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CWC Recruitment 2019 Syllabus

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.

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