

(vi) On successful completion of the transaction, an e-receipt will be generated.

(vii) Candidates are required to take a printout of the e-receipt and online application form containing fee details. Please note that if the same cannot be generated, online transaction may not have been successful.

Note:

- After submitting your payment information in the online application form, please wait for the intimation from the server, DO NOT press Back or Refresh button in order to avoid double charge
- For Credit Card users: All charges are listed in Indian Rupee. If you use a non-Indian credit card, your bank will convert to your local currency based on prevailing exchange rates.
- To ensure the security of your data, please close the browser window once your transaction is completed. After completing the procedure of applying on-line including payment of fees, the candidate should take a printout of the system generated on-line application form, ensure the particulars filled in are accurate and retain it along with Application number and password (Date of Birth) for future reference. They should not send this printout to the WBPCB.

15. EXAMINATION SCHEME

Part – I : Online (CBT) examination will be held for 90 marks (there will be 90 questions 1 mark each, duration 90 minutes.

There will be a negative marking @ 25% for each wrong answer.

Part –II : Interview/ Personality Test/ viva-voce Test will be held for 10 marks.

16. SYLLABUS, MARKS AND DURATION OF EXAMINATION:

1. For Assistant Environmental Engineer:-

Online (CBT) examination will carry 90 marks having 90 questions of 1 (one) mark each, comprising of multiple choice, objective type question on the following:-

- | | | |
|------|-----------------------------------|------------|
| i) | English | - 20 marks |
| ii) | General Studies & Current Affairs | - 20 marks |
| iii) | Engineering | - 40 marks |
| iv) | Computer app, | - 10 marks |

The duration of examination shall be 1 hour and 30 minutes:-

English (20 Marks)

- Fundamentals of the English language such as vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage,

General Studies& Current Affairs (20 Marks)

- Matters of everyday observation, everyday science, current events and problems with special reference to India , Test of Verbal and Non-Verbal Reasoning, Quantitative Aptitude.

Engineering (40 Marks)

- **Basic Engineering Principles:** Fluid Mechanics, momentum, heat and mass transfer, thermodynamics, Metallurgy
- **Fundamental Information:** Basic chemical technology, chemical reactions, strength of materials, materials of construction, definitions of BOD, COD, MLSS, MLVSS, SVI etc.
- **Basic Process information:** Thermal Power Plants, Primary and secondary steel industries, cement industries, basic chemical industries including coal and petroleum, food processing, distilleries, paper industry
- **Air Pollution Fundamentals:** Different air pollutants – sources and effects. Mitigation measures. Principles of basic design of APC devices like ESP, Bag Filter, Cyclone Separator etc. Vehicular Pollution – measurement & mitigation
- **Water Pollution Fundamentals:** Different water pollutants – sources and effects. Mitigation measures. Principles of basic design of Water Pollution mitigation devices – biological and chemical treatment. Unit Operations of ETP. Concept of CETP and its application. River, Lake, Water body pollution – sources & abatement measures
- **Soil pollution:** Causes and mitigation measures
- **Noise Pollution:** Basic knowledge; Causes & effects, mitigation measures
- **Waste management and minimization:** Different types of wastes and fundamentals of management methods, waste utilization, waste to energy
- **Environmental Legislations** – History of Indian environmental legislation. Fundamentals of different environmental laws and rules. Role of Judiciary, NGT on environmental issues. Role and activities of MoEF& CC, CPCB, SPCB as per environmental Acts & Rules
- **International and National background of development of Environmental movement** - Different conventions and events, International Environmental related Protocols, Conferences etc.
- **Basic knowledge of Monitoring of Environmental Parameters & Online Monitoring**
- **Concept of Sustainable Development, Green Economics, EIA, EMP, Green Peace Movement**
- **Water resources and its preservation, Non-conventional Energy/WHRB/Reduction of Energy Consumption in industrial processes**
- **Climate Change related issues**

Computer Application: (10 Marks)

Elementary knowledge of Computer, Concept of Hardware and Software, Operating System, Office Application Software, Computer networking.

2. For Junior Environmental Engineer:-

Online (CBT) examination will carry 90 marks having 90 questions of 1 (one) mark each, comprising of multiple choice, objective type question on the followings:-

- v) English - 20 marks
- vi) General Studies & Current Affairs - 20 marks
- vii) Engineering - 40 marks
- viii) Computer app, - 10 marks

The duration of examination shall be 1 hour and 30 minutes:-

English (20 Marks)

- Fundamentals of the English language such as vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage,

General Studies& Current Affairs (20 Marks)

- Matters of everyday observation, everyday science, current events and problems with special reference to India ,Test of Verbal and Non-Verbal Reasoning, Quantitative Aptitude.

Engineering (40 Marks)

- **Basic Engineering Principles:** Fluid Mechanics
- **Fundamental Information:** Strength of materials, materials of construction, definitions of BOD, COD, MLSS, MLVSS, SVI etc.
- **Basic Process information:** Thermal Power Plants,Primary and secondary steel industries, cement industries, basic chemical industries including coal and petroleum, food processing, distilleries, paper industry
- **Air Pollution Fundamentals:** Different air pollutants – sources and effects. Mitigation measures. Introduction to ESP, Bag Filter, Cyclone Separator etc. Vehicular Pollution – measurement & mitigation
- **Water Pollution Fundamentals:** Different water pollutants – sources and effects. Mitigation measures. Biological and chemical treatment. Unit Operations of ETP. Concept of CETP and its application. River, Lake, Water body pollution – sources
- **Soil pollution:** Causes and mitigation measures
- **Noise Pollution:** Basic knowledge; Causes & effects, mitigation measures
- **Waste management and minimization:** Different types of wastes and fundamentals of management methods, waste utilization
- **Environmental Legislations** – Historyof Indian environmental legislation. Fundamentals of different environmental laws and rules. Role of Judiciary, NGT on environmental issues. Role and activities of MoEF& CC, CPCB, SPCB as per environmental Acts & Rules
- **International and National background of development of Environmental movement** - Different conventions and events, International Environmental related Protocols, Conferences etc.
- **Basic knowledge of Monitoring of Environmental Parameters & Online Monitoring**

- Concept of Sustainable Development, Green Economics, EMP, Green Peace Movement
- Water resources and its preservation, Non-conventional Energy
- Climate Change related issues

Computer Application: (10 Marks)

- Elementary knowledge of Computer, Concept of Hardware and Software, Operating System, Office Application Software, Computer networking.

3. For Environmental Analyst:--

Online (CBT) examination will carry 90 marks having 90 questions of 1 (one) mark each, comprising of multiple choice, objective type question on the followings:-

- | | | |
|------|-----------------------------------|------------|
| i) | English | - 20 marks |
| ii) | General Studies & Current Affairs | - 20 marks |
| iii) | Science | - 40 marks |
| iv) | Computer app | - 10 marks |

The duration of examination shall be 1 hour and 30 minutes:-

English (20 Marks)

- Fundamentals of the English language such as vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage etc.

General Studies& Current Affairs (20 Marks)

- Matters of everyday observation including everyday science, Environmental law, Climate Change, Test of Verbal and Non-Verbal Reasoning, Quantitative Aptitude, Current events and problems with special reference to India. Mathematics of class XII standard.

Science (40 Marks)

Physics

- Kinetic Theory of Gases: Ideal gas, pressure exerted by it
kinetic interpretation of temperature, Maxwell's distribution of molecular speeds, C_p and C_v - two molar specific heats of gases, $C_p - C_v = R$ and pVT -relations for adiabatic changes; variation of atmospheric pressure and temperature, Behaviour of real gases,
- Thermodynamics: 1st law of thermodynamics & 2nd law of thermodynamics
- Thermal radiation: Planck's idea of quantization, Planck's distribution law
- Waves: Wave motion and differential equation of plane progressive waves, energy and intensity Bel and decibel; loudness and phon

- Elements of quantum physics: Photoelectric effect, Compton effect, Raman effect etc. and success of quantum theory, Bohr's theory of hydrogen spectra, principal quantum numbers
- Atomic Spectrum: Good quantum numbers, and selection rules. Bohr-Sommerfeld model. Fine structure. Study of fine structure by Michelson interferometer.
- Nuclear physics: Nucleus (mass, size, nucleons & binding energy), binding energy-mass number curve and explanation of stability, fission and fusion of nuclei, radioactive disintegration, radio isotopes and uses; nuclear reactor, nuclear reaction, thermonuclear reaction and stellar energy.

Chemistry

- Inorganic – Metal Complexes, photo-inorganic chemistry
Atomic Structure and Chemical bonding, group theory and chemistry of d & f block elements, Inorganic reaction mechanisms & catalysis, Qualitative and quantitative aspects of analysis, analytical techniques, inorganic materials & nuclear and radiochemistry, Spectral techniques in inorganics chemistry.
- Organic- Basic organic Chemistry Stereochemistry of aliphatic hydrocarbons, Aromatic Hydrocarbons Chemistry of Halogenated hydrocarbons, Alcohol, Ester, phenols, Sulphur containing compounds, Nitrogen containing Functional groups.
- Physical Chemistry - Quantum Chemistry & Spectroscopy
spectroscopic and diffraction methods States of matter & ionic Equilibrium Physical chemistry of materials, Molarity and Formality, Normality, Molality, Titration based on complexation reaction, Chemical Thermodynamics and its applications, Phase equilibrium and Electrochemical Cells

Zoology

- Principles of microscopy: Light Microscopy; Phase contrast microscopy; Electron microscopy (EM) - Scanning EM (SEM) and Transmission EM (TEM)
- Concept of genetic information-RNA polymerase, chain elongation and termination, Formation of initiation complex (in Prokaryotes and RNA Polymerase II in Eukaryotes)
- Characterization and classification of bacteria (on the basis of staining methods), Techniques of microorganism culture (sterilization reproduction and growth, maintenance and preservation of pure cultures), Control of micro-organisms
Microbes in relation to common diseases of man and control (Cholera and Shigella)
- Integrated pest management and biological control of pests: principles and significance

Botany

- Biochemistry: Mechanism of enzyme action, enzyme inhibition, Enzyme kinetics (MichaelisMenten equation)
- Physiology: absorption and action spectra, Red drop and Emerson effect, Photochemical reaction centres
Photosynthetic efficiency of C3 and C4 plants and crop productivity, Photorespiration – mechanism and significance, Oxidative pentose phosphate pathway and its significance, Biochemistry of dinitrogen fixation in Rhizobium, Critical day length, concept of light monitoring

- Concept of biological clock and biorhythm,
- Microbiology: Preparation of bacterial media – (a) Nutrient agar and nutrient broth, (b) Preparation of slants and pouring Petri plates, Sub-culturing of bacterial culture. Gram staining from bacterial culture. Microscopic examination of bacteria from natural habitat (curd) by simple staining. PCR and its application, Steps of cloning technique

Environmental Science

- Introduction to Environmental Sciences
- Stoichiometry, chemical equilibrium, chemical potential; Acid-base reactions (acidity, alkalinity, buffers and buffer capacity)
- Principles of sedimentation, coagulation, precipitation; Concept of solubility product; Filtration and adsorption processes
- Composition and structure of the atmosphere; Properties of atmospheric gases, aerosols, SPM; Photochemical reactions in the atmosphere (photochemical smog)
- Renewable Resources: Solar energy (PV cells, PG cells); Geothermal energy (origin, utilization); Ocean energy; Biomass energy; Hydroelectricity
- Social perspectives on environment, Environment, development & sustainability
- Methodologies for environmental studies, Environmental impact and risk assessment,
- Pollution and health
- Urban ecosystems
- Atmosphere and global climate change
- Natural & managed ecosystems, Biodiversity and conservation biology, Soil biology
- Ecotoxicology and environmental health
- Pesticide Pollution: Sources, categories; Pesticidal effects in water; Elementary idea on IPML
- Metal Pollution: Metals in soil, food and water; Elementary idea on Lead and Cadmium pollution
- Fireworks Pollution: Definition, characteristics, composition; Pollution and effects; Safety and laws
- COD, BOD, Phenol, Nitrate- Nitrogen, Nitrite- Nitrogen , Phosphate

Agricultural Science

- Cropping patterns in different agro-climatic zones of the country
- Concepts of various cropping and farming systems
- Package of practices for production of important cereals, pulses, oil seeds, fibres, sugar, commercial and fodder crops.
- Weeds, their characteristics, dissemination and association with various crops; their multiplications; cultural, biological, and chemical control of weeds
- Important features and scope of various types of forestry plantations such as social forestry, agro-forestry, and natural forests
- Forest products. Agro forestry and value addition. Conservation of forest flora and fauna.
- Soil- physical, chemical and biological properties. Processes and factors of soil formation. Soils of India. Mineral and organic constituents of soils and their role in maintaining soil productivity

Computer Application: (10 Marks)

- Elementary knowledge of Computer, Concept of Hardware and Software, Operating System, Office Application Software, Computer networking.

4. For Senior Accounts Clerk:-

Online (CBT) examination will carry 90 marks having 90 questions of 1 (one) mark each, comprising of multiple choice, objective type question on the followings:-

- | | | |
|------|---|------------|
| i) | English | - 20 marks |
| ii) | Arithmetic, General Studies & Current Affairs | - 20 marks |
| iii) | Commerce & Accountancy | - 40 marks |
| iv) | Computer app, | - 10 marks |

The duration of examination shall be 1 hour and 30 minutes:-

English (20 Marks)

- Fundamentals of the English language such as vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage etc.

Arithmetic, General Studies & Current Affairs: (20 Marks)

- Divisibility, fractions, decimals, recurring decimals, simplification, HCF, LCM, Partnership, Average, Ratio and proportions, percentage, simple interest, profit & loss, time & distance, area of rectangles and squares including matters of everyday observation and Verbal and Non-Verbal Reasoning, Quantitative Aptitude, General Knowledge & Current events.

Commerce & Accountancy (40 Marks)

- **Business Studies** - Nature and Purpose of Business, Forms of Business Organization, Private, Public and Global Enterprises, Banking, Banking Service including digital banking, Insurance, Postal & Telecom Service, E-Business, Outsourcing, Social Responsibility of Business & Ethics. Source of Business Finance, Nature and Significance of Management, Principles of Management, Business Environment, Planning, Organizing, Staffing, Directing and Controlling. Financial Management.
- **Accountancy**: Accounting- concept and objectives, Basic Accounting, Fundamental accounting assumptions: GAAP: Concept, Business Entity, System of Accounting, Accounting Standards, Recording of Business Transactions, Bank Reconciliation Statement, Depreciation, Provisions and Reserves, Accounting for Bills of Exchange, Trial balance and Rectification of Errors, Financial Statements, Cash Flow Statement Accounting for Not-for-Profit Organizations, Partnership Firms and Companies, Financial Statement Analysis, Computers in Accounting and Computerized Accounting System

- **Audit** -Introduction to Auditing, Errors and Frauds and Auditor, Different Types of Audit, Internal Control System, Pre-Audit Procedure, Vouching of Transactions, New Branches of Auditing.
- **Taxation** – Income Tax in India, Tax structure in India - Direct Tax, Indirect Tax, Basic Concepts and definitions under income Tax Act, Incomes which do not form part of Total Income, Residential Status and Incidence of Tax of individual assessee Income under the head "Salaries", Income from "House Property", Income from "Capital Gains", Income from Other Sources, Goods and Services Tax (GST):
- **Costing** – Definition of Cost, Classification of Cost, Preparation of Cost Sheet, Cost of Materials, Cost of Labour, Basic Concept of Overhead.
- **Economics and Statistics** - Economics, Scarcity, Choice, Opportunity Cost, Production, Production Possibilities, Factors of Production, Economic Problems, Economic Systems and the Concepts of Development and Underdevelopment, Demand, Supply, Production, Cost of Production, Markets, The Role of Government in the Economy, The Major Macroeconomic Variables: National Income, Consumption, Savings and Investments, Unemployment, and Inflation, Growth and Development, Fiscal Policy, Money and Banking, International Trade, Exchange Rates, Tariff, Quotas, The Basics of Factor Market, Statistical Tools for Understanding Indian Economy, Data- Collection of Data- Presentation of Data- Graphical- Tabular-Frequency, Distribution-Measures of Central Tendency- Mean, Median, Mode, Changing Features of Indian Economy, Analysis of the Agricultural Economy of India and West Bengal, Analysis of the Industrial economy of India and West Bengal, Growth in National Income, Per Capita Income- Literacy and Education- Population-Health Indicators- Sectoral Compositions. Concepts of Function, Curves, Straight line, Slopes (non evaluative part, Demand- Factors determining demand, Concept of Elasticity- Elasticity of Demand, Cost Curves- Relationships among AC,AVC, MC, AFC , TC, TVC, TFC- Interrelationship, Revenue- Total –Average- Marginal- Relationships among them- Relationship between AR MR and E- Revenue Under Variable Price and Fixed Price Situation., Supply- Supply function, Market Equilibrium under Perfect Competition, Equilibrium under Monopoly, National Income and Related Aggregates, Impact of Economic Reforms on Banking, Insurance and International Trade
- **Commercial Law** - Law of Contract, Law relating to Sale of Goods, The Law of partnership, Law relating to Negotiable Instruments, Law of Insurance.

Computer Application: (10 Marks)

- Elementary knowledge of Computer, Concept of Hardware and Software, Operating System, Office Application Software, Computer networking, .

5. For Accounts Clerk:-

Online (CBT)examination will carry 90 marks having 90 questions of 1 (one) mark each, comprising of multiple choice, objective type question on the followings:-

- v) English - 30 marks
- vi) Arithmetic - 30 marks
- vii) General Studies& Current Affairs - 20 marks
- viii) Computer app - 10 marks

The duration of examination shall be 1 hour and 30 minutes:-

English:(30 Marks)

- Fundamentals of the English language such as vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage etc.

Arithmetic : (30 Marks)

- Divisibility, fractions, decimals, recurring decimals, simplification, HCF, LCM, Partnership, Average, Ratio and proportions, percentage, simple interest, profit & loss, time & distance, area of rectangles and squares.

General Studies& Current Affairs (20 Marks)

- Matters of everyday observation including everyday science, current events and problems with special reference to India and elementary knowledge of Indian History and Indian Geography .Test of Verbal and Non-Verbal Reasoning, Quantitative Aptitude.

Computer Application: (10 Marks)

- Elementary knowledge of Computer, Concept of Hardware and Software, Operating System, Office Application Software, Computer networking.

6. For Laboratory Assistant:-

Online (CBT) examination will carry 90 marks having 90 questions of 1 (one) mark each, comprising of multiple choice, objective type question on the followings:-

| | | |
|------|----------------------------------|----------|
| i) | English | 20 marks |
| ii) | General Studies& Current Affairs | 30 marks |
| iii) | Science | 40 marks |

The duration of examination shall be 1 hour and 30 minutes:-

English (20 Marks)

- Fundamentals of the English language such as vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage etc.

General Studies & Current Affairs (30 Marks)

- Matters of everyday observation including everyday science, current events and problems with special reference to India, Test of Verbal and Non-Verbal Reasoning, Quantitative Aptitude.

Science (40 marks)

Chemistry

- Concept of elements, atoms and molecules, Atomic and molecular masses
- percentage composition and empirical and molecular formula
- chemical reactions, chemical equations
- periodic table, properties of elements - Nomenclature of element
- Types of solutions, expression of concentration of solutions of solids in liquids
- solubility of gases in liquids, solid solutions
- General introduction of Organic compounds
- qualitative and quantitative analysis

Physics

- Need for measurement; unit of measurement; systems of units; SI units, fundamental and derived
- units. Length, mass and time measurement
- Accuracy and precision of measuring instruments; errors in measurement; significant figures.
- Dimensions of physical quantities, dimensional analysis and its applications
- Equation of state of a perfect gas, work done in compressing a gas
- Kinetic theory of gases- assumptions; concept of pressure
- Kinetic energy and temperature
- Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum
- Composition and size of nucleus, atomic masses, isotopes, isobars; isotones

Environmental Pollution

- Air, water and soil pollution
- chemical reactions in atmosphere, smog, major atmospheric pollutants; acid rain, ozone and its reactions, effects of depletion of ozone layer, greenhouse effect and global warming

Biology

- Classification, Bryophytes, Pteridophytes, Gymnosperms, Angiosperms
- Photoperiodism, Vernalization, and Biogeochemical Cycle, Photosynthesis,
- Structure of DNA
- Structure of RNA, Types of RNA – mRNA; rRNA&tRNA
- Meaning of ecology, environment, habitat and niche
- Energy flow, Nutrient cycling (carbon and phosphorus)
- Pyramids of number, biomass and energy,
- Ecological Succession
- Ecological service: Carbon fixation, Pollination and Oxygen release
- Classification, Characteristics of invertebrates and vertebrates
- Anatomy and physiology of different system of humans, nerve impulse transmission
- Microbiology
- Air Pollution and its control
- Water Pollution and its control
- Agro-Chemicals and their effects
- Solid waste management

- Radioactive waste management
- Green House effect and global warming
- Ozone depletion
- Deforestation

7. For Junior Environmental Assistant:-

Online (CBT) examination will carry 90 marks having 90 questions of 1 (one) mark each, comprising of multiple choice, objective type question on the followings:-

- | | | |
|------|-----------------------------------|------------|
| i) | English | - 30 marks |
| ii) | Arithmetic | - 20 marks |
| iii) | General Studies & Current Affairs | - 30 marks |
| iv) | Computer app, | - 10 marks |

The duration of examination shall be 1 hour and 30 minutes:-

English (30 Marks)

- Fundamentals of the English language such as vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage etc.

Arithmetic : (20 Marks)

- Divisibility, fractions, decimals, recurring decimals, simplification, HCF, LCM, Partnership, Average, Ratio and proportions, percentage, simple interest, profit & loss, time & distance, area of rectangles and squares.

General Studies & Current Affairs (30 Marks)

- Matters of everyday observation, Current events and problems with special reference to India, Everyday science including Physics, Chemistry and Life Science, Test of Verbal and Non-Verbal Reasoning, Quantitative Aptitude, Environmental Science, Pollution (Air, Water, Sound), Economics and elementary knowledge of Indian Geography.

Computer Application: (10 Marks)

- Elementary knowledge of Computer, Concept of Hardware and Software, Operating System, Office Application Software, Computer networking.

17. GENERAL INSTRUCTIONS:

- i. **Correspondence with WBPCB:** WBPCB will not enter into any correspondence with the candidates about their candidature.
- ii. An email/ SMS intimation with the Application number and password (Date of Birth) generated on successful registration of the application will be sent to the candidate's email ID/ Mobile Number specified in the online application form as a system generated acknowledgement. If candidates do not receive the email and