SYLLABUS

Advertisement no. HRAQ/REC-EX-B/2025/07 dated 26/08/2025

GENERAL INFORMATION:

FOR ALL POST CODES (EXCEPT SO 17) COMPUTER BASED TEST (CBT) WILL CONSISTS OF FOLLOWING SECTIONS:

a) SECTION I (40 marks):

General English, Reasoning, Numerical Aptitude.

b) SECTION II (60 marks):

Questions based on Subject knowledge of concerned posts. Detailed syllabus is provided below, post code wise:

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SUPERINTENDING ENGINEER (PRODUCTION)

[POST CODE – (SPE-01)]

Sl.No	Topic	Description
1	Petroleum Exploration	• Classification and description of some common rocks with special reference to clastic and non-clastic reservoir rocks • Origin, migration and accumulation of Petroleum • Petroleum exploration methods • Normal and Abnormal Formation Pressure, Artesian Effect, faulting, salt beds, Gas cap effect, charged Sands
2	Oil and Gas Well Drilling Technology	• Well Planning • Drilling method • Drilling rigs Rig operating systems. • Drilling fluid's function and properties • Drilling fluid maintenance equipment • Oil & gas well cementing operations • Drill string & Casing string function, operations, selection & design • Drilling problems, their control & remedies. • Directional survey • Application of horizontal, Multilateral, extended reach and slim wells
3	Well Control	• Hydrostatic Pressure, Formation Pressure, Fracture Pressure • Formation Injectivity Test. • Primary Well Control, Secondary Well Control • Basic Calculations • Barriers – philosophy, management, testing • Influx Characteristic and behaviour, principles • Causes of kick • Causes of reduction in Hydrostatic Head • Kick Indication • Prevention and Control of Kick • BOP Drills Shut in principles and procedures. • Well Kill methods –forward circulation, reverse circulation, well kill calculations, bull heading, lubricate and bleed, hydrates, • Periodic Inspection of Well Control Equipment & Control system selection • Blowout Preventer testing • Minimum Requirements for Well Control Equipment for Workover Operations as per OISD-RP-174
4	Reservoir Engineering	• Petrophysical properties of reservoir rocks • Coring and core analysis. Reservoir fluid properties • Phase behaviour of hydrocarbon system • Flow of fluids through porous media • Water and gas coning • Reservoir pressure measurements • Reservoir drives • Drive mechanics and recovery factors
5	Petroleum Production Operations	• Well completion equipment and Well completion techniques. • Well production problems and mitigation. • Well intervention & Workover operations including fishing operation. • Workover & completion fluids • Production testing • Formation damage ▪ Introduction to Oil Recovery methods: ▪ Well Completion Design • Well Activation methods

		• Well stimulation techniques. • Artificial lift techniques ▪ Performance Evaluation ▪ Flowing well performance • Field processing of oil & gas • Metering and measurements of oil & gas • Production system analysis & optimization • Pressure vessels • storage tanks • shell and tube heat exchangers • pumps and compressors • shell and tube heat exchangers • pumps and compressors
6	Enhanced Oil Recovery Techniques	• Basic principles and mechanism of EOR Screening of EOR process • Concept of pattern flooding • recovery efficiency • permeability heterogeneity • Macroscopic and microscopic displacement efficiency EOR methods: • Chemical flooding • Miscible flooding • Thermal recoveries (steam stimulation hot water & steam flooding • in-situ combustion) • Microbial EOR.
7	Health Safety and Environment in oil & gas mines with applicable laws	Health hazards in Petroleum Industry: ▪ Toxicity ▪ Physiological ▪ Asphyxiation ▪ respiratory and skin effect of petroleum hydrocarbons ▪ sour gases Safety System: ▪ Manual & automatic shutdown system ▪ blow down systems ▪ Gas detection system ▪ Fire detection and suppression systems ▪ Personal protection system & measures ▪ HSE Policies ▪ Disaster & crisis management in Petroleum Industry Environment: ▪ Environment Clearance, Environment Impact Assessment, Environment Management Plan ▪ Consent to Operate (CTO), Consent to Establish (CTE) ▪ impact on ecosystem air, water and soil ▪ The impact of drilling & production operations on environment ▪ Environmental transport of petroleum wastes ▪ oil spill and oil spill control ▪ Waste treatment methods – Effluent Treatment, Hazardous waste and Management Applicable statutory laws and practices pertaining to Workover Operations under oil & gas mines ▪ Mines Act 1952, Mine Rules 1955, Mines Vocational Training Rules - 1966, Oil Mine Regulations – 2017 (in particular Duty of officials), ▪ Work Permit System as per OISD-STD-175 ▪ Standard of firefighting Equipment for Workover Installations as per OISD-STS-189 ▪ Safe Practices for Workover and Well Stimulation Operations as per OISD-GDN-182

8	Risk Management	▪ Understanding of Unsafe Act, Unsafe Conditions, near miss, accident/incident. ▪ Hazard and Risk. ▪ Incident risk management to reduce the probability of a kick and minimise the potential influx volume in a well control event. ▪ Management of Change (MOC) process to change a well control procedure. ▪ importance of checklists for operations with well control implications ▪ well control drills
09	General Engineering Concepts for Production /Workover	▪ Production Planning and Control (Forecasting Models, Aggregate Production Planning, Scheduling, Material Requirement Planning). Inventory Management. ▪ Structure and properties of engineering materials : stress-strain diagrams for engineering materials. ▪ Principle of hydraulics: Bernoulli's Theorem and its important applications, Viscosity, Streamline and Turbulent flow, Pressure and Fluid Statics, Dynamics of Fluid Flow, Flow through pipes. ▪ Types of Loads, Failure Theory, Designed stress and factor of safety, stress concentration, selection of materials ▪ Shafting: Design of shaft subjected to bending, torsion, axial and combined loading Keys, ▪ Power Transmission Elements: Belt and Chain Drives, ▪ Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; ' riveted and welded joints; shafts, gears, brakes and clutches ▪ Basic Thermodynamics, Laws of Thermodynamics, Properties of steam, Air standard cycles, Fuels and Combustions, Concepts of regeneration and reheat and I.C Engines: Air-standard Otto' Diesel, Air & Gas Compressors. ▪ Types of pumps, discharge through pumps

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (CHEMICAL)

[POST CODE – (CH-02)]

Sl No	Course Title	Syllabus
1	**Inorganic Chemistry**	1. Chemical Bonding & structure 2. Acid Base and Redox Chemistry 3. Inorganic reactions and mechanism 4. Symmetry and Group Theory in Chemistry 5. Chemistry of Lanthanides and Actinides 6. Properties of transition metal complexes 7. Magnetochemistry 8. Electronic Spectra of Transition Metal Complexes 9. Inorganic Photochemistry 10. Characterization of inorganic compounds. 11. Organometallic Chemistry
	Organic Chemistry	1. Structure, Reactivity and reaction mechanism of organic compounds. 2. Stereochemistry 3. Retro synthesis/importance of synthetic planning in organic synthesis 4. Heterocyclic Chemistry 5. Oxidation-Reduction Reactions 6. Photo chemistry of organic compounds 7. Bio-Chemistry-Enzymes and Co-enzymes, Nucleic acids 8. Separation techniques of organic compounds and their spectroscopic identification. Experiments involving the separation and purification of organic compounds from a mixture, using chromatographic techniques, steam distillation, fractional crystallization and sublimation. 9. Basics of polymer chemistry 10. Chemistry of Paints and Surface Coating Technology 11. Fundamentals of industrial polymers. 12. Natural products
3	**Physical Chemistry**	1. Equilibrium and Non-equilibrium Thermodynamics: Phase Rule 2. Surface Chemistry & Catalysis 3. Chemical Kinetics and Reaction Dynamics 4. Electrochemistry 5. Solid State Chemistry 6. Crystals, crystal symmetry, including the principles and practices of X-ray crystallography. 7. Surface phenomena like curve surface, capillary action, adsorption. 8. Structure and properties of different colloidal dispersion

Sl No	Course Title	Syllabus
4	**Analytical Chemistry**	1. UV-Visible spectrometer and FT-IR. 2. Polarography, X-Ray Diffractions. 3. Chromatographic methods: Adsorption, liquid-liquid partition, ion–exchange, HPLC, gel permeation chromatography gas chromatography, HPTLC, Flash chromatography 4. Transmission Electron Microscopy (TEM), Scanning Electron Microscopy (SEM), Atomic Force Microscopy (AFM) 5. Characterization of organic molecules-Applications of IR, UV-visible, NMR, Mass spectrometry, LC-MS 6. Characterization of inorganic molecules- Applications of IR, Raman, NMR, EPR, Mössbauer, UV-visible, NQR, MS, electron spectroscopy and microscopy. 7. Microscopy-Optical microscopy, Reflectance, Transmittance, Fluorescence Microscopy, CLSM, Ultra-high-resolution microscopy 8. Analytical Spectroscopic Methods-Atomic Absorption Spectroscopy (AAS), Atomic (or Optical) Emission Spectroscopy A/OES. 9. X-ray methods: X-ray diffraction, X-ray fluorescence and X-ray absorption and X-ray emission spectroscopy.
5	**Green and Sustainable Chemistry**	1. Introduction to Green Chemistry 2. Principles of Green Chemistry 3. Importance in modern chemical laboratory/industry 4. Examples of Green Reagents/Synthesis/Reactions 5. Waste: production, problems and prevention 6. Analysis and purification of water, wastewater, solid-waste and air pollution. 7. Environmental protection and pollution prevention 8. Adverse Effects of Chemicals on Health and the Environment; Green Chemistry Problems 9. Environmental impact and quality parameter so fair, water and soil. 10. Green chemistry in sustainable development-Designing Sustainable Solutions
6	**Spectroscopy**	1. NMR spectroscopy, ESR spectroscopy, Mossbauer spectroscopy 2. Spectroscopy-Electromagnetic spectrum, Rotational (microwave), Vibrational and Raman spectroscopy, Electronic spectroscopy etc. 3. Mass spectrometry

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (CHEMICAL ENGINEERING)

[POST CODE – (CE-03)]

Sl No.	Course title	Syllabus
1	Process Calculations and Thermodynamics	1. Mass and energy balances (steady/unsteady, multiphase, multi-component, reacting/non-reacting systems). 2. Recycle, bypass, purge calculations. 3. Gibb's phase rule, degrees of freedom. 4. First and Second Laws of Thermodynamics, entropy, applications to open/closed systems. 5. Thermodynamic properties: equations of state, residual properties, partial molar properties, fugacity, activity coefficients. 6. Phase equilibria (VLE, LLE), chemical reaction equilibrium.
2	Fluid Mechanics and Mechanical Operations	1. Fluid statics, Newtonian/non-Newtonian fluids. 2. Shell balances, Bernoulli's equation, energy balance. 3. Macroscopic friction factors, dimensional analysis, similitude. 4. Flow in pipelines, flow meters, pumps, compressors. 5. Boundary layer theory, flow past bodies, packed/fluidized beds, turbulent flow. 6. Particle size/shape/distribution, size reduction, classification. 7. Settling (free/hindered), centrifuges, cyclones, filtration, thickening, mixing, conveying of solids.
3	Heat Transfer	1. Conduction (steady/unsteady), convection, radiation. 2. Heat transfer coefficients, boundary layers. 3. Boiling, condensation, evaporation. 4. Heat exchangers (types, design), evaporators (single/multiple effect), process calculations.
4	Mass Transfer	1. Fick's laws, molecular diffusion, mass transfer coefficients 2. Film, penetration, surface renewal theories. 3. Momentum, heat, mass transfer analogies 4. Stage-wise and continuous contacting (distillation, absorption, extraction, leaching, drying). 5. Design and operation of mass transfer equipment.
5	Chemical Reaction Engineering	1. Reaction rate theories, kinetics of homogeneous and heterogeneous reactions 2. Ideal reactors (batch, CSTR, PFR), non-ideal reactors, non-isothermal reactors. 3. Catalysis, reactor design and analysis.
6	Chemical Technology	1. Inorganic chemical industries (sulfuric acid, phosphoric acid, chlor-alkali). 2. Fertilizers (ammonia, urea, SSP, TSP). 3. Natural products (pulp/paper, sugar, oils/fats). 4. Petroleum refining, petrochemicals. 5. Polymerization industries (polyethylene, polypropylene, PVC, polyester fibres).
7	Instrumentation and Process Control	1. Measurement of process variables, sensors, transducers. 2. P&ID symbols, process modelling, transfer functions, dynamic response. Controller modes (P, PI, PID), control valves, system stability, controller tuning, cascade/feed-forward control.

8	Plant Design, Economics, and Safety	1. Process equipment design and drawing. 2. Plant layout, project engineering, cost estimation. 3. Process safety, hazard analysis, environmental management.
9	Electives / Specialized Topics	1. Polymer Science & Technology. 2. Biochemical Engineering. 3. Fertilizer Technology. 4. Nanotechnology. 5. Pharmaceutical Technology.
10	Engineering Mathematics	Linear algebra, calculus, differential equations, probability and statistics, numerical methods.

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (Civil)

[POST CODE – (CIV-04)]

1. Engineering Measurements & Drawing: Understanding of scales, units, and measurement systems used in civil engineering practices, along with the interpretation and study of engineering drawings.

2. Building Materials including important Construction Chemicals e.g. Admixtures, Grouts, Epoxy, Carbon fibre wrapping etc.

3. Geotechnical Engineering

4. RCC/Steel Structural Design -Beam, Column, Slab, Isolated/Combined footing, Staircase, Water Tank.

5. Transportation Engineering -Design of pavements/IRC guidelines/Rigid & flexible pavement, pavement materials, and construction practices.

6. Basic knowledge of RCC/steel bridges, culverts, and basics of well and pile foundations.

7. Theory of Structure-basics of SFD/BMD/Truss Analysis/ILD/Deflections etc.

8. Strength of Materials - Stress-strain relationships, modulus of elasticity, Poisson's ratio, elongation, and related mechanical properties etc.

9. Estimation & Costing – Preparation of estimates for roads, bridges, culverts, water tanks, and industrial/residential buildings.

10. Basics of Surveying & Levelling (Dumpy Level, Theodolite, Total Station, GPS etc.)

11. Concrete Technology -Concrete Mix design, laboratory & field tests of Cement, Steel, Aggregates & Concrete.

12. Water Supply and Sanitation Engineering e.g. Pipe fittings, estimation of water demand, sanitary fittings, and basic plumbing design etc.

13. Environmental/Public Health Engineering- Basics of environmental protection laws, eco-restoration techniques, solid waste management, effluent treatment, design of manholes, junction boxes, septic tanks, etc.

14. Construction Safety measures- Safety practices, PPE, site safety norms, and risk mitigation.

15. Project Planning and Management: Basics of CPM, PERT, and Gantt charts for project scheduling.

16. Basic knowledge of construction equipment such as road rollers, excavators, hot mix plants, tar boilers, water sprinklers, concrete pumps, asphalt compactors, asphalt pavers, concrete batching plants, transit mixers, motor graders, vibratory soil compactors, concrete mixers, etc.

17. Familiarity with commonly used Indian Standards in civil engineering, including but not limited to: IS 456, IS 800, IS 1893 & Other applicable BIS codes as relevant to construction practice.

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (Electrical)

[POST CODE – (EE-05)]

Sl.No	Topic	Description
1	Circuits and Networks	Circuits and Networks, Two Port Network, Transients in Electric Circuits, Magnetically coupled circuits, Graph Theory, Application of Laplace Transform, Frequency Response, Fourier Analysis, Filter Circuits
2	Electromagnetic Field Theory	Vector Analysis, Electrostatics, Magnetostatics, Electromagnetic Field, Materials and Fields, Electromagnetic Waves
3	Electrical Measurements and Measuring Instruments	Characteristics of Instruments and Measuring Systems, Measuring Instruments, Potentiometers, A.C and D.C. Bridges, Magnetic Measurement, Instrument Transformers, Measurement of Resistance, Inductance, Capacitance, Voltage, Current, Power, Power Factor and Electrical Energy.
4	Power System	General Induction, Transmission Line Parameters, Performance of Transmission Lines, Underground Cable, Distribution, Mechanical Design: (a) Line support, (b) Insulators, (c) Sag, (d) Corona, Substations, Neutral Grounding, Circuit Breakers, Protective Relays, Overvoltage Phenomenon in Power Systems, Over-voltage Protection and Insulation Co-ordination, HVDC Transmission and Systems of Electrical Power Transmission and Load Management, Economic Operation of Steam Power Plant, Elements of Hydrothermal Co-ordination, Transients in Power Systems.
5	Signal and System	Introduction to Signals and Systems, Introduction to System, Representation of Signals, Statistical Signal Analysis.
6	Electrical Machines	Electro-mechanical Energy Conversion, D.C. Machines, D. C. Motors, Transformer, Special Machines, Stepper Motor, Servo Motors, Fundamentals of A.C. Machine Windings, Poly-phase Induction Machines, Single Phase Induction Motors, Synchronous Machines, Other Motors: Phase Commutator Motors, Universal and Repulsion Motors, Reluctance Motors, (Conventional and Switched), Stepper Motor, Brushless D.C. Motor (BLDC).
7	Control System	Fundamentals of Control System, physical System Modelling, Introduction to Control System Components, Time Domain Analysis, the Root Locus Technique, Frequency Domain Analysis, Compensation Techniques, Discrete Time Systems, State-Space Analysis of Control Systems, Describing Function Analysis, Phase-Plane Analysis, Stability Analysis by Liapunov's Method, Design of Feedback Control Systems.
8	Microprocessor and Controller	Introduction, Microprocessor Architecture, Programming Microprocessors, Memory Interfacing, Data Transfer Techniques and their Implementation, Microcontrollers, Common Peripherals and their Interfacing, Important Features of some Advanced Microprocessors, Application of Microprocessors.

Sl.No	Topic	Description
9	Power Electronics	Semiconductor, Power Devices, Converter Operation with SCRs: (i) Single Phase Controlled Rectifier, (ii) Three Phase Controlled Rectifier, (iii) Dual Converter and Cycloconverter Operating Modes, A.C. Voltage controller, SCR Commutation Circuits and Inverters: (i) Commutation Schemes (different classes), Forced Commutation Circuits, (ii) Single-phase and Three-phase Inverters, (iii) Voltage and Current Source Inverters, Output Voltage Control, Harmonic Elimination, Firing circuits for Inverters, Choppers, Applications.
10	Switchgear and Industrial Protection	Symmetrical Fault Analysis, Symmetrical Components and Unsymmetrical Fault Analysis, Neutral Grounding, Circuit Breakers, Protective Relays, Sub-stations, Lightning Arrestors.
11	Industrial Drives	Introduction, Dynamics of Electrical Drives, Selection of Motor Power Rating, Starting, Electric Braking, Control of Electrical Drives, Control of D.C. Drives, Thyristorized A.C. & D.C. Motor drives, Mechanical Features for Electrical Motors, Control of Induction Motor Drives, Industrial Applications.
12	High Voltage AC/DC	Breakdown Mechanism of Gases, Liquids and Solid Materials, Electrical Properties of High Vacuum, Overvoltage Phenomenon and Insulation Co-ordination, High Voltage Generation, Measurement of High Voltage and Currents, High Voltage Equipment, High Voltage Testing and Testing Techniques, Design, Planning and Layout of High Voltage Laboratory.
13	Flexible AC Transmission System	Flexible AC Transmission System (FACTS): Concepts and Opportunities, Basic Concept of Voltage Source Converter (VSC) and Current Source Converter (CSC), Power Flow in A.C. Systems, Static Shunt Compensation: SVC and STATCOM, Operation and Control of TSC, TRC and STATCOM, Compensatory Control, Comparison between SVC and STATCOM, Unified Power Flow Controller Applications, Introduction to Interline Power Flow.
14	Electrical Power Utilization, Traction and Conservation of Electrical Energy	Electric Heating, Welding, Traction, Storage, Electrical Losses and Energy Conversion, Electrical Transmission, Distribution and Utilization Losses, Classification, Reduction of Losses, Benefits of Electrical Energy Conservation, Energy Conservation in Lighting, Electric Furnaces, Electric Drives, Traction Systems, Use of Energy-efficient Equipment, Electrical Energy Audit.
15	Renewable Energy Sources and Management	Non-conventional Energy Sources, Introduction to Non-conventional Energy Sources, Solar Energy, Photovoltaic Energy Conversion, Wind Energy, Fuel Cell, Energy from Biomass, Geothermal Energy, Energy from the Ocean, Tidal Power, Components of Tidal Power Plant, Generation of Tidal Power, Estimation of Energy and Power, Ocean Thermal Energy Conversion (OTEC): Introduction, Types, Plants and their Specifications, Magneto-hydrodynamic Generation and Other Resources, Small Hydro Schemes, Hydrogen Energy, Thermoelectric Generation etc., Combined Operation utilizing more than one Source, Composite Systems, Solar Radiation, Applications of Solar Energy, Bio-conversion, Wind Energy, Energy Management and Conversion.

Sl.No	Topic	Description
16	Distribution System Planning and Automation	Configuration of Distribution Systems, Load Characteristics, Distribution Transformers, Distribution Substation Design, Feeder Design, Voltage Regulation, Protection in Distribution Systems, SCADA, Distribution Automation.
17	Power Plant Engineering	Introduction to Power Plant Engineering, Diesel Plant, Hydro-electric Plant, Gas-Turbine Plant, Modern Trends in Power Plant Operation: Use of Computers in Power Stations, On-line Computer Control of Power Systems (SCADA), Load Dispatching and Load Forecasting.
18	Illumination Technology	Basics of Illumination Engineering, the Visual System, Light Sources and their Characteristics, Control of Light, Illumination and Measurement, Lighting Applications and Design Calculations.
19	Modelling and Simulation	System Models and Role of Simulation, Statistical Tools, Discrete Event Simulation, Modelling and Performance Evaluation of Computer Systems, Continuous System Simulation, Virtual Reality Modelling, Verification and Validation of Simulation Models.
20	Electrical Engineering Materials	Dielectrics, Behaviour of Dielectrics in Alternating Fields, Magnetic Properties of Materials, Conductors, Properties of Semiconductors, Conducting Materials, Insulating Materials.
21	Instrumentation	Introduction, Analytical Instrumentation, Transducers and Sensors, Non-destructive Testing Equipment, Data Transmission and Telemetry.
22	Advanced Engineering Mathematics	Linear Algebra, Complex Variables, Calculus, Vector Analysis, Linear Programming, Transform Calculus, PDE.
23	Analog Electronics	Review of PN Junction Diode, Linear Wave Shaping, Bipolar Junction Transistor, MOSFET, BJT Configuration, Multi-stage Transistor Amplifiers, Operational Amplifiers, Introduction to Feedback Amplifiers.

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (PETROLEUM)

[POST CODE – (PE-06)]

Petroleum Engineering

Linear Algebra: Matrix algebra, systems of linear equations, eigen-values and eigenvectors.

Calculus: Functions of single variable, limit, continuity and differentiability, Taylor series, mean value theorems, evaluation of definite and improper integrals, derivatives, total derivative, maxima and minima, gradient, divergence and curl, vector identities, directional derivatives, line, surface and volume integrals, Stokes, Gauss and Green's theorems.

Differential Equations: First-order equations (linear and nonlinear), higher-order linear differential equations with constant coefficients, Cauchy's and Euler's equations, initial and boundary value problems, Laplace transforms, solutions of one-dimensional heat and wave equations and Laplace equations.

Probability and Statistics: Definitions of probability and sampling theorems, conditional probability, mean, median, mode and standard deviation, random variables, Poisson, normal and binomial distributions, linear regression analysis.

Numerical Methods: Numerical solutions of linear and non-linear algebraic equations. Integration by trapezoidal and Simpson's rule. Single and multi-step methods for numerical solution of differential equations.

Petroleum Exploration: Classification and description of some common rocks with special reference to elastic and nonelastic reservoir rocks. Origin, migration, and accumulation of petroleum. Basics of Petroleum exploration methods.

Oil and Gas Well Drilling Technology: Well planning, drilling method, drilling rigs, rig operating systems, drilling fluid's function and properties, drilling fluid maintenance equipment, oil & gas well cementing operations, drill bit types and their applications, drill string & casing string function, operations, selection & design, drilling problems, their control & remedies. Application of horizontal, multilateral, extended reach, slim wells.

Reservoir Engineering: Petrophysical properties of reservoir rocks, coring and core analysis, reservoir fluid properties, phase behaviour of hydrocarbon system, flow of fluids through porous media, water and gas coning, reservoir pressure measurements, reservoir drives, Primary and secondary recovery techniques, pressure maintenance techniques, reservoir drive mechanism and recovery factors.

Petroleum Production Operations: Well equipment, well completion techniques, well production problems and mitigation, well servicing & workover operations, workover & completion fluids, formation damage, well stimulation techniques, artificial lift techniques, field processing of oil & gas, storage and transportation of petroleum and petroleum products, metering and measurements in oil & gas, production system analysis and optimization, production testing, multiphase flow in tubing and flow-lines, nodal system analysis.

Offshore Drilling and Production Practices (Basic Awareness): Offshore oil and gas operations and ocean environment, offshore fixed platforms, offshore methods like mobile & dynamic mobile units, station keeping platform, jack-up, ships and semi-positioning system, offshore drilling from fixed submersibles, use of conductors and risers.

Petroleum Formation Evaluation: Evaluation of petrophysical properties of subsurface formations: principles, applications, advantages and disadvantages of SP, resistivity, radioactive, acoustic logs and tools used. Evaluation of CBL/VDL, USIT, SFT, RFT. Production logging tools: principles, limitations, and applications. Special types of logging tools. Casing inspection tools (principles, applications, and limitations), Formation Micro Scanner (FMS), NMR logging principles. Standard log interpretation methods. Cross-plotting methods.

Oil and Gas Well Testing: Diffusivity equation, derivation & solutions. Radius of investigation. Superposition principles, Horner's approximations, drill stem testing, pressure transient tests: drawdown and buildup-test analysis, wellbore effects, multilayer reservoirs, injection well testing, multiple well testing, interference testing, pulse testing, well-test analysis by use of type curves, gas well testing.

Reservoir Simulation & Modeling: Static and dynamic reservoir modeling approaches, PVT analysis, History matching techniques and numerical simulation methods

Material Balance & Decline Curve Analysis: Material Balance & Decline Curve Analysis: MBAL and volumetric methods for reserves estimation, tank models and drive mechanism identification, and decline curve analysis for forecasting production performance and estimating ultimate recovery.

Enhanced Oil Recovery Techniques: Basic principles and mechanisms of EOR, screening of EOR processes, concept of pattern flooding, recovery efficiency, permeability heterogeneity, macroscopic and microscopic displacement efficiency. EOR methods: chemical flooding, miscible flooding, thermal recoveries (steam stimulation, hot water & steam flooding, in-situ combustion), microbial EOR.

Reserve estimation and Petroleum Economics:
Production forecast and reserves estimation methods, oil and gas prices, risk and uncertainty analysis, petroleum parameters, system and uncertainty analysis, financial analysis and accounting, petroleum fiscal system.

Latest Trends in Petroleum Engineering: Coal bed methane, shale gas, oil shale, gas hydrate, heavy oil, Underground Gas storage & CCUS.

Digital Tools & Programming: Basic Python/Excel for RE workflows, AI/ML tools-based application for Reservoir Engineers.

Health Safety and Environment in Petroleum Industry: Overview of health hazards in petroleum operations including toxicity, asphyxiation, and exposure to sour gases. Safety systems such as shutdown mechanisms, gas and fire detection, and personal protective equipment. HSE policies and emergency response planning. Environmental impacts of drilling and production activities on air, water, and soil. Basics of environmental protection measures, waste management, and oil spill control.

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR ACCOUNTS OFFICER/ SENIOR INTERNAL AUDITOR

[POST CODE – (AC-07)]

Sl.No	Topic	Description
1	Financial Accounting & Reporting	Accounting Standards- Introduction and Overview, Carve outs/ins in Ind ASs vis-à-vis International Financial Reporting Standards (IFRSs), Preparation of Financial statements of Company viz. Cash flow Statement (Profit and Loss Account, Balance Sheet and Cash Flow Statement)- Profit/Loss prior to incorporation as per Schedule II of Companies Act, SEBI Regulations only related to financial matters excluding Secretarial issues, Internal Financial Controls (IFC).
2	Cost and Managing Accounting	Introduction to Cost Accounting, Materials, Labor, Overheads, Non-Integrated Accounts, Methods, Job and Batch, Contract, Operating, Process and Operation, Standard Cost, Marginal Costing, Budget and Budgetary Control, Cost Management, Cost Volume Profit Analysis, Pricing Decisions, Budgets and Budgetary Control, Standing Costing and Variance Analysis, Transfer Pricing, Cost Management in Service Sector and Financial Decision Modelling, Employee Stock Option and buy back of securities, Capital Budgeting.
3	Company Law and Allied Laws	Company Law 2013, Insolvency and Bankruptcy Code 2016, The Indian Contract Act, 1872; The Negotiable Instrument ACT, 1881, The Payment of Bonus Act 1965, The Foreign Exchange Management Act, 1999.
4	Direct Tax Laws	The Income Tax Act, 1961 and Rules thereunder.
5	Indirect Tax Laws Including Goods and Services Tax & Customs & Foreign Trade Policy	Goods and Services Tax (GST) Law as contained in the Central Goods and Services Tax (CGST) Act, 2017 and Integrated Goods and Services Tax (IGST) Act, 2017, Customs Law as contained in the Customs Act, 1962 and the Customs Tariff Act, 1975 and Foreign Trade Policy to the extent relevant to the indirect tax laws.
6	Auditing and Assurance	Auditing Concepts, Auditing and Assurance Standards, Preparation for an Audit, Internal Control, Vouching, Verification of Assets and Liabilities, Company Audit, Audit Report, Special Audit, Cost Audit and Record Rules, Risk Analysis & Mitigation.

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (INFORMATION TECHNOLOGY)

[POST CODE – (IT-08)]

Sl.No	Topic	Particulars
1	Data Structure and Algorithms	Stacks and Queues Arrays, Linked Lists Searching, Sorting and Hashing Graph and Tree Algorithms Design and analysis of Algorithms Tractable and Intractable Problems Time Complexity, Space Complexity
2	Computer Organization and Architecture	Functional blocks of a computer Introduction to x86 architecture and instruction set, RISC, CISC Pipelining Memory organization Basics of Intel and AMD Processors Organization and Architectural Techniques Memory Hierarchies Peripheral Devices Instruction Level, Thread Level & Process Level Parallelism
3	Operating System	Introduction to OS Process Management Inter-process Communication Deadlocks, Mutex, Semaphores Memory Management techniques I/O devices OS Protection and Security
4	JAVA / C# / Python Programming	Principles of Object-Oriented Programming Basics of Java/C#/Python language Working with User Interfaces Introduction to Threads in Java Database connectivity using JAVA / C# / Python
5	Database Management System	Database System Architecture Relational Query Languages, Relational Database Design, Query Processing and Optimization Storage Strategies Transaction Processing Database Security ACID Properties Normalization and Joins DDL, DML, DCL, DQL, TCL
6	Formal Language and Automata Theory	Finite Automata and Regular Expressions Context-Free Grammars (CFG) Turing Machines Regular & Context-Free Languages Applications of Formal Languages and Automata Theory
7	Computer Graphics	Display Devices Output Primitives Geometric Modelling Two-Dimensional Viewing, 3-D Concepts Visible Surface Detection Methods
8	Compiler Design	Syntax Analysis (Parser) Semantic & Lexical Analysis Intermediate Code Generation Type systems Error detection and recovery

Sl.No	Topic	Particulars
9	Computer Networks	Data communication Components OSI Model & TCP/IP Model Switching and Routing Subnetting Network Security & Firewalls Fundamentals of Wireless Networks SDN
10	Data Mining and Big Data Analytics	Data Cleaning and Processing Association and Correlation Analysis Clustering Algorithms and Cluster Analysis Classification Introduction to Big Data Introduction to Big Data Applications Introduction to Big Data Applications using machine learning. Introduction to Analytics engines like Spark, Hadoop MapReduce etc.
11	Software Engineering	Software Development Process Software Requirement Gathering System Design Principles Software Testing and Quality Management Software Project Management
12	Cloud Computing	Introduction to Cloud Computing Cloud Architecture and Virtualization Serverless Computing and Microservices Basics of popular Cloud Providers: AWS, Azure, GCP
13	Principles of Programming Languages	History & Classification of programming languages Data Abstraction and Data Structures Syntax and semantics of programming languages Types in programming languages Programming Language Evaluation (features/design/implementation)
14	Machine Learning	Introduction to Machine Learning Supervised and Unsupervised LearningEnsemble and Probabilistic LearningReinforcement Learning and Evaluating Hypotheses Genetic Algorithms Deep Learning Techniques
15	Distributed Systems and Parallel Computing	Concepts and characteristics of distributed systems Distributed algorithms and protocols Distributed Database Systems Parallel processing architectures Basics of Parallel programming & Parallel algorithms Distributed Systems Security
16	Cryptography	Symmetric Ciphers -Overview Public Key Encryption, Digital Signatures Authentication Protocols System Security
17	Artificial Intelligence	Scope of AI Problem solving - State space search, Production systems, search space control. Knowledge Representation-Predicate Logic Handling uncertainty and learning non-Monotonic reasoning Neural Networks Planning and Constraint Satisfaction Swarm Intelligence Image processing Natural Language Processing

Sl.No	Topic	Particulars
18	Web Development	HTML, CSS, JavaScript HTTP Methods, Request/Response Headers, Storage Mechanisms – Local, Cookie, Session Server-Side Programming – NodeJS / Java / Python / C# CRUD Operations REST APIs, Rate Limiting, Authorization and Authentication

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (MECHANICAL)

[POST CODE – (ME-09)]

Sl.No	Topic	Description
1	Theory of Machines	Simple Mechanisms, Friction and Friction Drives Displacement, velocity, and acceleration analysis of plane mechanisms; dynamic analysis of linkages; cams; gears and gear trains; flywheels and governors; balancing of reciprocating and rotating masses; gyroscope. Analysis of Plane Motion with Velocity diagram, Acceleration diagram; Kinematic synthesis of linkages, Equilibrium of Rigid Bodies Analysis of Structures Friction Centre of Gravity and Moment of Inertia Lifting Machines Virtual Work and Energy Method Impulse, Momentum, Work and Energy Stress and strain, elastic constants, Poisson's ratio; Mohr's circle for plane stress and plane strain, Strain Rosette. Thin & Thick cylinders; shear force and bending moment diagrams; bending and shear stresses; deflection of beams; torsion of circular shafts. Eule/s theory of columns. Testing of materials with universal testing machine (Uniaxial Tension Test/ engineering stress-strain curves) Testing of hardness and impact strength: Rockwell, Brinell and Vickers and their relation to strength.
2	Machine Design	Types of Loads, Failure Theory, Designed stress and factor of safety, stress concentration, selection of materials, codes for design-BIS codes, Modes of Failure, Failure theories, Fits and Tolerance. Shafting: Design of shaft subjected to bending, torsion, axial and combined loading Keys, Cotter and Knuckle joint Coupling: Rigid and Flexible coupling Power Transmission Elements: Belt and Chain Drives, design of Flat and V-belts Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; principles of the design of machine elements such as bolted' riveted and welded joints; shafts, gears, rolling and sliding contact bearings' brakes and clutches' springs. Design of Mechanical Springs – helical spring, Gears: Spur and Helical gear Design of Friction clutches – single and multidisc clutch, cone clutch, Brakes – Disc, cone, band and internal expanding shoes Tribology, Design of Bearings – radial and Thrust journal bearings, Selection of Rolling Contact Bearings

Sl.No	Topic	Description
3	Vibrations	Basic Concepts Measurement of Vibrations Seismic transducers (ii) LVDT accelerometers (iii) Piezo-electric accelerometers Free and forced vibration of single degree of freedom systems' effect of damping; vibration isolation; Resonance; Critical speed of a shaft for whirling motion. Two Degrees of Freedom System (2DOF) Seismic Instruments Multi Degree of Freedom Systems (MDOF)
4	Engineering Mechanics	Equilibrium of Rigid Bodies Analysis of Structures Friction Centre of Gravity and Moment of Inertia Lifting Machines Virtual Work and Energy Method Impulse, Momentum, Work and Energy Stress and strain, elastic constants, Poisson's ratio; Mohr's circle for plane stress and plane strain, Strain Rosette. Thin & Thick cylinders; shear force and bending moment diagrams; bending and shear stresses; deflection of beams; torsion of circular shafts. Eule/s theory of columns. Testing of materials with universal testing machine (Uniaxial Tension Test/ engineering stress-strain curves,) Testing of hardness and impact strength: Rockwell, Brinell and Vickers and their relation to strength.
5	Engineering Materials	Structure and properties of engineering materials: Crystal Directions and Planes. Phase diagrams: Interpretation of binary phase diagrams and microstructure development; eutectic, peritectic, peritectoid and monotectic reactions Heat treatment (Alloy), stress-strain diagrams for engineering materials. Pattern making and sand casting – Pattern materials – Types – Pattern allowances. Core prints. Moulding sand – ingredients – classification – sand additives – properties of moulding sand – sand preparation and testing. Green sand mould preparation. Cores and core making – Types of cores Principles of powder metallurgy. Principles of welding, brazing, and soldering.
6	Machining and Machine Tool Operations	Mechanics of machining; Basic machine tools - Machining, definition, and objectives. Geometry of cutting tools. Cutting Tool Specification - single and multipoint cutting tools and materials, Mechanics of metal cutting, Mechanism of chip formation, Cutting tools materials and methods of failure; Assessment of tool life. Economics of Machining. Non-Conventional Machining process - Principles of operation, Applications, Merits and Demerits of different non-conventional machining; Principles of work holding, Design of jigs and fixtures Kinematics of Machine Tools Measurement by Dynamometry
7	Metrology and Inspection	Introductory Concept of engineering metrology, Statistical Process Control, Tolerance, Limits of Size and Fits, Tool Room Measuring Instruments; Measurement of Screw Threads Measurement of Gears. Surface Texture Interferometry Alignment Testing

Sl.No	Topic	Description
8	Production Planning and Control	Production Planning and Control (Forecasting Models, Aggregate Production Planning, Scheduling, Material Requirement Planning). Inventory control (EOQ Model, ABC, VED, FSN analysis) Modelling (Classification of inventory, Deterministic versus Stochastic problems situations, Formulation and solution of Deterministic inventory problems) Operations Research (Linear Programming, and solutions in such cases as Integer Programming Problems (IPP), Transportation problem (TP) and Assignment Problem (AP)) PERT & CPM. Network Analysis - PERT (Assumptions and computations related to PERT mode) & CPM (Crashing of jobs for minimum cost-time schedule for CPM models) Maintenance Management - Meaning and Types of maintenance, and their suitability, Standards of maintenance, Total Productive Maintenance (TPM).
9	Fluid Mechanics	Fluid Mechanics: Bernoulli's Theorem and its important applications, Viscosity, Co-efficient of Viscosity. Streamline and Turbulent flow, Reynolds Number, Critical velocity, Poiseuille's equation for flow of liquid through a tube, Motion of a Rigid body in a viscous medium, Rotational Viscometer Pressure and Fluid Statics, Kinematics of Fluids Dynamics of Fluid Flow Flow through pipes Compressible Flow Viscous Flow Turbulent Flow
10	Thermodynamics & Power Engineering	Basic Thermodynamics, Laws of Thermodynamics, Properties of steam, Air standard cycles, vapour compression refrigeration cycle, Fuels and Combustions, Boiler, properties of steam Basic Steam Power Cycles Steam Nozzles, Steam Turbines, Steam Condensers Concepts of regeneration and reheat and I.C Engines: Air-standard Otto' Diesel Air & Gas Compressors Gas Turbine Basic of Blower Psychrometry
11	Turbo machinery	Eular equation for turbo,Rankine and Brayton cycles, Impulse turbine- Pelton wheel, Reaction Hydraulic turbine- Franci's turbine; Centrifugal Pump and Reciprocating Pump; Fluid System - Fluid couplings, Hydraulic dynamometer, Gear Pumps.
12	Heat Transfer	Modes of Heat Transfer, 1-D heat conduction, heat transfer through fins, unsteady heat conduction, lumped parameter system, Heisler's charts, Thermal Boundary layer, Dimensionless parameters in freed forced convective heat transfer, heat transfer correlations for flow over flat plates & through pipes, effect of turbulence, Heat exchanger performance, LMTD & NTU method, Radiative heat transfer, Stefan Boltzmann law, Wein's Displacement Law, Black & Grey Surfaces, View factors, Radiation Network Analysis.
13	Manufacturing Science	As suggested by Drilling Department
14	IC Engines	SI and CI Engines, Engine Systems and Components, Performance characteristics and testing IC Engines, Fuels, Emissions and emission control. (As suggested by FE Department)
15	CAD/CAM	Basic concepts of CAD/CAM and their integration tools; additive manufacturing. (As suggested by FE Department).
16	Basics of Energy and Environment	Conservation, environmental pollution and degradation, climate change, environmental impact assessment, basics of renewable energy.

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (FIRE & SAFETY)

[POST CODE – (FS-10)]

Sl. No	Subject
1	Engineering Graphics, Basic of Civil Engineering, Basics of Electrical Engineering, Advanced Electrical Systems, Applied Chemistry
2	Basics of Mechanical Engineering, Automobile Engineering, Robotics
3	Advanced Engineering Materials, Engineering Mechanics, Engineering Thermodynamics, Heat and Mass Transfer, Fluid Mechanics, Structural Mechanics
4	Mathematics-II, Computational skills
5	Instrumentation and Control, Basic Electronics and Communication
6	Energy and Environment, Indian Culture & Constitution, Universal Human Values-II, Fundamentals of Management
7	Fundamentals of Fire Engineering
8	Fire Service Hydraulics
9	Structural Fire Protection
10	Fire Dynamic
11	Fire Protection
12	Fire Laws
13	Fixed Fire Fighting Installations
15	Fundamentals of Industrial Safety and Health, Chemical Process Safet
16	Fire Codes and Standards, Fire and life Safety Audit
22	Principles of Safety Management, Behavior Based Safety
14	Fire Modelling
17	Fie and Arson Investigation
18	Fire and Risk Assessment
19	Special Hazards, Nuclear Reactors and Safety
20	Occupational Health and Hygiene Management
21	Disaster Management

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER-PUBLIC AFFAIRS

[POST CODE – (PA-11)]

Social Work

1. History and Ideologies of Social Work
2. Qualitative Research Methods in Social Work
3. Disasters, Impoverishment and Social Vulnerability
4. Social Welfare Administration
5. Social Policy, Planning and Programmes
6. Conflict, Violence and Collective Violence
7. Mental Health
8. Social Policy and Planning
9. Community Organisation
10. Social Action
11. Networking and Advocacy
12. Global Economy and Polity
13. Sustainable Development and Gender

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (Safety & Environment)

[POST CODE – (S&E-12)]

SL. No	Course title	Syllabus
01	Environmental Chemistry	• Fundamentals of Environmental Chemistry. • Principles of Water Chemistry. • Soil Chemistry. Atmospheric Chemistry.
02	Environmental Microbiology	• Prokaryotic and Eukaryotic Microorganisms; Characteristics & Classification; Plant-microbe and soil-microbe interactions; Role of microorganisms in wastewater treatment and bioremediation. • Microbial Metabolism. • Growth and Control of Microorganisms. Microbiology and Health.
03	Water Resources	• Global Water Resources. • Surface Water Resources. Groundwater Resources.
04	Water & Wastewater Treatment and Management.	• Water and wastewater quality parameters; Eutrophication and thermal stratification in lakes; River pollution - Oxygen sag curve. • Water treatment methods. • Point and non-point sources of wastewater; Population forecasting methods; Design of sewer and storm water sewers; Sewer appurtenances; Preliminary, primary, secondary and tertiary sewage treatment; Sludge generation, processing and disposal methods; Sewage farming. • Sources and characteristics of industrial effluents; Concept of Common Effluent Treatment Plants (CETP); Wastewater recycling and zero liquid discharge. • Kinetics and Biological reactor design.
05	Air and Noise Pollution	• Structure of the atmosphere; Natural and anthropogenic sources of pollution; Atmospheric sources, sinks, transport; Indoor air pollution; Effects on health and environment; Air pollution: gases and particulate matter; Air quality standards; Primary and secondary pollutants; Criteria pollutants, ambient and source standards, air quality indices, visibility. • Particulate Pollutants. • Gaseous Pollutants. • Automotive emission controls, fuel quality, diesel particulate filters, catalytic convertors. • Air Quality Management. • Noise pollution. • Instrumentation Techniques for Environmental Monitoring.
06	Solid and Hazardous Waste Management	• Integrated solid waste management; Waste hierarchy; Rules and regulations for solid waste management in India. • Municipal solid waste management. • Hazardous waste management • Soil contamination and its remediation • Leachate contamination into groundwater and its prevention & treatment. Management of Biomedical waste, Plastic waste, E-waste, Construction & Demolition Waste.
07	Global and Regional Environmental Issues.	• Global effects of air pollution – Greenhouse gases, global warming, climate change, urban heat islands, acid rain, ozone hole. • Environment conventions and protocols. Principles of International Law and International treaties.

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (GEOPHYSICS)

[POST CODE – (GP-13)]

Part A: Basic Geology

1. Earth and Planetary system - size, shape, internal structure and composition of the earth; concept of isostasy; continental drift; plate tectonics relationship with earthquakes, volcanism and mountain building; continental and oceanic crust composition, structure and thickness. Weathering and soil formation; landforms created by river, wind, glacier, ocean and volcanoes. Basic structural geology - stress, strain and material response; brittle and ductile deformation; nomenclature and classification of folds and faults. Mechanism of rock deformation; primary and secondary structures; geometry and genesis of folds, faults, joints and unconformities. Petrology mineralogy and classification of common igneous, sedimentary and metamorphic rocks, concept of porosity and permeability. Geological time scale - geochronology and absolute time. Principles of Stratigraphy and concepts of correlation. Stratigraphic principles; major stratigraphic divisions of India. Sedimentary Basins in India and their types, Geological and geographical distribution of petroleum resources of India. Petroleum Geology and Petroleum system- source rocks, reservoir rocks, reservoir traps, migration paths, seals.

Part B: Geophysics

1. The earth as a planet; different motions of the earth; gravity field of the earth; geomagnetic field, paleo-magnetism; Geothermics and heat flow, elements of seismology interior; variation of density, velocity, pressure, temperature, electrical and magnetic properties of the earth; earthquakes-causes and measurements, magnitude and intensity, focal mechanisms & beach ball diagrams, earthquake quantification, source characteristics, seismo-tectonics and seismic hazards; digital seismographs. Scalar and vector potential fields; Laplace, Maxwell and Helmholtz equations for solution of different types of boundary value problems in Cartesian, cylindrical theory; integral equations in potential theory; Eikonal equation and Ray theory.

2. Absolute and relative gravity measurements; Gravimeters, Land, airborne, shipborne and bore-hole gravity surveys; various corrections for gravity data reduction free air, Bouguer and isostatic anomalies; density estimates of rocks; regional and residual gravity separation; principle of equivalent stratum; data enhancement techniques, upward and downward continuation; derivative maps, wavelength filtering; preparation and analysis of gravity maps; gravity anomalies and their interpretation anomalies due to geometrical and irregular shaped bodies, depth rules, calculation of mass.

3. Elements of magnetic field, units of measurement, magnetic susceptibility of rocks and measurements, magnetometers, Land, airborne and marine magnetic surveys, Various corrections applied to magnetic data, IGRF, Reduction to Pole transformation, relation of gravity and magnetic potential field, preparation of magnetic maps, upward and downward continuation, magnetic anomalies- geometrical shaped bodies, depth estimates, Image processing concepts in processing of magnetic anomaly maps; Interpretation of processed magnetic anomaly data. Applications of gravity and magnetic methods for oil exploration.

4. Conduction of electricity through rocks, electrical conductivities of metals, non-metals, rock forming minerals and different rocks, concepts of D.C. resistivity measurement, various electrode configurations for resistivity sounding and profiling, application of filter theory, Type-curves over multi-layered structures, Dar-Zarrouck parameters, reduction of layers, coefficient of anisotropy, interpretation of resistivity field data, equivalence and suppression, self-potential and its origin, field measurement, Induced polarization, time and frequency domain IP measurements; interpretation and applications of IP, ground-water exploration, mineral exploration, environmental and engineering applications.

5. Basic concept of EM induction in the earth, Skin-depth, elliptic polarization, in phase and quadrature components, Various EM methods, measurements in different source-receiver configuration. Earth's neutral electromagnetic field, tellurics, magneto-tellurics; geomagnetic depth sounding principles, electromagnetic

profiling, Time domain EM method, EM scale modeling, processing of EM data and interpretation. Geological applications in hydrocarbon exploration.

6. Seismic methods of prospecting- Elastic properties of earth materials; Reflection, refraction and CDP surveys; land and marine seismic sources, generation and propagation of elastic waves, velocity depth models, geophones, hydrophones, recording instruments, digital formats, field layouts, seismic noises and noise profile analysis, optimum geophone grouping, noise cancellation by shot and geophone arrays, 2D and 3D seismic data acquisition, processing and interpretation; CDP stacking charts, binning, filtering, dip-moveout, static and dynamic corrections, Digital seismic data processing, seismic deconvolution and migration methods, attribute analysis, bright and dim spots, seismic stratigraphy, high resolution seismic, VSP, AVO. Basic Reservoir geophysics.

7. Geophysical signal processing, sampling theorem, aliasing, Nyquist frequency, Fourier series, periodic waveform, Fourier and Hilbert transform, Z-transform and wavelet transform; power spectrum, delta function, auto correlation, cross correlation, convolution, deconvolution, principles of digital filters, windows, poles and zeros.

8. Principles and techniques of geophysical well-logging, SP, resistivity, induction, gamma ray, neutron, density, sonic, temperature, dip meter, calliper, nuclear magnetic, cement bond logging, micro-logs. Quantitative evaluation of formations from well logs; application of borehole geophysics in oil exploration.

9. Radioactive methods of prospecting and assaying of mineral (radioactive and non- radioactive) deposits, half-life, decay constant, radioactive equilibrium, G M counter, scintillation detector.

10. Basic concepts of forward and inverse problems, ill-posed of inverse problems, condition number, non-uniqueness and stability of solutions; L1, L2 and Lp norms, overdetermined, underdetermined and mixed determined inverse problems, quasi- linear and non-linear methods including regularization method, Singular Value Decomposition (SVD), Non-linear inverse problems, Gauss Newton method,, steepest descent (gradient) method, BackusGilbert method, simulated annealing, genetic algorithms and artificial neural network.

11. Basic principles of remote sensing energy sources and radiation principles, atmospheric absorption, interaction of -photo interpretation, multispectral remote sensing in visible, infrared, thermal IR and microwave regions, digital processing of satellite images. GIS basic concepts, raster and vector mode operations.

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (GEOLOGY)

[POST CODE – (GEO 14)]

Sl.No	Topic	Particulars
1	**Structural Geology**	• Introduction to Rock Mechanics. • Folds, Faults and Joints, Shear zones, Unconformities. • Basics of Experimental Structural Geology. • Tectonic elements of Earth's Crust. • Plate Tectonics. • Structure & Tectonics of India
2	**Stratigraphy**	• Modern development in stratigraphy. • Formal stratigraphic classifications Stratotypes. • Facies in stratigraphy. Walther's Law of succession of facies. Types of Stratigraphic facies. • Methods of Correlation. • Sequence Stratigraphy: Accommodation Space Controls, Subsidence (tectonics and compaction), Sea Level (Eustasy), Sediment (rates and climate), Basic terms: systems tracts, sequence boundaries, maximum flooding surfaces, para-sequences. • Seismic stratigraphy: Development of the concepts and their significance. • Geology of Indian Peninsula. • Tectonic evolution of cratons and mobile belts in peninsular India. • Introduction to important Hadean, Archaean, Proterozoic successions of Indian Peninsula. • Dharwar, Singhbhum Cratons, Shillong Plateau. Proterozoic stratigraphy of Cudappah Vindhyan and Delhi Basins. • Paleogeography, Sedimentation and Paleoclimate during Gondwana Times. Distribution of Gondwana equivalents in other continents. • Stratigraphy and distribution of Triassic rocks of Spiti, Jurassic rocks of Kutch and Cretaceous rocks of Meghalaya and Cauvery Basins. • Volcanic provinces of India. Deccan Volcanics: Stratigraphy and Distribution and age. • Stratigraphy and Distribution of Tertiary rocks of upper Assam and Surma basins, Assam Arakan Mobile Belt, Meghalaya Basin and Arunachal foredeep. • Geology of Himalayas: Physiographic and Lithotectonic subdivisions of the Himalaya. Major thrusts and their boundaries. India & Asia collision. • Sedimentation and evolution of Himalayan foreland and intra-cratonic basins. Palaeozoic, Mesozoic and Cenozoic succession of the Himalayas. Stratigraphy of the Siwalik Group.

Sl.No	Topic	Particulars
3	**Igneous and Metamorphic Petrology**	• Definition of Magma, Constitution of Magmas, Generation of Magmas. • Source rock composition: upper mantle and lower crust, evolution of magma. • Rare earth elements and their applications to petrogenesis. • IUGS classification of plutonic, hypabyssal and volcanic rocks, • Mid oceanic ridge volcanism, continental flood basalts, Deccan basalts, basalt magmatism associated with subduction zone. • Igneous rocks associated with convergent plate boundaries: ophiolite, granites and granites, continental rift associations.
4	**Geomorphology and Seismology**	• Basic concept of Geomorphology, Control of geomorphological features by geological structure, lithology & Climate. • Physical, chemical, and biological processes in weathering, Soil profiles and nomenclature of horizons, Classification of soils, Role of soil in geomorphology. • Fluvial system, drainage basin and networks, River and channel geometry, Longitudinal profile of river, Fluvial erosion, transportation and depositional processes and related landforms. • Morphometric analysis of basins. Concept of basin morphometry. • Formation of deserts, desert characteristics Eolian processes and landforms. • Energetics of shore-zone processes - waves, tides and currents. • Coastal landforms: Coastal submergence and emergence-shoreline development. • Cycles of climatic changes and landforms. • Geomorphological subdivisions of Indian subcontinents. • Tectonic Geomorphology: Concept, topographic markers and geomorphic indices of active tectonics.
5	**Geological & Geochemical Exploration**	• Mineral Exploration and Exploration Geology • Stages and norms of exploration. • Geological techniques and procedures of exploration. • Geological mapping phases and types. Sampling methods and ore reserve estimation. • Exploration of important economic mineral deposits. • Study of geological maps and sections, stratigraphic columns, structure contour maps, isopach maps, facies maps. • Exploratory drilling: brief reviews of different drilling methods, planning, selection of sites, core logging and records. • Special properties of trace and REE. Radioactive isotopes and their application to geochronology and petrogenesis. • Stable isotopes and their application to earth system processes. • Geochemistry in Mineral exploration.

Sl.No	Topic	Particulars
6	**Remote Sensing**	• Aerial photography: Photographic flight planning, Aerial camera, film and filters. • Geometric characteristics of Aerial photographs: Geometry of vertical aerial photographs, Terminology, Tilt and image displacement, Stereoscopic parallax, stereoscopy and vertical exaggeration. • Aerial photographs in field mapping and preparation of photogeological maps. • Working principles and use of simple photogrammetric instruments. • Methods of quantitative determination of height, dip of bed, stratigraphic thickness and throw. • Remote sensing sensors and platforms. Remote sensing data products, Concept of Digital Image Processing: Geometric and radiometric corrections. • Principles of photo interpretation. Elements of photo interpretation: scale, tone, colour, texture, pattern, shape, size, drainage patterns, drainage anomaly. • Applications: Photogeological Techniques in lithological and structural interpretation. • Geological features identification from Remote Sensing Techniques. • Space Missions : Global and Indian space mission: LANDSAT, METEOSAT, SEASAT. SPOT, IRS. • GIS - Concepts, components, data formats and structure.
7	**Palaeontology**	• Organic life, fossil: Introduction to Taphonomy, Organic evolution & General principles of palaeontology. • Microfossils. • Morphology and geological distribution of Foraminifera. • Palynological guide fossils of India. • Cretaceous-Palaeocene-Eocene microfossil assemblages of Assam, Meghalaya and Arunachal Pradesh and their age and environmental significance. • Application of microfossils (fauna and flora) in Hydrocarbon exploration, Palaeo-oceanographic interpretation, Climate change interpretation. • Oxygen and Carbon Isotope studies of microfossils. • Introduction to Biofacies, Microfacies and Palynofacies. • Biostratigraphy and biostratigraphic zonation. • Biomarker
8	**Non-conventional Energy**	• Components of Energy : Non-Renewable and Renewable. • Production of Thermal energy using fossil fuels and solar energy. • Geothermal and Tidal Energy: Basic principles, Systems used in practice and applications Resource assessment.
9	**Geoscientific Data Analysis with Matlab and Petrel**	• Introduction to Matlab. • Image processing using Matlab. Signal processing using Matlab. • Simulation, regression, classification and optimization. • Brief on Reservoir modeling using Petrel.

Sl.No	Topic	Particulars
10	**Sedimentology**	• Condition of sedimentation on the earth surface. • Origin and occurrence of siliciclastic, carbonate sediments and other chemical/biochemical sedimentary rocks. • Physical processes of sediment movement and sedimentation. • Sedimentary textures and structures. Use of textures and structures in interpreting depositional conditions. • Classification of sedimentary rocks: classification of conglomerate, sandstones, mudstone and carbonate rocks. • Sedimentary environments, facies association and models for major environments. • Palaeocurrent analysis, heavy minerals analysis. • Sedimentary Facies and Sequence Analysis. • Provenance of siliciclastic sedimentary rocks. • Diagenesis of sandstones, mudstone and carbonate rocks. • Sedimentation and Tectonics: Classification of tectonic basins, sandstone composition and basin evaluation. • Application of Stable isotopes in sedimentological studies.
11	**Geochemistry: Principles & Applications**	• The Elements and the Periodic Table, • Chemical bonding, Geochemical classifications, atomic nucleus and isotopes. • Basics, Methods for analysis, Major and minor elements in the crust, Normative minerals, Variation diagrams. • Basics, Element distribution, rare earth elements: a special group of trace elements, Isotopes: radioactive & stable. • Carbon cycle, origin composition and structure of organic matter, Optical and geochemical methods for source rock characterization and maturation assessment.
12	**Elements of GIS**	• Introduction and definitions of GIS, components, application areas of GIS, advantages and disadvantages of GIS. • Data formats, Data structure, Raster data model and vector data model, Raster versus vector, Advantages and disadvantages of raster and vector. • Functional elements of GIS: Data acquisition, Data input and data processing, data management system, product and report generation. • Coordinate systems: Cartesian Coordinate System, Geographic Coordinate system. • Map Projection: Definition, Classification and types of map projection, Polyconic projection, UTM projection, Latitude/Longitude geographic coordinates. • Digital Image processing and GIS software (ArcGIS, ERDAS).

Sl.No	Topic	Particulars
13	**Geophysical Exploration**	• Surveying natural potentials: Exploring shallow natural potentials, Telluric currents, Telluric current surveying, Magneto telluric surveying, Field examples. • Electromagnetic surveying: The principle of EM surveying, parallel line dip angle EM surveying, Horizontal-loop EM surveying, Airborne EM surveying, Field examples. • Electrical resistivity surveying: Ohm's law and resistivity, current flow in three dimensions, current density, current flow across a boundary, Measuring resistivity, Equipment for electrical resistivity surveying, Sounding and profiling. • Seismic methodology and brief on interpretation,
14	**Petroleum Geology**	• Introduction to Petroleum Geology. • Mode of occurrences of petroleum. • Surface, subsurface and Miscellaneous Physical and chemical nature of petroleum. • Organic/Inorganic Origin of petroleum, Migration and accumulation of Petroleum. • Source rocks, Source Rock Evaluation, Rock Eval pyrolysis. • Conversion of organic matter into Petroleum • Reservoir fluids: Gas, Oil and Water • Clastic and non-elastic reservoir rocks • Trapping Mechanism for Oil & Gas: Structural, Stratigraphic and Combination traps. • Drive mechanism of migration. • Concept of petroleum bearing basins and basin geology. • Petroliferous basins of India. • Petroleum Geology of India and world. • Geology of major oil and gas fields of India. • Future trends of oil exploration. • Details study of oil-gas fields of NE region. • World oil and gas reserves. • A brief review of the important oil fields of the world.

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (LAND/ LEGAL)

[POST CODE – (LL- 15)]

Sl.No	Topic
1	Constitution Of India
2	Indian Penal Code, 1980
3	Labour And Industrial Laws
4	Land Laws of the State of Assam
5	The Arbitration and Conciliation Act, 1996
6	The Code of Civil Procedure, 1908
7	The Code of Criminal Procedure, 1973
8	The Companies Act, 2013
9	The Indian Contract Act, 1872
10	The Indian Evidence Act, 1872
11	The Indian Partnership Act, 1932
12	Environmental Laws
13	The Right to Information Act, 2005
14	Transfer to Property Act, 1882

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (HR)

[POST CODE – (HR-16)]

Sl No	Course Title	Syllabus
1	Principles and Practices of Management	Development of management Thought, Contributions of Taylor, Fayol, Mayo, Mary Parker Follett and C.I. Barnard. Behavioural Approach, Systems Approach, Quantitative Approach and Contingency Approach. Function of Management: Planning and Decision Making, Organising, Staffing, Directing, Controlling, Coordinating.
	Human Resource Management	Conceptual framework, Human Resource Planning, Job Analysis, Recruitment, Selection, Placement, Induction, Training and Development, Performance Management, Job Evaluation, Compensation Management, Employee Benefits and Incentives, Managing Career. New Trends in HRM: Changing environment of HRM and contemporary challenges, Emerging HRM Concepts.
3	Human Resource Development (HRD)	Concepts, Assumptions, Values, HRD Mechanisms, Action – research Model, HRD Culture and Climate, HRD Interventions, HR Accounting and Audit, Consultant – client relationship, Knowledge Management, Human Resource Information System. International Human Resource Management (IHRM): Organisational context of IHRM, IHRM and Sustainable Business, Functions of IHRM, Cross – Cultural Studies, Cultural Diversity, Transnational Organisations, IHRM models.
4	Organisational Behaviour	Concept, Scope, Nature of human behavior, Personality, Perception, Learning, Attitude, Motivation, Interpersonal Behaviour, Group Dynamics, Leadership, Communication, Power and Authority, Stress management, Organisational Change and Development.
5	Industrial Relations	Concept, Scope, Evolution, Approaches, Actors and Models, Conflict and cooperation, Bi-partitism, Tri-partitism, Collective Bargaining, Workers' Participation in Management, Grievance Handling and Disciplinary Action, Code of Conduct, Industrial Relations in changing scenario, Employers' organisations. Trade Unions: Concepts, Evolution, Problems of trade unions in India, Recognition, The Trade Unions Act, 1926. Emerging role of trade unions in India
6	Industrial Disputes	Factors, Forms, Trends, Prevention and Settlement, Role of State and Central Labour Administration, Strikes and Lockouts. The Industrial Employment (Standing Orders) Act, 1946. The Industrial Disputes Act, 1947.
7	Labour Legislation	• Objectives, Principles, Classification and Evolution. International Labour Organisation, Social Justice and Labour Legislation, Indian Constitution and Labour Laws. • The Factories Act, 1948. • The Mines Act, 1952. • The Inter-state Migrant Workmen (Regulation of employment and conditions of service) Act, 1979. • The Contract Labour (Regulation and Abolition) Act, 1970. • The Building and other Construction workers (Regulation of employment and conditions of service) Act, 1996. • The Child Labour (Prohibition and Regulation) Act, 1986. • Maternity Benefit Act, • PoSH Act • RPwD Act
8	Wages	Concept, Types, Factors influencing wages, Wage Theories and Wage Differentials: • The Minimum Wages Act, 1948. • The Payment of Wages Act, 1936. • The Payment of Bonus Act, 1965. • The Equal Remuneration Act, 1976. • The Payment of Gratuity Act, 1972. • The Employees' Provident Fund and Miscellaneous Provisions Act, 1952.

Sl No	Course Title	Syllabus
9	Labour Welfare	Concept, Scope, Types, Theories and Principles, Industrial Health and Hygiene, Industrial Accidents and safety, Occupational Diseases Social Security: Concept and Scope, Social Assistance and Social assurance.
10	Labour Market	Features, Demand and Supply of Labour, Nature and Composition of Indian Labour Force, Unemployment and Underemployment, Types of Labour Market, Characteristics of Indian Labour Market, New Dynamics of Labour Market in India, Economic Systems and Labor Market, Problems of Labour in India.

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF SENIOR OFFICER (COMPANY SECRETARY)

[POST CODE – (COS-18)]

Unit 1 - Corporate Laws and Governance

1. **Companies Act, 2013**
   - Provisions related to Corporate Governance
   - Board Composition and Meetings
   - Corporate Social Responsibility (CSR)
   - Appointment, Powers, and Duties of Company Secretary
   - Shareholders and Investor Relations
2. **Securities Laws**
   - SEBI Regulations
   - Listing Obligations and Disclosure Requirements (LODR)
   - NSE and BSE Listing Requirements
   - Insider Trading Regulations
   - Market Rumour Compliance
3. **Regulatory Framework**
   - SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015
   - SEBI (Insider Trading) Regulations
   - Securities Contracts (Regulation) Act, 1956

Unit 2 - Investor Relations and Compliance

1. **Handling Investor/Shareholder Grievances**
   - Procedures for Redressal of Investor Complaints
   - Role of Company Secretary in Investor Relations
   - Coordination with Registrar and Transfer Agents (RTA)
2. **Unpaid Dividends and Unclaimed Shares**
   - Provisions under the Companies Act, 2013 regarding Unpaid Dividends
   - Transfer of Unclaimed Shares to Investor Education and Protection Fund (IEPF)
   - Procedures for handling shareholder requests and transfer to IEPF
3. **Corporate Disclosures and Communication**
   - Statutory Disclosures under SEBI and Companies Act
   - Regular Reporting to Stakeholders
   - E-filing of Statutory Forms on MCA Portal

Unit 3 - E-Filing and Statutory Compliance

1. **MCA Portal E-Filing**
   - E-filing of Forms (DIR-12, AOC-4, MGT-7, etc.)
   - Role of Company Secretary in Filing Annual Reports and Financial Statements
   - Co-ordination with PCS for Filing
2. **Handling Statutory Returns**
   - Filing of Forms and Reports with SEBI
   - Filing of Forms with Stock Exchanges (NSE, BSE)
   - Preparation of Annual Return and its filing
3. **Board and Committee Meetings**
   - Procedures for Convening and Conducting Board and Committee Meetings
   - Drafting and of ,Notices, Resolutions & Minutes,
   - Statutory Requirements for Board Reports and Annual Reports

Unit 4- Insider Trading & Corporate Ethics

1. **Insider Trading Regulations**
    - Monitoring and Reporting of Insider Trading Activities
    - System Driven Disclosures on NSDL
    - Reporting to SEBI and Other Authorities
2. **Corporate Governance and Ethics**
    - Role of Company Secretary in Ensuring Corporate Governance
    - Corporate Social Responsibility (CSR) and Compliance
    - Whistleblowing and Ethical Practices

Unit 5 - General Awareness and Current Affairs

1. **Economic and Financial Laws**
    - Current Trends in Corporate Governance
    - Updates on Market and Financial Regulations
    - Current Affairs Related to Corporate Law, SEBI, NSE/BSE
2. **Recent Developments in the Corporate World**
    - Changes in Companies Act, SEBI Guidelines, and Stock Exchange Regulations
    - Case Studies on Corporate Failures and Lessons Learned

Unit 6- Communication and Reporting

1. **Report Preparation and Documentation**
    - Drafting Reports for Board Meetings and Stakeholders
    - Preparation of Annual Reports, Forms, and Financial Disclosures
    - Coordination with Senior Management and External Authorities
2. **Legal Documentation and Compliance Communication**
    - Communication with Regulatory Bodies (SEBI, NSE/BSE)
    - Interaction with Investors and Shareholders
    - Draft response against RTI Query

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

SENIOR OFFICER (Electronics & Communication)

[POST CODE – E&C 19)]

Sl.No	Topic	Particulars
1	ENGINEERING MATHEMATICS	Linear Algebra Calculus Differential Equations Vector Analysis Complex Analysis Probability and Statistics
2	BASIC ELECTRICAL ENGINEERING	DC circuits: Electro-magnetism: Single-phase AC circuits Transformers and efficiency Basics- DC machines Electrical power sources Basics of cell, batteries and their uses Basics of Electrical Installations
3	ELECTRONIC DEVICES	Semiconductor Physics P-N junction Basics of semiconductors Diodes Junction & Field Effect Transistors Power Switching Devices Optoelectronics
4	NETWORKS, SIGNALS AND SYSTEMS	Circuit Analysis Continuous-time Signals Discrete-time Signals LTI systems
5	ANALOG CIRCUITS	Simple diode circuits Single-stage BJT and MOSFET amplifiers BJT and MOSFET amplifiers Simple op-amp circuits Sinusoidal oscillators Power supplies
6	DIGITAL CIRCUITS	Number Representation Combinatorial circuits Logic Gates Logic Families Semiconductor Memories Sequential Circuits Data Converters Computer Organization
7	COMMUNICATION SYSTEMS	Random Processes Analog Communications Information Theory Digital Communications Optical Communication Cellular Networks

Sl.No	Topic	Particulars
8	CONTROL SYSTEMS	Basics of Control Systems Feedback systems Transfer function Block diagram representation Signal flow graph Transient and steady-state analysis of LTI systems Frequency response Routh-Hurwitz and Nyquist stability criteria Bode and root-locus plots Lag, lead and lag-lead compensation State variable model and solution of state equation of LTI systems Design of control systems, compensators, elements of lead/lag compensation, PID and industrial controllers.
9	ELECTRONIC MEASUREMENTS AND INSTRUMENTATION	Principles of measurement Analog and Digital systems for measurement Electromagnetic Instruments Electronic Instruments Measurement systems for non-electrical quantities Basics of telemetry Different types of transducers and displays Data acquisition system basics
10	COMPUTER ARCHITECTURE, PROGRAMMING, NETWORKING	Basics of Programming Object Oriented Programming Basics Basic Data structures Overview of data communication and Networking OSI reference model
11	ADVANCED ELECTRONICS TOPICS	DSP: Discrete time signals/systems, uses Digital filters Transmission lines Microprocessors & microcontrollers Basics of Embedded systems

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

CONFIDENTIAL SECRETARY

[POST CODE – (CS 20)]

Sl No	Course Title	Syllabus
1	TYPING	• Methods of typing, • Centering • Typing of letters, blocked, semi blocked and NOMA simplified with open closed and mixed punctuations, • Typing of addresses on envelopes, inland and postcards including window display chain feed. • Typing of annexure and appendices to letters. • Tabular typing Correction of errors on the carbon copies • Typing on printed forms • Typing from recorded tapes • Personal habits and work habits, personal appearance, willingness, promptness, initiative, trustworthiness, punctuality, etc. Following instructions/directions.
2	SHORTHAND ENGLISH	• Introduction to Shorthand, Consonants: Definition, Classification, arrangements and directions, table of consonants, Joining of Strokes • Vowels: Long & Short Vowel, Dot & Dash Vowel, Places of Vowel, following and preceding vowel, Intermediate vowel, places for joined strokes & vowel. • The Consonants, the Vowels, Intervening Vowels and Position, Grammalogues, Punctuation, Alternative signs for `r' and `h'. • Dipthongs and abbreviated `W'. Phraseography including tick 'the'. • Representing `S' and `Z' with circle and strokes, large circles `sw' and `ss' or `sz'. Loops `ST' and `STR', initial hooks to straight strokes and curves, `n' and `f' hooks, alternative forms for `fr' and `vr' etc. with intervening vowels. Circle and loops to final hooks, the shun hooks. The aspirate, upward and downward 'r', upward and downward 'l' & 'sh', compound consonants, vowel indication. The halving principle, the doubling principle, dipthonic or two vowel signs, medial semicircle. Prefixes and negative words, suffixes and terminations. Special list of words. • Contraction, Special Contractions, Figures, etc, Proper Names, etc., Essential Vowels, Intersections, Advanced Phraseography. Different Phrases- Business, Political, Banking & Stock Broking, Insurance and Shipping, Technical & Railway, Legal etc.
3	OFFICE MANAGEMENT	• Importance of Filing and its various kinds of proformas used in organizations and institutions. • Office-Introduction, Importance of Office, Departments of Office. Functions, Duties and Characteristics of Office Manager.Office Accommodation and Environment - Office building : size, layout, safety and security measures - Reception : Importance, shape and size, control - Communication : Feature, classification, barriers. - Arrangement and adjustment: Furniture, allotment of seats, chambers, cabins rooms etc. - Handling of correspondence and market registers, filling forms and stationery. Office Layout-Types of Office Layout, Open and Private Office. • Office Machines, manuals, charts and reports - Kind of office machines (Computers and word processors), calculators, etc. - Objectives and advantages of various machines. - Use of machines, installing, handling, maintenance. - Objectives and advantages of office manuals charts, preparation and play of manuals and charts. - Kind of reports, report preparation, enquiries. • Office Equipments: Types of Office Equipment and Mailing Room Equipments. Photocopier and Communicating Equipments. Other useful equipments – Duplicating Machine, Intercom, EPBX, Electronic Stencil Cutter, Personal Computer, Internet Fax, Zerox etc. Networking - LAN, MAN, WAN Using internet, sending and receiving e-mail messages; searching, Information from websites by the use of search engines. • Personnel Management, Supervision, Control and coordination - Office staff (Peon, daftari, clerk, technical staff, supervisors, accountant, manager, etc.) Selection, training and development - Supervision: Importance and span of supervision-Discipline: Importance and manner of office control, work control and work distribution.

Sl No	Course Title	Syllabus
4	**SECRETARIAL PRACTICE**	• Secretary: Roles and responsibilities, definition, need and importance, appointment and dismissal, work, duties, rights and liabilities, memorandum of association and secretary, articles of association and secretary, prospectus and secretary. • Company management and administration: Definition, importance and kinds, directors: qualification and number, appointment, removal, powers, duties and liabilities, remuneration, prevention of oppression and mismanagement, compromise, arrangement. Company formation and incorporation, promoter, capital subscription, company and association, memorandum and articles, prospectus and statements, meetings and Company Act. Share and debentures, application, allotment, transfer and transmission, calls and forfeiture, dividend and interest, account and audit, taxes. • Official Correspondence: Difference between official letter and demi official letter. Formal and informal letters. Types and differences. Writing applications, drafting letters, complaint, notices. Preparation of agenda/minutes and reports, circular & memorandum etc. Commercial, officials, demi official, meaning, importance, objectives, sales letter, trade order agency correspondence, import, export trade, secretarial correspondence, application for jobs, post of accountant, lecturer, reminder. • Communication Skills and its introduction: Communication and its importance, Principles of effective communication, Types of communication - verbal, non-verbal, written, email, talking on phone. Non-verbal communication - characteristics, components- Para- language, Body language. Barriers to communication and dealing with barriers. Handling nervousness/ discomfort. Listening Skills Listening-hearing and listening, effective listening, barriers to effective listening, guidelines for effective listening. Triple- A Listening - Attitude, Attention & Adjustment. Active listening skills. Facing interviews- Manners, etiquettes, dress code for an interview, Do's & don'ts for an interview, Behavioral Skills- Problem solving Confidence building Attitude. • GENERAL KNOWLEDGE: Energy Conservation, Global Warming, Relationship between society and environment, ecosystem and factors causing imbalance. Welfare Acts Benefits guaranteed under various acts- Factories Act, Apprenticeship Act, Employees State Insurance Act (ESI), Payment Wages Act, Employees Provident Fund Act, The Workmen's Compensation Act, Accident & Safety- Accident prevention techniques-- control of accidents and safety measures.
5	**BASIC COMPUTER KNOWLEDGE**	• Concept and Importance of Computer in Communication. General Idea of various operating systems, Computer Fundamentals: Introduction, Definition, Utility, types and applications of Computers. Hardware: Definition & Introduction, Motherboard, Processor, Input & Output Devices and Storage devices. Software: Definition & types of Software, Introduction of MS-Excel: Opening a Worksheet; Entering text in worksheets, Editing Excel - selecting cells, editing cell contents; saving; printing. Internet.

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF

HINDI OFFICER

[POST CODE – (HO 21)]

SL No	Course title
1	The Union's Official Language policy, Constitutional provisions, President's Order - 1960, Official Language Resolution - 1968 (Official Language Act, Rules and Official Language Program).
2	Government institutions and projects working related to the official language Hindi.
3	National Language and Official Language.
4	Development of the Hindi language and literature.
5	History of Hindi Literature.
6	Hindi Literary Studies, Hindi Poetry, Hindi Novel, Hindi Story, Hindi Play.
7	Hindi grammar rules, vocabulary, usage and sentence correction etc.
8	Prominent Hindi writers and their works.
9	Modern trends in Hindi literature / criticism.
10	History and development of the Devanagari script.
11	Translation from Hindi to English and from English to Hindi, vocabulary/technical terminology.
12	Scientific and Technical Translation and Terminology.
13	IT tools related to Hindi.
14	Hindi in e-governance.
15	General knowledge related to Hindi.
16	English language and grammar rules, vocabulary and usage, sentence corrections etc.
17	English and Hindi passage-based questions.