TATA STEEL

Internal Communication Form

Ref. No. : TAG / 114 / 2023

Date : 03rd October, 2023

Internal Career Opportunities:

Assistant Manager (IL6) Vacancies
(For locations across the company)

Position	Assistant Manager	
Level	IL6 (For locations across the company)	
Minimum qualifications for Domain	Domain (Test Cluster)	Minimum Qualification
	Agglomerates	Full Time Engineering Degree / Diploma in any discipline from a recognized Institute or Ex OT.
	Administration	Full time Post Graduate Degree / Post Graduate Diploma / MBA / Degree or Diploma in Engineering / Graduate in any discipline from a recognised institute
	Automation – Maintenance	Full time B. Tech (Mech/ Elec/ Electronics) or equivalent or Diploma (Mech/ Elec/ Electronics)
	Blast Furnace	Full Time Engineering Degree / Diploma in any discipline from a recognized Institute or Ex OT.
	Civil	Full Time Engineering Degree / Diploma in Civil from a recognized Institute
	Coke Plant	Full Time Engineering Degree / Diploma in any discipline from a recognized Institute or Ex OT.
	Cold Rolling	Full Time Engineering Degree / Diploma in any discipline from a recognized Institute or Ex OT.
	Corporate Audit Finance & Commercial	Degree or Diploma in Engineering, CA Inter, ICWA Inter, M. Com, B. Com
	Corporate Audit Technical	Full-Time B.E or B. Tech Degree/ Diploma or equivalent in Engineering from an AICTE recognized institute
	Corporate Communication	Full time Post Graduate Degree / Post Graduate Diploma / MBA / Degree or Diploma in Engineering / Graduate in any discipline from a recognized Institute
	Design – Civil	Full Time Engineering Degree / Diploma in Electrical / Electronics / Instrumentation / Mechanical / Civil / Structural from a recognized institute with relevant experience in Design
	Design – Electrical	Full Time Engineering Degree / Diploma in Electrical / Electronics / Instrumentation from a

		recognized Institute with relevant experience in Design
	Design – Mechanical	Full Time Engineering Degree / Diploma in Mechanical / Production from a recognized Institute with relevant experience in Design
	Electrical Maintenance	Full Time Engineering Degree / Diploma in Electrical / Electronics / Instrumentation from a recognized Institute.
	Electrical T&D	Full Time Engineering Degree / Diploma in Electrical from a recognized Institute.
	Engineering & Project	Full time Engineering Degree / Diploma in Civil/ Electrical / Electronics/ Instrumentation/ Mechanical/ Industrial/ Production from a recognized institute
	Engineering Services	Full Time Engineering Degree / Diploma in Mechanical / Production/ Industrial Engineering/ Civil.
	Finance & Accounts	CA(Inter)/ ICWA(Inter)
	Fuel Management	Full Time Engineering Degree / Diploma in any discipline from a recognized Institute or Ex OT / Graduate in Science from a recognized Institute.
	Intelligence	Graduate in any discipline
	Hot Rolling	Full Time Engineering Degree / Diploma in any discipline from a recognized Institute or Ex OT.
	Human Resource Management	(Full time) PG Diploma/ Degree with specialization in HRM/ Personnel Management/ Social Welfare/ Labour Welfare from a recognized institute.
	Legal (Industrial & Litigation)	Full time LLB from a recognized Institute
	Learning & Development – Electrical, Electronics & Instrumentation	Full Time Engineering Degree / Diploma in Electrical / Electronics / Instrumentation from a recognized Institute
	Learning & Development - Mechanical	Full Time Engineering Degree / Diploma in Mechanical from a recognized Institute
	Learning & Development - Metallurgy	Full Time Engineering Degree / Diploma in Metallurgy from a recognized Institute or Ex OT
	Logistics and Supply Chain	Full time Post Graduate Degree / Post Graduate Diploma / MBA / Degree or Diploma in

		Engineering / Graduate in any discipline from a recognized Institute
	Manufacturing (TGS/SMD)	Full Time Engineering Degree / Diploma in Mechanical / Production from a recognized Institute
	Mechanical Maintenance	Full Time Engineering Degree / Diploma in Mechanical / Industrial / Production from a recognized Institute.
	Mining Operations (Coal)	Full time Degree in Mining Engineering or equivalent (AMIE) or Diploma in Mining with Second Class Mine Manager Competency Certificate (Coal)
	Mining Operations (Metal)	Full time Degree in Mining Engineering or equivalent (AMIE) or Diploma in Mining with Second Class Mine Manager Competency Certificate (Metal)
	Natural Resource Division Chemical	M. Sc. in Chemistry/ B.Tech in Chemical Engineering from recognized Institute / University
	New Material Business (Quality Assurance)	Full Time Engineering Degree in Mechanical/ Production/ Material Science / Metallurgy Engineering from recognized institute.
	One IT	Full Time Engineering Degree /B.Sc. Engineering / M.E. / MTech. / M.B.A. / Post Graduate Diploma in Engineering / M.Sc. (Maths, Stats or Physics) / MCA / from a recognized Institute
	Power Plant Operations	Full Time Engineering Degree / Diploma in Mechanical / Electrical / Electronics / Power Engineering / Instrumentation from a recognized Institute.
	Product Application Group	Full Time Engineering Degree / Diploma in Metallurgy/ Material Science/ Mechanical/ Production Engineering from recognized institute.
	Product Technology (Quality Assurance)	Full Time Engineering Degree / Diploma in Metallurgy/ Material Science/ Mechanical/ Production Engineering from recognized institute.
	Refractories	Full Time Engineering Degree / Diploma in Ceramics from a recognized Institute or Ex OT.
	Sampling	B.Sc. in Chemistry
	Safety	Full Time Engineering Degree / Diploma in any discipline / Graduate / Postgraduate in Science from a recognized Institute.

		Degree/ Diploma in Industrial safety is mandatory.
	Security	Graduate in any discipline from a recognized Institute/Experience of seven years in Security function
	Steel Making	Full Time Engineering Degree / Diploma in any discipline from a recognized Institute or Ex OT.
	Wire Drawing	Full Time Engineering Degree / Diploma in any discipline from a recognized institute or Ex OT.
	Wire Rod Rolling	Full Time Engineering Degree / Diploma in any discipline from a recognized institute or Ex OT.
Eligibility Criteria	1) All NOPR employees of TSL including the erstwhile NOPR employees of merged entities TSML and RFTL. 2) All permanent employees of Tata Steel Meramandali in JB-A and JB-B grade and SBD grade, possessing the requisite qualification and experience are eligible to apply. 3) Employees with Only full-time qualification are eligible to apply. Part time courses, distance education programs and correspondence courses are not eligible. Employees who had enrolled after 31.05.2013 and had already acquired diploma level certificate /degree level certificate in engineering, till 1 July,2020 from the below mentioned institutes which were recognized by Tata Steel but the recognition by AICTE/UGC was withdrawn, their diploma level/degree level certificates in engineering will be considered valid: • AMIIM from Indian Institute of Metal, Kolkata • AMIE from Indian Institute of Engineers • Diploma in Mechanical Engineering from Institute of Mechanical Engineers (India) • Diploma in Electronics & Telecommunications Engineering from Institute of Electronics & Telecommunications Engineering, New Delhi • Section A and Section B of Institution examinations from Institute of Computer Engineers of India • BE in Mechanical Engineering from the institute of Engineers of India **Experience Eligibility** a) Employees applying with B.E. / B.Tech. / M.E. / MTech. or equivalent qualifications must have minimum of 3 (three) years of experience in Tata Steel/TSBSL (with continuity of service).	

	b) Employees applying with Diploma / Postgraduate / Graduate degree must have minimum 5 (five) years of experience in Tata Steel/TSBSL (with continuity of service) on the last day of application of the selection process are also eligible to apply. c) **Diploma holders/ Postgraduate/Graduate** recruited laterally having minimum **relevant** experience of 3 (three) years prior to joining Tata Steel/TSLBSL (with continuity of service) and having completed 3 (three) years in Tata Steel/TSBSL (with continuity of service) on the last day of application of the selection process are also eligible to apply. d) Employees applying with B.E. / B.Tech. / M.E. / MTech. or equivalent qualifications, recruited laterally having minimum relevant experience of three years prior to joining Tata Steel/ TSLBSL (with continuity of service) and having minimum of 2 (two) years of experience in Tata Steel/TSBSL (with continuity of service) on the last day of application of the selection process are also eligible to apply.
Selection Method	Written test (domain), behavioural assessment and interview. The written test as well as behavioural assessment will be conducted online. For security domain, a separate physical test will also be conducted. Specific guidelines pertaining to online assessment will be shared with the eligible candidates before written test.
Training and Placement	1. Selected candidates will undergo necessary induction training. 2. They will be placed against vacancies as per the domain in which they have applied. 3. The positions are across locations of Tata Steel India. 4. The selected candidates can be placed and / or transferred to any locations of Tata Steel or its subsidiaries during their employment. 5. Employees will become ineligible for applying in any IL6 selection process for 3 years in first instance and 10 years in second instance under the following conditions: a) Refusal to accept the offer for IL6 position b) Request for reversion to previous NOPR position during probationary period
Other Terms & Conditions (Read Thoroughly)	1. Technical test for the domains will be different. Candidates need to select the domain in which they want to apply at the time of application. Forms once submitted will be considered as final and no request for change of domain will be accepted. **2. An individual can apply for any two domains (Test Cluster).** 3. The last date for submission (24 October,2023) of applications will be taken as cut-off date for considering experience. 4. Training period in Tata Steel, before being confirmed will not be counted as experience. 5. The qualification of the candidates must be from AICTE / UGC and Tata Steel recognized Institutes. 6. Employees who have acquired their diploma in engineering certification which is

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	not recognized by Tata Steel and neither accredited by AICTE/UGC will have to pass the Bridge course to become eligible. 7. If the information submitted by the candidate is found to be incorrect, during or after the selection process, the candidate will be removed from the selection process and suitable action will be taken. 8. If the candidate is found to engage in any fraudulent means/practices at any step of the process, it will result in the cancellation of candidature as well as make the candidate ineligible for three years for applying in any IL6 selection process.
How to Apply	1. Please click on the link below to fill up the online application form: https://irisapp.corp.tatasteel.com/recruit/Location.aspx 2. The last date of receipt of application is 24 October,2023

Note: Indicative Course Content is given in the annexure.

Vipin Sharma

Head HRM Talent Acquisition

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Annexure

Indicative Syllabus for IL6 2023

Domain	Syllabus
Administration	a) TQM Basics b) Customer Relations c) Project Management Skill d) Safety - Office Safety e) Resource Management f) Travel / Arrangement Trends g) Communication System h) Basic IT Skill i) Record Keeping j) External Stakeholder management
Agglomerates	a) Raw Material Bedding & Blending (Receiving, Storing, Crushing & Making Base Mix.) b) Sinter Making Process & Mechanism c) Sinter Dispatch & Quality d) Drying & Grinding process of iron ore e) Green Pelletizing f) Induration Process g) Raw Material Handling & Pellet Dispatch h) Pellet Dispatch & Quality
Automation (Maintenance)	a) Vision systems, Optics, Data Communication, Networking and networking devices b) Digital Electronics, Power Electronics and Electrical Drives c) Mechatronics d) Control Systems, Electrical Measurement, Transducers and Industrial Instrumentation, Field Sensors and Actuators e) Pneumatic systems and devices, Cylinders, flow devices f) Structural inspection methods, Welding inspection. g) Engineering thermodynamics, cooling systems h) Study of engineering and network drawing, P&I diagrams, etc. i) General Safety on shop floor (Understanding safety systems like SOP, PSRM, MoC, PSSR, etc. and commonly used and interfaced safety standards like E Permit, Positive Isolation, Gas Safety standard etc.) j) SAP PM, SMPs, maintenance policies, etc.
Blast Furnace	a) Raw Material of Blast Furnace & its quality b) Stock House Operation & Charging System c) Basic Principles of Blast Furnace operation d) Blast Furnace Operation (All Blowing Parameters) e) Stove Operation f) Injection System

	g) Cast House Operation h) Blast furnace irregularities. i) Handling of different emergency situations j) Alternative route of iron making process k) Heat and mass balance of blast furnace l) Derivation of different formulas in blast furnace iron making
Civil	a) Applied Mechanics b) Strength of Materials, Materials Engineering - Chemical composition and physical properties of different grades of steel, stress strain diagram, elongation c) Design of Steel structure - Design of welded and bolted joints, trusses, steel foundation, girders, etc. d) Design of Reinforced Concrete Structure - beams, columns, slabs, retaining wall and foundation e) Masonry Structures - design and maintenance techniques f) Estimating, costing and Valuation g) Surveying h) Civil Engineering Drawing i) Concrete Technology - concrete- mix design. Grading j) Transportation Engineering - Design of road, maintenance of road, road management, traffic density, road furniture & road safety, Permanent way engineering) Public Health Engineering - Design and maintenance of drain, manholes, sewer line road side drain, finalization of layout based on level etc. k) Building construction Materials, properties of aggregates, bricks, cement properties, l) Construction Management m) Computer Application for Engineering - CAD technique n) Structural Analysis- determinant structures - truss, trestles, towers, o) Behaviour of different structures under various loading conditions - simply supported beams, beams fixed at both ends, trusses, trestles, framed structures, stability of structures p) Elementary soil mechanics and foundation engineering, compaction, consolidation, slope analysis q) Soil waste management r) Water resource Engineering s) Town Planning Engineering
Coke Plant	a) Coal characterization b) Carbonization process c) Battery Heating process d) Oven Machines e) Coal & Coke Handling f) Coke Dry Quenching

	g) Coal blending h) Coke properties i) Battery Anchorage system j) BPP Gas Processing Operation k) BPP Liquor Processing Operation
Cold Rolling	a) Iron-Carbon System, CCT & TTT Diagram b) Recovery-Recrystallization- Grain Growth Kinetics c) Flat Rolling Fundamentals d) Pickling Process e) Cold Rolling Process f) Electrolytic Cleaning Process g) Batch and Continuous Annealing h) Defects in Cold Rolled Sheets i) Physical testing of cold rolled products j) Welding - Flash but and seam welding k) Basics of Galvanizing l) Basics of IATF 16949 m) Roll grinding
Corporate Audit Finance & Commercial	a) Knowledge of Indian Accounting standards b) Basic understanding of financial statement – Profit and Loss Account, Balance sheet and related items. c) Companies Act 2013 - Reporting requirements under the Companies Act, 2013 including CARO, Other Important Provisions under the Companies Act, 2013 relating to Audit and Auditors and Rules made thereunder. d) Cost Terms and Concepts and Preparation of Cost sheet e) Budget and Budgeting Control f) Basic concepts of GST including Input Tax Credit, Tax Deducted at Source g) Preliminary understanding of Standards on Auditing issued by ICAI h) Concepts of Auditing – Audit Planning, Audit Programme, Audit Evidence, Audit Sampling, Internal Control, Internal Financial Control etc. i) Understanding around Audit of Procurement, Inventory Management, Administration, Hire to Retire. j) Methods of Physical verification of Inventory and Fixed Assets and related controls k) Knowledge around Risks and controls for specific business processes: Procure to pay (P2P), Order to cash, Inventory Cycle, Hire to Retire, Supply Chain Management, Fixed Assets etc. l) Basic understanding of SAP and related modules viz. MM, FICO m) Knowledge of basic Concepts of Data Analytics in Internal Audit Domain

	n) Knowledge of Basic IT Skills – MS Office (MS Word, PPT and Excel)
Corporate Audit Technical	a) Excavation work in different soil/rock etc. b) Painting work on steel and cemented surface. c) Design Mix of concrete, Ready Mix Concrete. d) Knowledge on structural work. e) Building construction (Residential/Industrial), Bridge/Culverts, Retaining wall, Drainage, sewerage etc f) Material Engineering (property and use of different of construction materials). g) Basic understanding of different type of BIS code used in Civil Engineering h) Surveying used for Civil engineering work i) Transportation Engineering (Road work, Railway/Track line work etc.) j) Knowledge on bill certification process for different civil engineering work. k) Methods of Physical verification of Inventory for bulk commodity l) Basic understanding of SAP and MM modules m) Knowledge of Basic IT Skills – MS Office (MS Word, PPT and Excel)
Corporate Communication	a) Internal Communications b) External communication c) Branding d) Content e) CFE f) Media Management
Design – Civil	a) Bending Moment b) Shear Force c) Deflection d) Welding & Bolting e) Welded & Bolted Connection f) Tension Member g) Compression Member. h) Plate Girder / Gantry Girder i) Column
Design – Electrical	a) Electrical Safety aspects considered in the design. b) Motor Power Calculation c) Type of brakes used and Calculation for brake size. d) Type of cables and Selection criteria of cables. e) Type of Control Schemes provided for VVVF Drives f) Selection of VVVF Drives g) Type of DSL Systems used. h) Power circuit with control scheme for RDOL feeder of a motor. i) Power circuit of VVVF Drive with dynamic braking for hoist motion.

Design-Mechanical	a) Material-Different types (Steel, Brass, etc.), Properties (UTS, YS, Elongation, Density, Hardness, Modulus of elasticity, Modulus of rigidity, etc.) b) Heat Treatment (Normalizing, Annealing, Hardening, Case Carburizing, Tempering, etc) c) Shear force and Bending moment for cantilever and simply supported beam. d) Centre of gravity of different shape. e) Moment of inertia of different section such as T-Section, H-Section, Circular shaft, Hollow shaft etc. f) Helical Spring (Tension, Compression, Torsion) g) Rivet Joints (Types, Material, Use, etc) h) Basic concepts of Weld Joints such as fillet weld, Butt weld, Vee weld, etc. i) Design of Shafts to calculate different types of stresses such as bending, shear, torsion, etc. j) Anti-friction Bearing (Different types, use & Clearance) k) Torsion of solid and hollow shaft. l) Basic concept of Friction such as co-efficient of friction of different material etc.
Electrical Maintenance	a) Digital Electronics, Power Electronics and Electrical Drives b) Electrical Equipment (Switchgears, Protection, Relay, Cables etc.) c) Control Systems, Electrical Measurement, Transducers and Industrial Instrumentation, Field Sensors and Actuators d) Electrical Machines (AC/DC Motor, Transformer, etc.) e) EOT cranes f) PLC, DCS, SCADA, Data Communication and Networking g) Pollution Control Equipment and Measurement (ESP, Bag Filter etc.) h) General Safety on shop floor (Understanding safety systems like SOP, PSRM, MoC, PSSR, etc. and commonly used and interfaced safety standards like Work Permit, Positive Isolation, Gas Safety standard etc.) i) Electrical Safety (Electrical safety standards, IE rules, and Electrical safety in general) j) Electrical Maintenance (SAP PM, SMPs, maintenance policies, etc.)
Electrical T&D	a) Basic Electrical Engineering b) Cables and Selection criteria of cables c) Electrical Substation Equipment's d) Electrical Switchgears (EHV/HV/MV/LV) e) General Testing f) Indian Electricity Rules (Safety Regulation 2010) g) Power System (Generation and Distribution) h) Power System (Transmission & Distribution) i) Power Transformers j) Relay & Protection

Engineering & Project	a) Separation and Extraction of dust b) Bag Filters, ESP and other Mechanical Equipment's (Gear Box and ID Fans) c) Different types of conveyors and conveying systems (Belt, pneumatic, etc.) d) Bulk Material Handling systems e) Yard Equipment (stackers, wagon tipplers, etc.) f) Testing of transformers & HT Sub-station equipment g) Sub-station equipment h) HT & LT cables i) Single line drawings of Power Systems j) Quality Control in Civil works k) Underground Hindrance l) Construction Management m) Study of Civil drawings n) Quality Assurance in Civil & Structural work
Engineering Services	a) Applied Mechanics b) Strength of Materials c) Design of Steel & Masonry Structures d) Design of Reinforced Concrete Structure e) Estimating, costing and Valuation f) Surveying g) Civil Engineering Drawing h) Concrete Technology i) Transportation Engg j) Public Health Engg. k) Building Materials l) Computer Application for Engg. m) Engineering Thermodynamics n) Fluid Mechanics
Finance & Accounts	a) Micro & Macro economics b) Industrial Economics c) Fundamentals of Marketing d) Consumer Behaviour e) Marketing research and analytics f) Branding through Integrated Marketing Communication (IMC) Strategy g) Digital and Social Media Marketing
Fuel Management	a) Fuel Efficiency b) Properties of Industrial Gases/By Product Gases/ Steam/Compressed Air c) Knowledge of ASU Plant d) Knowledge of CP/BF/PP/Mills/Power House/SMS Operations

	e) Boosters and Holders f) Instrumentation and Measurement g) Distribution of the Gases and its Costing
HRM	a) IRP/ERP Policy b) Dearness Allowance c) Social security schemes (FBS, EFBS, FSS etc.) d) Cluster system of manning e) Rules pertaining to service progression of new series at Jamshedpur f) Retrenchment compensation g) Domestic enquiry h) ESI i) Maternity benefit at TSL j) Subsistence allowance during suspension period k) Grievance procedure l) Joint Departmental councils m) LTC n) Labour Laws o) Performance Management p) Employee Engagement q) Talent Management r) Service Rules for Officer
Hot Rolling	a) Iron-Carbon System, CCT & TTT Diagram & its use b) Recrystallization kinetics c) Thermo Mechanical Control Process (TMCP) d) Flat Rolling (Hot) Fundamentals e) Hot Rolling process – Equipment's and their functions f) Basics of Fuel & Combustion g) Re-Heating Furnace Operation and Control h) Knowledge of Rolls & Grinding in Hot Rolling i) Defects on HR Sheets, Genesis & Control j) Basics of IATF 16949 k) Basic knowledge of Heat Treatment l) Knowledge of Different Steel Grades
Intelligence	a) Basic knowledge of Intelligence trade craft - raising and running of source and contacts etc b) Basic knowledge of Intelligence agencies in India and their functioning. c) Understanding of trade unionism and major trade unions in India. d) Basic knowledge of labour laws and compliances. e) Knowledge of basic IT skill like MS office, Excel and PPT. f) Understanding of industrial security g) Networking skill. h) Understanding of open-source channels of intelligence collection. i) Basics of stake holder management.

	j) General knowledge related to industries in India. k) Report writing in English l) Political parties in IndiaInternal security threats like terrorism, communalism, LWE activities etc.
Learning & Development – Electrical, Electronics & Instrumentation	a) Basic Electronics - AC Fundamental, Analog Electronics, Digital Electronics, b) Automation - Method of Measurement, Microprocessor and Microcontroller c) Electronic Weighing System d) Instrumentation e) ELECTRICAL - AC /DC Motors, Transformer, EOT Crane, Faults in Electrical systems, f) Power Electronics & Drives
Learning & Development – Mechanical	a) Rolling Contact Bearing b) Sliding Contact Bearing c) Power Transmission through Gears d) Mechanical Couplings e) Limit, Fit and Tolerance f) Welding and Gas Cutting/Plasma Arc Cutting g) Lubrication and Oil Conditioning Pumps, h) Fans and Compressors i) Belt Conveyor Systems j) Pipeline Valves and Fittings k) Hydraulics and Pneumatics Lifting Tools and Tackles l) Engineering Mechanics m) Theory of Machines n) Machine Design o) Fluid Mechanics p) Thermodynamics q) Thermal Engineering r) Engineering Materials Casting and Forming s) Machining and Machine Tool Operations t) Metrology and Inspection
Learning & Development – Metallurgy	a) Physical metallurgy b) Iron Making c) Steel Making d) Rolling Technology e) Refractory & Heating
Legal (Industrial & Litigation)	a) Constitutional Law b) Criminal Procedure Code, 1973 c) Civil Procedure Code, 1908 d) Arbitration and Conciliation Act, 1996 e) Transfer of Property Act, 1882 f) Indian Contract Act, 1872 g) Labour Laws- Factories Act, 1948, Workmen Compensation Act, 1923,

	h) Insolvency & Bankruptcy Code, 2016 i) Environmental Laws including Environment Protection Act, 1986, Air (Prevention & Control of Pollution) Act, 1981 & Water (Prevention & Control of Pollution) Act, 1974. j) Negotiable Instruments Act, 1881
Logistics and Supply Chain	a) Rail Logistics b) Road Transportation c) Coastal Shipment d) Documentation e) Warehousing f) Network Design g) Sustainability in logistics h) Logistics Planning and Scheduling i) Unitization, Loading and lashing j) Forecasting, Sampling Techniques k) Lean, PERT/ CPM l) Supply Chain Mgt m) Basics of Operations Research n) Statistical Quality Control o) Logistics Mgt at Tata Steel p) IT, Digital, Tableau, RPA q) SNOP and OG & F Process at Tata Steel
One IT	a) SQL DB b) MVC .net c) IT System development life cycle d) Computer Network – i. LAN, WAN and Internet – Basics ii. Switch, Router - Basics e) Windows 10 operating system – Basic features f) Antivirus – Basics g) Server – Basics
Manufacturing (TGS/SMD)	a) Fabrication & Welding: Theory of fabrication & Welding. Welding processes (eg. SMAW, GMAW, SAW etc.) & weldability of material like MS, SS, CS, CI etc., Weld positioners and weld fixtures, Welding parameters, their relation & deposit calculation and welding time calculation and their impact on the weld quality for various welding processes, Different kinds of Power sources, auxiliaries like wire feeder, torch, holder, conduit, tip etc. b) Gas cutting: Cutting parameters like Cut Oxy pressure, LPG flow rate, cutting speed etc. & their impact on quality of gas cutting, Selection of nozzles for various cutting and knowledge of plasma cutting, Lead in & lead out and precautions when input is rusted or flat c) Limit, Fit and Tolerance & Measuring Instruments

	d) Engineering Drawing: Basic concepts of engineering dwg, Angle of projection, types of engineering drawing & their application, Jigs and fixture. e) Mech Assembly Practice: Couplings, Bearings, Gears, Power Transmission, Levelling & Alignment. Balancing (dynamic and static). f) Fluid Power: Hydraulics & Pneumatics. g) Lubrication Systems. h) Codes & Standards applicable for Fabrication & Assembly, ISO, TQM i) Work Place Safety & M/c Guarding j) Mass manufacturing, Lean manufacturing & fabrication shop lay out
Mechanical Maintenance	a) Engineering Mechanics b) Strength of Materials c) Engineering Thermodynamics d) Fluid Mechanics e) Mechanisms and Dynamics of Machines f) Manufacturing Processes & Industrial Piping g) Fits & Tolerances & Assembly Practices h) Gears & Bearings i) Lubrication / Lubricants j) Fan, Blower, Pumps and Valves & Compressors k) Seals l) Hydraulics-Oil Cleanliness ISO / NAS m) Hydraulic Valves, Cylinders & 'O' rings n) Pneumatics
Mining Operations (Coal)	a) Excavation planning b) Dump and slope stability c) Drilling and Blasting d) Coal Quality e) Basic understanding of IT infrastructure/ usage f) Mine Machinery & equipment selection g) Environmental laws & statutory clearances required to operate a Mine h) Haul road & Dump design, maintenance & Reclamation i) Health and Mine safety legislation (DGMS) j) Mining Geology
Mining Operations (Metal)	a) Excavation planning b) Dump and slope stability c) Drilling and Blasting d) Metal Quality e) Basic understanding of IT infrastructure/ usage f) Mine Machinery & equipment selection g) Environmental laws & statutory clearances required to operate a Mine

	h) Haul road & Dump design, maintenance & Reclamation i) Health and Mine safety legislation (DGMS) j) Mining Geology
Natural Resource Division Chemical	a) Atomic structure b) Radio Activity c) Periodicity of elements d) General Properties of Atoms and Molecules e) Oxidation and Reduction, Valence f) Chemical Equilibrium g) Ionic equilibria h) Acids and Bases i) Buffers j) Reaction Intermediates and Reagent k) Solutions and Colligative Properties l) Elementary Stereochemistry m) Noble Gases n) Titrimetric Analysis o) Oxidation-Reduction Titrimetry p) Iodo / Iodometric Titrations q) Basic sampling concepts r) Measurement and Quality Control s) Statistics
New Material Business (Quality Assurance)	a) TQM Basics, b) Safety - Process Safety, c) ISO 9000 system, d) Design documentation, e) Quality Audit, f) Basic IT Skill, g) Record Keeping.
Power Plant Operations	a) Boiler (Basic design and construction, Fuel, Combustion, Operational concepts and Performance) b) Water Chemistry (Concepts and Control) c) Steam Turbine (Operational concepts and Performance) d) Pumps (Operational concepts and Performance) e) Fans and Compressors (Operational concepts and Performance) f) Heat Exchangers (Concepts and Performance) g) Materials and Metallurgy (Concepts and Utilization) h) Fundamentals of Electrics / Instrumentation i) Power plant auxiliaries including CW System, compressed air system, Lube oil system, Furnace draft & flue gas system, Fuel supply system. j) Engineering drawing

Product Application Group	a) Basics of steel making, hot rolling, re-bar, wire rolling, cold rolling, galvanizing b) Testing of steels (Tensile, Hardness, Chemical etc) c) Quality assurance d) Knowledge of different steel grades e) Basic customer end process (tube making, rolling, forming, welding)
Product Technology (Quality Assurance)	a) Knowledge of Primary Steel Making Processes b) Secondary metallurgy c) Casting process d) Casting defects (Genesis & Control) e) Steel Making Thermodynamics f) Mechanical Metallurgy g) Basics of flat product Rolling and defects h) Knowledge of Different Steel Grades i) Iron-Carbon System, CCT & TTT Diagram & its use j) Quality assurance k) Basics of IATF 16949 l) Knowledge of Total Quality Management
Refractories	a) Basics of refractory (Type of refractory, different shape, Properties of refractory) b) Refractory Raw materials c) Monolithic (Mortar, Castable, Ramming mass, Gunning mass, DVM, Plastic mass) d) Coke Plant refractory (Battery construction, CDQ) e) Iron making Refractory (Blast furnace, sinter and pellet) f) Steel making refractory (BOF, Ladle, RH, Tundish, Caster and black refractory, Mearz kiln) g) Mills Refractory (Different type of reheating furnaces) h) Insulation Refractory (insulation brick, insulation castable and different type of fibres and ceramic product) i) Refractory sample preparation and different testing procedure. j) Phase Diagram (binary and ternary type)
Safety	a) Hazard Identification & Risk Assessment (Recalibrated Risk Matrix) b) Fundamentals of Process safety c) Behaviour based safety d) Emergency Preparedness e) Work Permit & Access control f) Electrical Safety g) Safety in Material Handling h) Road & Rail safety i) Occupational Health, Ergonomics & Industrial Hygiene

	j) Fire safety k) Contractor Safety management l) Safety Legislation (Factories Act & State Rules) m) Gas Safety n) Working at height o) Positive Isolation p) Confined space Safety q) Knowledge on important safety standard for e.g., Excavation, Transportation, EOT Crane etc. r) Knowledge on Mechanical Integrity & Quality Assurance
Sampling	a) General Aptitude b) Basic Statistics c) General properties of Atoms and molecules d) Oxidation and reduction e) Valence f) Chemical Equilibrium g) Ionic Equilibria h) Acids and bases, Buffers i) Titrimetric Analysis j) Basic sampling concepts k) National and International standards for sample collection and preparation of iron ore, manganese ore, limestone/dolomite, coal etc l) Measurement and Quality Control m) Quality Assurance n) Blending, blend planning o) Understanding of impacts of various ore quality parameters in customer processes in relation to iron & steel industry p) Knowledge of sample collection & preparation equipment, general maintenance and calibration requirement
Security	a) Physical Security Infrastructure b) Physical Security Operations c) Crime Control d) Emergency and Disaster Management e) Integrated Security System – Convergence of Physical Security with IT f) Law relevant to Security g) Security Risk Assessment h) Workplace Safety i) Collaboration, Contract Management & Engagement j) Behavioral Skills s) Organizational Skills
Steel Making	a) Extractive Metallurgy - Iron Making and Steel Making b) External Hot Metal Treatment – Process & control system c) Primary Steel Making Processes – Raw materials, different processes and control, Special practices, Steel making reactions d) Secondary Metallurgy- Different steel refining processes, Grades of Steel, Iron - Carbon Diagram

	e) Casting Process: Role of different casting accessories and casting practices. f) Casting defects: Slab casting Defects and Billet casting defect, Causes and its counter measure. g) Steel Making Thermodynamics: Law of thermodynamics, Enthalpy, Entropy, Gibbs free energy, Ellingham diagram, Heat capacity. h) Steel Making Refractory: - Converter refractory and Ladle refractory, its type of usage and maintenance. i) Ferro Alloys: Application of different ferro alloys in steel making process. j) EAF technology: Fundamentals of Electric arc furnace
Wire Drawing	a) Wire rod cleaning (pickling & mechanical descaling) and coating b) Wire drawing process c) Heat treatments in wire drawing d) Coatings in wire e) Mechanical properties of wire f) Applications of wire g) Productivity concepts in wire manufacturing h) Dies and lubricants used in wire manufacturing
Wire Rod Rolling	a) Iron-Carbon System, CCT & TTT Diagram b) Basics of Fuel & Combustion c) Re-Heating Furnace Operation and Control d) Long Product rolling fundamentals e) Long Product rolling mill equipment f) Pass Design Fundamentals g) Wire rod & Rebar defects h) Knowledge of Roll materials i) Rolling Mill Controls j) Different Grades of Wire Rod and their Application