

**Syllabus for Computer Based Written Test for various Non-executive Posts in
S-7, S-5 & S-3 Grade w.r.t Advt. no GAIL/OPEN/MISC/1/2024**

1. Jr. Engineer (Chemical)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none"> ➤ Fluid Mechanics (Preliminary) ➤ Stoichiometry / Material & Energy Balance ➤ Petroleum refinery Technology (Practical) ➤ Fertilizer Technology (Practical) ➤ Heat transfer (Preliminary) ➤ Mass transfer (Preliminary) ➤ Chemical Engineering Thermodynamics (Preliminary) ➤ Fuels and Combustion ➤ Process Control and Instrumentation (Preliminary) ➤ Unit operations ➤ Operation of <ul style="list-style-type: none"> • Pumps • Rotary Compressors • Blowers • Heaters • Heat Exchangers ➤ Safety Systems in Industry <ul style="list-style-type: none"> • Work Permit System • Safety Equipment • Personal Protective Equipment (PPE)
<u>Part II</u>	<ul style="list-style-type: none"> ➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

2. Jr. Engineer (Mechanical)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Measurement systems like Vernier Callipers, Micrometers, Wire Gauge➤ Cutting & Threading➤ Scrapping and Abrasive Operations➤ Pipe Joints – Flanged or welding➤ Machining➤ Fire Fighting Equipment➤ Hydraulic Machines (Practical aspects)➤ Pumps, Compressors, Turbines (Practical Aspects)➤ Workshop technology➤ Engineering Materials➤ Welding Science➤ Safety Systems in Industry<ul style="list-style-type: none">• Work Permit System• Safety Equipment• Personal Protective Equipment (PPE)
<u>Part II</u>	<ul style="list-style-type: none">➤ [General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)]

3. Foreman (Electrical)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Basic Physics & Ohm's Law, Kirchoff's law etc.➤ Electrical Insulation➤ Electrical circuits➤ Electrical machines-Transformers, Generators, AC & DC Motors etc.➤ Electrical Power system➤ Electrical measurements and measuring instruments➤ Electrical Protection system➤ HT & LT Switchgear Panel & it's accessories➤ Winding technique➤ Wiring and lighting➤ Electrical earthing system➤ Battery Banks system➤ Electrical Wiring and Jointing➤ Safety Systems in Industry<ul style="list-style-type: none">• Work Permit System• Safety Equipment• Personal Protective Equipment (PPE)
<u>Part II</u>	<ul style="list-style-type: none">➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

4. Foreman (Instrumentation)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Electrical Insulation➤ Basics of circuits and Measurement systems➤ Transducers, mechanical measurement and industrial instrumentation➤ Electrical and electronic measurements➤ Control system and process control including control valves, pressure safety valves etc.➤ Measuring instruments - Pressure gauges, temperature gauges, flowmeters, level gauges, pressure transmitters, temperature transmitters etc.➤ Calibration of instruments➤ Instrument tubings➤ Loop checking➤ P & ID diagrams➤ Electrical Wiring and Jointing➤ Safety Systems in Industry<ul style="list-style-type: none">• Work Permit System• Safety Equipment• Personal Protective Equipment (PPE)
<u>Part II</u>	<ul style="list-style-type: none">➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

5. Foreman (Civil)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Surveying<ul style="list-style-type: none">• Plain Table Survey• Theodolite Surveying• Soil Survey and Analysis➤ Cement Concrete and Reinforced Cement Concrete<ul style="list-style-type: none">• Basics of Plain Cement Concrete (different grades)• Basics of Design Mix Concrete (different grades)➤ Building Materials<ul style="list-style-type: none">• Sand• Aggregates• Cement• Bricks➤ Material Testing<ul style="list-style-type: none">• Concrete Testing• Bricks Testing• Aggregates Testing➤ Plumbing & Sewerage<ul style="list-style-type: none">• Basic of Plumbing (Pipes & Flow Analysis)➤ Safety Systems in Industry<ul style="list-style-type: none">• Permit System• Safety Equipment• Personal Protective Equipment (PPE)
<u>Part II</u>	<ul style="list-style-type: none">➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

6. Jr. Superintendent (Official Language)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Knowledge of Official Language policy and OL act 1963 and provisions thereof➤ OL rules 1976 and various provisions and rules framed under it➤ Comprehension in Hindi & English➤ Administrative terminology (Hindi & English)➤ Hindi literature➤ Hindi grammar
<u>Part II</u>	<ul style="list-style-type: none">➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

7. Jr. Chemist

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Polymer chemistry➤ Inorganic chemistry➤ Physical chemistry➤ Organic chemistry➤ Water chemistry➤ Environmental Chemistry➤ Analytical chemistry➤ Principle of chromatography➤ Testing equipment in Labs➤ Classification of elements
<u>Part II</u>	<ul style="list-style-type: none">➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

8. Jr. Accountant

#	Syllabus	
Part-I	➤ Accountancy	<ul style="list-style-type: none"> ○ Accounting concepts and conventions ○ Property Plant & Equipment's (Ind AS 16) ○ Depreciation, Depletion and Amortization (Concepts & Methods) ○ Inventory Valuation (Ind As 2) ○ Capital and Revenue expenditure/receipts ○ Bank Reconciliation Statement & Rectification of Errors ○ Lease/ Hire Purchase Accounting (Ind AS 116) ○ Revenue Recognition (Ind As 115) ○ Impairment of Assets (Ind As 36) ○ Cash Flow Statements (Ind As 7) ○ Events after Reporting Period (Ind As 10) ○ Ind-AS: An overview and compliance (Ind As 1,8,37,)
	➤ Basic of Mercantile Law	<ul style="list-style-type: none"> ○ Contract Act, 1872 ○ Sale of Goods act, 1930 ○ Negotiable Instruments Act, 1881 ○ Payment of Gratuity Act, 1972
	➤ Company's Act 2013	<ul style="list-style-type: none"> ○ Accounts & Audit ○ Schedule II (Depreciation) ○ Schedule-III (Financial Statements) ○ CSR provision
	➤ Income Tax Act 1961	<ul style="list-style-type: none"> ○ Income Tax - Basic Concepts, Residential Status ○ Exempted Income and Income Tax Deductions (Chapter-VI A of Income Tax 1961) ○ Heads of Income (concepts & key provisions) ○ Provision relating to TDS & Forms to be filed with Income Tax Department
	➤ Goods & Services Act & Indirect Tax	<ul style="list-style-type: none"> ○ Fundamental Concepts of GST (Basic Concepts, Composition Levy and Registration, Returns and Assessment) ○ GST Input Tax credit provisions / Documentations ○ Customs Act & Rules
	➤ Cost accounting & Management Accounting	<ul style="list-style-type: none"> ○ Cost Accounting basic – Material, Labour & Overhead ○ Fixed Cost & Variable Cost ○ Marginal & Relevant / Incremental Costing, Decision Making, Absorption Costing, Activity Based Costing ○ Methods of Costing ○ Budget and Budgetary Control ○ Variance Analysis
	➤ Financial Management	<ul style="list-style-type: none"> ○ Basic Concepts ○ Financial Ratio Analysis ○ Capital Budgeting ○ Cost of Capital & Working Capital Management
	➤ Computer (MS – Office) and financial packages proficiency	

Part II	➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)
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9. Technical Assistant (Laboratory)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Polymer chemistry➤ Basic chemistry➤ Environmental Chemistry➤ Analytical chemistry➤ Water chemistry➤ Principle of chromatography➤ Testing equipment in Labs
<u>Part II</u>	<ul style="list-style-type: none">➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

10. Operator (Chemical)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Atomic Mass, Atoms➤ States of matter, Acids and Bases, Oxidation➤ Hydrocarbons, Petrochemicals, Distillation, Refining, exchange equipment, humidification operation, Refrigeration and liquefaction➤ Petroleum Refinery Technology (Practical)➤ Fertilizer Technology (Practical)➤ Basics of Organic/ Inorganic Chemistry➤ Basics of unit operations➤ Operation of<ul style="list-style-type: none">• Pumps• Rotary Compressors• Blowers• Heat Exchangers➤ Safety Systems in Industry<ul style="list-style-type: none">• Work Permit System• Safety Equipment• Personal Protective Equipment (PPE)
<u>Part II</u>	<ul style="list-style-type: none">➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

11. Technician (Electrical)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Basic Physics & Ohm's Law, Kirchoff's law etc.➤ Electrical Insulation➤ Electrical circuits➤ Electrical machines-Transformers, Generators, AC & DC Motors etc.➤ Electrical Power system➤ Electrical measurements and measuring instruments➤ Electrical Protection system➤ HT & LT Switchgear Panel & it's accessories➤ Winding technique➤ Wiring and lighting➤ Electrical earthing system➤ Battery Banks system➤ Electrical Wiring and Jointing➤ Safety Systems in Industry<ul style="list-style-type: none">• Work Permit System• Safety Equipment• Personal Protective Equipment (PPE)
<u>Part II</u>	<ul style="list-style-type: none">➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

12. Technician (Instrumentation)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Electrical Insulation➤ Basics of circuits and Measurement systems➤ Transducers, mechanical measurement and industrial instrumentation➤ Electrical and electronic measurements➤ Control system and process control including control valves, pressure safety valves etc.➤ Measuring instruments - Pressure gauges, temperature gauges, flowmeters, level gauges, pressure transmitters, temperature transmitters etc.➤ Calibration of instruments➤ Instrument tubings➤ Loop checking➤ P & ID diagrams➤ Electrical Wiring and Jointing➤ Safety Systems in Industry<ul style="list-style-type: none">• Work Permit System• Safety Equipment• Personal Protective Equipment (PPE)
<u>Part II</u>	<ul style="list-style-type: none">➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

13. Technician (Mechanical)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Measurement systems like Vernier Callipers, Micrometers, Wire Gauge➤ Cutting & Threading➤ Scrapping and Abrasive Operations➤ Pipe Joints – Flanged or welding➤ Machining➤ Fire Fighting Equipment➤ Hydraulic Machines (Practical aspects)➤ Pumps, Compressors, Turbines (Practical Aspects)➤ Workshop technology➤ Engineering Materials➤ Welding Science➤ Safety Systems in Industry<ul style="list-style-type: none">• Work Permit System• Safety Equipment• Personal Protective Equipment (PPE)
<u>Part II</u>	<ul style="list-style-type: none">➤ [General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)]

14. Technician (Telecom & Telemetry)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Basics of Networking and Network Devices such as, Router, Switches, Modems➤ Motherboard, CPU, Memory➤ Electrical Wiring and Jointing➤ Basics of Communication systems – Wired and Wireless systems, OFC, Microwave etc.➤ UPS & Batteries➤ Basics of Power Electronics such as rectifiers, DC/AC converters etc.➤ GPRS, GSM, 3G, 4G➤ Mobile and other Wireless Device (walkie talkie etc.) Communication➤ Basic Analog Electronics➤ Digital electronics Basics➤ Semiconductors Basics➤ Transistors Basics➤ Instruments and measurements Basics➤ Computer and microprocessor Basics➤ Amplifiers and oscillators➤ Safety Systems in Industry<ul style="list-style-type: none">• Work Permit System• Safety Equipment• Personal Protective Equipment (PPE)
<u>Part II</u>	<ul style="list-style-type: none">➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

15. Operator(Fire)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Chemistry of Fire & Extinction Methods➤ Fire Extinguishing Mediums➤ Fire Hose & fittings➤ Ladders➤ Lines and knots➤ Fire Pumps & Hydrant System, water network➤ Portable Fire Extinguishers, small gears➤ Breathing Apparatus Set & BA Procedure➤ Basic First Aid & CPR➤ Electrical Fires➤ High Rise Building & Evacuation Methods➤ Fixed Fire Fighting Systems➤ Hydrocarbon Fire Fighting➤ Mobile Fire Appliances /Fire tender➤ Fire Ground Operation➤ Communication & mobilization➤ Control Room Operations & Procedure➤ Work Permit System➤ Rescue & search methods, Methods of entry and types➤ Fireman’s Outfit & donning capability➤ Fire Drills➤ Personnel Protective Equipment
<u>Part II</u>	<ul style="list-style-type: none">➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

16. Operator (Boiler)

#	Syllabus
<u>Part I</u>	<ul style="list-style-type: none">➤ Atomic Mass, Atoms,➤ States of matter, Acids and Bases, Oxidation➤ Measurements➤ Steam Properties➤ Boiler Technology➤ Water Chemistry➤ Basics of Inorganic/ Organic Chemistry➤ Basics of unit operations➤ Operation of<ul style="list-style-type: none">○ Pumps○ Steam Turbines○ Fans/ Blowers○ Heat Exchangers➤ Safety Systems in Industry<ul style="list-style-type: none">○ Work Permit System○ Safety Equipment○ Personal Protective Equipment (PPE)
<u>Part II</u>	<ul style="list-style-type: none">➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)

17. Accounts Assistant

#	Syllabus	
Part I	➤ Accountancy	<ul style="list-style-type: none"> ○ Accounting concepts and conventions ○ Property Plant & Equipment's ○ Depreciation, Depletion and Amortization (Concepts & Methods) ○ Inventory Valuation ○ Capital and Revenue expenditure/receipts ○ Bank Reconciliation Statement & Rectification of Errors ○ Lease/ Hire Purchase Accounting ○ Revenue Recognition ○ Impairment of Assets ○ Cash Flow Statements
	➤ Basic of Mercantile Law	<ul style="list-style-type: none"> ○ Contract Act, 1872 ○ Sale of Goods act, 1930 ○ Negotiable Instruments Act, 1881
	➤ Company's Act 2013	<ul style="list-style-type: none"> ○ Accounts & Audit ○ Schedule II (Depreciation) ○ Schedule-III (Financial Statements) ○ CSR provision
	➤ Income Tax Act 1961	<ul style="list-style-type: none"> ○ Income Tax - Basic Concepts, Residential Status ○ Exempted Income and Income Tax Deductions (Chapter-VI A of Income Tax 1961) ○ Heads of Income (concepts & key provisions) ○ Provision relating to TDS & Forms to be filed with Income Tax Department
	➤ Goods & Services Act	<ul style="list-style-type: none"> ○ Fundamental Concepts of GST ○ GST Input Tax credit provisions / documentations
	➤ Cost accounting & Management Accounting	<ul style="list-style-type: none"> ○ Cost Accounting basic – Material, Labour & Overhead ○ Fixed Cost & Variable Cost ○ Marginal & Relevant / Incremental Costing, Decision Making ○ Methods of Costing
	➤ Financial Management	<ul style="list-style-type: none"> ○ Basic Concepts ○ Financial Ratio Analysis ○ Capital Budgeting
	➤ Computer (MS – Office) and financial packages proficiency	
Part II	➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)	

18. Business Assistant

#	Syllabus
<u>Part I</u>	<p>Basics of computers and applications for day-to-day office tasks</p> <ol style="list-style-type: none"> 1. Introduction to Computers <ul style="list-style-type: none"> ➤ Basic computer operations (booting, shutdown, restart) ➤ Basic Microsoft Windows operating system tasks (cut, copy, paste, etc.) ➤ File management (create, rename, delete, and organise files and folders) 2. Software Applications <ol style="list-style-type: none"> 2.1. Microsoft Word <ul style="list-style-type: none"> ➤ Creating, saving, and opening Word documents ➤ Formatting text (font styles, size, colour, alignment) ➤ Using bullet points and numbering ➤ Inserting tables, images, and hyperlinks ➤ Page layout (margins, orientation, page breaks) 2.2. Microsoft Excel <ul style="list-style-type: none"> ➤ Concept of Excel workbooks and sheets ➤ Basic data entry and formatting ➤ Sorting and filtering data ➤ Using formulas and functions (SUM, AVERAGE, MAX, MIN, IF, etc.) ➤ Creating and formatting charts 2.3. Microsoft PowerPoint <ul style="list-style-type: none"> ➤ Creating and saving PowerPoint presentations ➤ Slide layouts and designs ➤ Adding and formatting text, images, and multimedia ➤ Slide transitions and animations 2.4. Microsoft Outlook (Email and Calendar) <ul style="list-style-type: none"> ➤ Composing, sending, and receiving emails in Outlook ➤ Email attachments and signatures ➤ Organizing emails (folders, categories, flags) ➤ Calendar management (scheduling meetings, setting reminders) ➤ Contact management ➤ Understanding Cc and Bcc ➤ Recognizing and avoiding phishing scams 2.5. Internet & Web Browsing <ul style="list-style-type: none"> ➤ Using web browsers (Chrome, Firefox, Edge) and Search Engines ➤ Basic understanding of cloud storage (OneDrive, Google Drive, etc.) 2.6. Data Security <ul style="list-style-type: none"> ➤ Understanding basic cybersecurity principles ➤ Creating and managing strong passwords ➤ Basic PC data backup practices
<u>Part II</u>	<ul style="list-style-type: none"> ➤ General Aptitude Test (Viz. General Knowledge, Logical Reasoning, Current Affairs, Visual Reasoning, English Comprehension, Mathematics)