) Penalty for Wrong Answers

There will be penalty for wrong answers marked in the Objective Tests. For each question for which a wrong answer has been given by the candidate, one fourth (1/4<sup>th</sup>) of the marks assigned to that question will be deducted as penalty to arrive at corrected score. If a question is left blank, i.e. no answer is marked by the candidate; there will be no penalty for that question.

#### b) Examination Centres

- (i) The examination will be conducted online in venues across centres in India. The tentative list of Examination centres is available in Annexure I.
- (ii) No request for change of centre for Examination shall be entertained.
- (iii) CWC, however, reserves the right to cancel any of the Examination Centres and/ or add some other Centres, at its discretion, depending upon the response, administrative feasibility, etc.
- (iv) CWC also reserves the right to allot the candidate to any centre other than the one he/she has opted for.