

**RITES LIMITED**  
**(A Govt. of India Enterprise)**  
**Shikhar, Plot No. 1, Sector – 29, Gurgaon – 122001**



**Recruitment of Engineering Professionals on Contract basis**

RITES Ltd., a Nav Ratna Central Public Sector Enterprise under the Ministry of Railways, Govt. of India is a premier multi-disciplinary consultancy organization in the fields of transport, infrastructure and related technologies.

RITES Ltd. is in urgent need of dynamic and hard-working professionals as under:

VC No.	Post	No. of Vacancies					
		UR	EWS	OBC (NCL)	SC	ST	Total
91/24	Assistant Manager (Mechanical / Electrical)	2	-	-	-	-	2

**Age Limit**

<b>Maximum Age</b>
40 Years

**Note: Age, experience, and all other eligibility criteria shall be reckoned as on the last date of submission of the application (cut-off date).**

**Minimum Qualifications & Experience**

VC No	Designation	Minimum Qualification*	Minimum post - qualification experience
91/24	Assistant Manager (Mechanical / Electrical)	Full time Bachelor's Degree in Mechanical Engineering/Technology in Mechanical/ Production/ Production & Industrial/ Manufacturing/ Mechanical/Railways/Mechatronics & Automobile or any of the above combination in part or whole  Or  Full time Bachelor's degree in Electrical / Electronics /Power Supply/ Instrumentation and Control/ Industrial Electronics/Electronics & Instrumentation/Applied Electronics/ Digital Electronics/Power Electronics Engineering or any of the above combination in part or wholes	1 year

**Experience is defined as under:**

Candidate should have minimum 1 year of post-qualification experience in the field of procurement & purchase.

\*Candidate belonging to General/ EWS category (and candidates belonging to SC/ST/OBC(NCL)/PWD applying against unreserved posts) should have first class degree/ minimum 60% marks in Minimum Qualification for consideration against unreserved posts.

Reserved category candidates (SC/ST/OBC(NCL)/PWD as applicable) should have at least 50% marks in Minimum Qualification for consideration against reserved posts.

**Note for Educational Qualifications:**

The candidate should possess Degree recognized by AICTE; from a University incorporated by an Act of Central or State legislature in India or other Educational Institutions established by an Act of Parliament or declared to be Deemed as University under Section 3 of the University Grants Commission Act, 1956. Sections A & B examination of the Institution of Engineers (India) which is treated as equivalent to Degree by Govt. of India and recognized by AICTE, shall also be accepted.

**Relaxations & Concessions**

Reservation/ relaxation/ concessions to EWS/ SC/ST/OBC (NCL)/PWD/ Ex-SM/ J&K Domicile would be provided against reserved posts (where applicable) as per extant Govt. orders.

Relaxation in upper age limit to OBC (NCL)/ SC/ ST candidates shall be provided against reserved posts as per extant Govt. orders.

PWD candidates suffering from not less than 40% of the relevant disability shall only be eligible for the benefit of PWD. Such PWD candidates shall be eligible for relaxation of 10 years in upper age limit.

PWD candidates will have to meet the Physical Requirements and Functional Classifications which have been identified for the post as under:

Categories for which identified	Functional Classification	Physical Requirements
Locomotor disability	OA, OL, Leprosy Cured, Acid Attack Victims	

Persons with Disabilities belonging to the category/ categories for which the post is identified (as indicated in Table above) can also apply even if no vacancies are specifically reserved for them. Such candidates will be considered for selection for appointment to the post by general standard of merit.

Functional Classification:

Code	Functions
OL	One leg affected (R or L)
OA	One arm affected
OAL	One arm one leg affected
BL	Both legs affected
HI	Hearing Impaired
LV	Low Vision

Physical Requirements:

Code	Physical Requirements
S	Work performed by sitting (on bench or chair)

ST	Work performed by standing
SE	Work performed by seeing
RW	Work performed by reading and writing
BN	Work performed by bending
MF	Work performed by manipulation by fingers
C	Work performed by communication
W	Work performed by walking
H	Hearing/ Speaking
KC	Kneeling and Crouching
JU	Jumping
CL	Climbing

The above lists are subject to revision.

### Selection Process

Based upon the performance in the Written Test and fulfilling the conditions of eligibility; candidates shall be shortlisted for Interview.

The weightage distribution of various parameters of the selection shall be as under:

Written Test	-	60%
Interview	-	40%
(Technical & Professional proficiency - 30 %; Personality Communication & Competency – 10%)		
Total	-	100%

A minimum of 50% marks for UR/ EWS (45% for SC/ST/OBC (NCL)/PWD against reserved posts) in written test and a minimum of 60% marks for UR/ EWS (50% for SC/ST/OBC (NCL)/ PWD against reserved posts) in interview will be required to enable the candidate to be considered for placement on panel. There will be no minimum qualifying marks required in the aggregate.

**Candidates should be called for interview in the ratio of 1:6 to the number of vacancies.**

There will be 125 objective type questions carrying one mark each for a duration of 2.5 Hours. There will be no negative marking system applicable and therefore, no marks will be deducted in case of an incorrect answer. Candidates belonging to PwD Category are eligible for an additional compensatory time of 50 minutes.

Appointment of selected candidates will be subject to their being found medically fit in the Medical Examination to be conducted as per RITES Rules and Standards of Medical Fitness for the relevant post.

Candidates have the option to appear for interview either in Hindi or English.

### Nature & Period of Engagement

The appointment shall be purely on contract basis initially for a period of one year, extendable until completion of the assignment subject to mutual consent and satisfactory performance.

Selected candidates shall be liable for posting anywhere in India as per Company requirements.

## Remuneration

Pay, allowances and perks for the post would be as under:

Basic pay	Allowances	Other perks
Rs. 22660/- (1 to 3 % annual increment based on the performance)	70% in Non-metro cities 75% in Metro Cities other than Mumbai/Bangalore 80% for Mumbai/Bangalore.	Medical & Accidental Insurance for self and Employer's contribution towards PF @ 12% would be borne by the company.

The Consolidated monthly Gross Emoluments including PF contribution of Employer for posting in Non – Metro city comes out to be ₹ 41,241/- which results in CTC of 4.94 LPA.

**Remuneration mentioned above is only indicative. Actual remuneration shall depend upon place of posting and other terms & conditions of appointment.**

## Fees

The candidates will have to deposit the under mentioned amount of fees during online application:

Category	Fee
General/OBC Candidates	Rs. 600/- plus applicable taxes
EWS/ SC/ST/ PWD Candidates	Rs. 300/- plus applicable taxes

For any difficulty/ queries regarding fee payment, candidates may contact on following only:

Helpdesk No: 011 – 33557000 Extension Code - 13221

Helpdesk e-mail id: pghelpdesk@hdfcbank.com

**Note:**

- Candidates should note that the fee submitted through any other mode except the mode specified, will not be accepted by RITES and such applications will be treated as without fee and will be summarily rejected.
- Persons with disabilities are given concession in the fee provided they are otherwise eligible for appointment. A PWDs candidate claiming age relaxation/fee concession will be required to submit along with their Detailed Application Form, certified copy of the PWD certificate as per latest GOI format.

## How to Apply

- Before applying candidates should ensure that they satisfy the necessary conditions and requirements of the position.**
- Interested candidates fulfilling the above laid down eligibility criteria are required to apply online in the registration format available in the Career Section of RITES website, <http://www.rites.com>.

3. While submitting the online application; the system would generate 'Registration No.' on top of online form filled up by the candidate. Note down this "Registration No." and quote it for all further communication with RITES Ltd.
4. While filling up the required details, candidates are advised to carefully and correctly fill the details of "Identity Proof". Candidates are also advised to note the same and ensure the availability of the same Identity Proof as it will be required to be produced in original at later stages of selection (if called).
5. **After filling up the required details under the "Fill/ Modify Application Form", click on "Make payment". The payment details show the amount to be paid to the bank based on your category. Applications without successful fee payment shall be treated as incomplete and shall be summarily rejected.**
6. The candidates are also advised to keep a copy of Application Form submitted with them and to carry the same at the time of the selection (if called).
7. A copy of this online **APPLICATION FORM** containing the registration number is to be printed, signed, and furnished along with **SELF-ATTESTED SCANNED COPIES** of the following documents in the given order only from top to bottom (if called for interview):
  - a. 2 recent passport size colour photographs
  - b. High School certificate for proof of Date of Birth
  - c. Certificates of Academic & Professional qualifications and statements of marks of all the qualifications for all semesters/years (Xth, XIIth, Diploma/ Graduation/ Post-Graduation as applicable)
  - d. EWS/ SC/ST/OBC Certificate in the prescribed format by Govt. of India (if applicable)
  - e. Proof of Identity & Address (Passport, Voter ID, Driving Licence, Aadhaar Card etc)
  - f. PAN Card
  - g. Proof of different periods of experience as claimed in the Application Form (if applicable)
  - h. Any other document in support of your candidature
  - i. PWD Certificate as per latest format (if applicable).

**No documents are to be submitted at present. Candidates may be asked to submit relevant documents at a later stage if so required.**

8. Please attach copies of experience certificates from your previous employer in respect of claims made by you in your application. In respect of current employment, experience certificate/ joining letter along with last months' salary slips, or, Form 16 and other documents which clearly prove your continuity in the job are to be attached. In case your claim is not established from the proofs submitted by you; your application is liable to be rejected. Please check your claims and certificates submitted by you carefully. Incomplete application or, insufficient proof would entail rejection of your application. No claims would be entertained at a later stage.
9. For proof of CTC/ salary, candidates shall have to submit a copy of their last Form No. 16/ Earning Card/ salary slip/ Appraisal letter/ any other suitable document.
10. Community certificate (SC/ST/OBC) should be in the format prescribed by Government of India only. OBC candidates included in the Central List with certificate not more than 12 months old (with clear mention of candidate not belonging to "Creamy Layer") in the GOI prescribed format only will be considered for the posts reserved for OBC. EWS certificate should also be as per Gov. of India format.
11. Hard copies of documents are not to be sent to this office through post/ courier. Documents are to be uploaded on RITES portal only.
12. The original testimonials/documents along with one self-attested copy will have to be produced by the candidate(s) at the time of selection (if called).

13. Candidates who have registered online but whose application are not submitted by the due date, their candidature may not be considered. The company reserves the right to consider only such applications which are received by the prescribed date. RITES Ltd. does not bear any responsibility for any delay for any reason whatsoever.
14. Mere applying for the post/ submission of documents/ appearing or qualifying in the selection does not confer any right on the candidates for claiming selection. If it is found that a candidate does not fulfill the advertised eligibility criteria, his/her candidature will be summarily rejected.
15. Candidates should submit only one application for one vacancy and application once submitted cannot be altered. A valid e-mail ID is essential for submission of the online application. RITES will not be responsible for bouncing of any e-mail sent to the candidates. However, candidates can apply for any number of vacancies.
16. The candidates must submit all the details pertaining to his candidature viz. personal details, educational qualification details, experience details, category etc. Suppression, in this regard, if any, detected on a future date shall render the candidature liable for forfeiture.
17. If any claim made by a candidate is found to be incorrect, his/her candidature shall be summarily rejected.

#### Venue & Time

S. No.	Selection Round	Venue & Date
1	Written Test	Delhi-NCR
2	Interview (Subject to performance in Written Test)	Venue for the Interview shall be communicated to shortlisted candidates

#### General Instructions

1. Management reserves the right to cancel/ restrict/ enlarge/ modify/ alter the selection/ recruitment process at any stage, without issuing any further notice or assigning any reason thereafter.
2. The number of vacancies may vary.
3. Departmental candidates of RITES and candidates working in Government Departments/ PSU shall be allowed to join RITES only after being properly relieved from their parent organization.
4. Before applying, the Candidates must satisfy themselves about their eligibility for the post applied for.
5. In case it is detected at any stage of recruitment that a candidate does not fulfill the eligibility norms and/or that he/she has furnished any incorrect/false information or has suppressed any material fact (s), his/her candidature is liable for cancellation. If any of these shortcomings is/are detected even after appointment, his/her services are liable to be terminated.

6. Any corrigendum/addendum to this advertisement will be displayed only on the Company's website www.rites.com. Therefore, applicants are advised to keep checking the Company's website for any update.
7. The period of training/internship shall not be counted towards post qualification experience.
8. Legal jurisdiction will be Delhi in case of any dispute
9. No train/bus fare / TA / DA shall be payable.
10. Age, experience, and all other eligibility criteria shall be reckoned as on the last date of submission of application (cut-off date).
11. The date of declaration of result / issuance of Marks Sheet shall be deemed to be date of acquiring the qualification and there shall be no relaxation on this account. No further relaxation shall be provided in this regard.
12. Where a specialization is required in the qualifying degree in the educational qualification, candidate is required to submit a certificate from the University/ Institution clearly specifying the specialization in the qualifying degree.

### Syllabus for Written Test

#### For Mechanical:

#### **Applied Mechanics and Design**

**Engineering Mechanics:** Free-body diagrams and equilibrium; trusses and frames; virtual work; kinematics and dynamics of particles and of rigid bodies in plane motion; impulse and momentum (linear and angular) and energy formulations, collisions.

**Mechanics of Materials:** Stress and strain, elastic constants, Poisson's ratio; Mohr's circle for plane stress and plane strain; thin cylinders; shear force and bending moment diagrams; bending and shear stresses; deflection of beams; torsion of circular shafts; Euler's theory of columns; energy methods; thermal stresses; strain gauges and rosettes; testing of materials with universal testing machine; testing of hardness and impact strength.

**Theory of Machines:** 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.

**Vibrations:** Free and forced vibration of single degree of freedom systems, effect of damping; vibration isolation; resonance; critical speeds of shafts.

**Machine Design:** 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.

#### **Fluid Mechanics and Thermal Sciences**

**Fluid Mechanics:** Fluid properties; fluid statics, manometry, buoyancy, forces on submerged bodies, stability of floating bodies; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation; dimensional analysis; viscous

flow of incompressible fluids, boundary layer, elementary turbulent flow, flow through pipes, head losses in pipes, bends and fittings.

**Heat-Transfer:** Modes of heat transfer; one dimensional heat conduction, resistance concept and electrical analogy, heat transfer through fins; unsteady heat conduction, lumped parameter system, Heisler's charts; thermal boundary layer, dimensionless parameters in free and forced convective heat transfer, heat transfer correlations for flow over flat plates and through pipes, effect of turbulence; heat exchanger performance, LMTD and NTU methods; radiative

heat transfer, Stefan-Boltzmann law, Wien's displacement law, black and grey surfaces, view factors, radiation network analysis.

**Thermodynamics:** Thermodynamic systems and processes; properties of pure substances, behaviour of ideal and real gases; zeroth and first laws of thermodynamics, calculation of work and heat in various processes; second law of thermodynamics; thermodynamic property charts and tables, availability and irreversibility; thermodynamic relations.

**Applications:** *Power Engineering:* Air and gas compressors; vapour and gas power cycles, concepts of regeneration and reheat. *I.C. Engines:* Air-standard Otto, Diesel and dual cycles. *Refrigeration and air-conditioning:* Vapour and gas refrigeration and heat pump cycles; properties of moist air, psychrometric chart, basic psychrometric processes. *Turbomachinery:* Impulse and reaction principles, velocity diagrams, Pelton-wheel, Francis and Kaplan turbines.

## **Materials, Manufacturing and Industrial Engineering**

**Engineering Materials:** Structure and properties of engineering materials, phase diagrams, heat treatment, stress-strain diagrams for engineering materials.

Elasticity, plasticity, fracture and fracture toughness, fatigue, solid solutions, equilibrium diagram, thermal treatment, isothermal transformation of austenite, TTT and CCT diagrams Cooling, curves, austempering, martempering, factors affecting hardenability, function of alloying elements in steel (ferrite former, austenite former, carbide former, stabilizer)

**Casting, Forming and Joining Processes:** Different types of castings, design of patterns, moulds and cores; solidification and cooling; riser and gating design. Plastic deformation and yield criteria; fundamentals of hot and cold working processes; load estimation for bulk (forging, rolling, extrusion, drawing) and sheet (shearing, deep drawing, bending) metal forming processes; principles of powder metallurgy. Principles of welding, brazing, soldering and adhesive bonding.

**Machining and Machine Tool Operations:** Mechanics of machining; basic machine tools; single and multi-point cutting tools, tool geometry and materials, tool life and wear; economics of machining; principles of non-traditional machining processes; principles of work holding, design of jigs and fixtures.

**Metrology and Inspection:** Limits, fits and tolerances; linear and angular measurements; comparators; gauge design; interferometry; form and finish measurement; alignment and testing methods; tolerance analysis in manufacturing and assembly.

**Computer Integrated Manufacturing:** Basic concepts of CAD/CAM and their integration tools.

**Production Planning and Control:** Forecasting models, aggregate production planning, scheduling, materials requirement planning.

**Inventory Control:** Deterministic models; safety stock inventory control systems.



**Operations Research:** Linear programming, simplex method, transportation, assignment, network flow models, simple queuing models, PERT and CPM.

### **Manufacturing Processes**

Metal casting – patterns and moulds including mould design involving feeding, gating and risering, melting, casting practices in sand casting, permanent mould casting, investment casting and shell moulding, casting defects and repair; Hot, warm and cold working of metals; Metal forming – fundamentals of metal forming processes of rolling, forging, extrusion, wire drawing and sheet metal forming, defects in forming; Metal joining – soldering, brazing and welding, common welding processes of shielded metal arc welding, gas metal arc welding, gas tungsten arc welding and submerged arc welding; Welding metallurgy, problems associated with welding of steels and aluminium alloys, defects in welded joints; Powder metallurgy – production of powders, compaction and sintering; NDT using dye-penetrant, ultrasonic, radiography, eddy current, acoustic emission and magnetic particle methods.

### **Testing of material:**

Nondestructive testing: Ultrasonic testing, radiography, magnetic particle testing, eddy current testing, dye penetration testing.

Physical testing: Tensile test, % elongation, % reduction in area, hardness (Brinell, Rockwell, Vickers), impact test (Izod, Charpy), bend test, shear test, fatigue test, creep test.

Chemical testing ferrous and nonferrous metals

Metallography; micro and macro examination Testing of paints, rubber, textiles, wood, and plastics.

### **Material Science :**

Thermal, chemical, electrical, magnetic and mechanical properties of material. Structure of metals (arrangement of atoms, crystalline & amorphous structure, crystal imperfections), solid solution, diffusion in metals and alloys, transformation during cooling of metals and alloys, deformation and metal, impact of cold and hot working on metal, corrosion, forms, causes and prevention.

**Heat transfer,** conduction, convection, radiation and heat exchangers.

**Air compressors,** types of air compressors, compressors performance. Reciprocating and rotary air compressors, air receivers, intercoolers and after coolers.

**Air conditioning,** air conditioning units and plants, air conditioner types, selection of plants.

### **For Electrical:**

Unit-1 Electric Circuits and Fields :

Network graph, KCL, KVL, node and mesh analysis, transient response of AC and DC networks, sinusoidal steady-state analysis, resonance, basic filter concept, ideal current and voltage sources, Thevenin's Norton's and Superposition and Maximum Power Transfer theorems, two-port networks, three phase circuits, Gauss

Theorem, electric field and potential due to point, line, plane and spherical charge distributions, Ampere's and Biot-Savart's laws, inductance, dielectrics, capacitance.

#### Unit-2 Signals and Systems:

Representation of continuous and discrete-time signals, shifting and scaling operation, linear, time-invariant and causal systems, Fourier series representation of continuous periodic signals, sampling theorem, Fourier, Laplace and Z transforms.

#### Unit-3 Electrical Machines:

Single phase transformer – equivalent circuit, phasor diagram, tests, regulation and efficiency, three phase transformers – connections, parallel operation, auto-transformer, energy conversion principles; DC machines – types, windings, generator characteristics, armature reaction and commutation, starting and speed control of motors, three phase induction motors – principles, types performance characteristics, starting and speed control, single phase induction motors, synchronous machines – performance, regulation and parallel operation of generators, motor starting characteristics and applications; servo and stepper motors.

#### Unit-4 Power Systems:

Basic power generation concepts; transmission line models and performance, cable performance, insulation, corona and radio interference, distribution systems, per-unit quantities, bus impedance and admittance matrices, load flow, voltage control, power factor correction, economic operation, symmetrical components, fault analysis, principles of over-current, differential and distance protection, solid state relays and digital protection, circuit breakers, system stability concepts, swing curves and equal area criterion, HVDC transmission and FACTS concepts.

#### Unit-5 Control Systems:

Principles of feedback, transfer function, block diagrams; steady-state errors, Routh and Nyquist techniques, Bode plots, root loci, lag, lead and lead-lag compensation, state space model, state transition matrix, controllability and observability.

#### Unit-6 Electrical and Electronic Measurements:

Bridges and potentiometers, PMMC, moving iron, dynamometer and induction type instruments, measurement of voltage, current, power, energy and power factor, instrument transformers, digital voltmeters and multimeters, phase, time and frequency measurement, Q-meters, oscilloscopes, potentiometric recorders, error analysis.

#### Unit-7 Analog and Digital Electronics:

Characteristics of diodes, BJT, FET, amplifiers – biasing, equivalent circuit and frequency response, oscillators and feedback amplifiers, operational amplifiers – characteristics and applications, simple active filters, VCOs and timers, combinational and sequential logic circuits, multiplexer, Schmitt trigger, multi-vibrators, sample and hold circuits, A/D and D/A converters, 8-bit microprocessor basics, architecture, programming and interfacing.

#### Unit-8 Power Electronics and Drives:

Semiconductor power diodes, transistors, thyristors, triacs, GTOs, MOSFETs and IGBTs – static characteristics and principles of operation, triggering circuits, phase control rectifiers, bridge converters – fully controlled and half controlled, principles of choppers and inverters, basis concepts of adjustable speed Dc and Ac drives.

#### Unit-9 Application/utilization of Electrical Energy

Properties of Electrical System: Characteristics/properties of electrical systems/equipment/devices used in institutional building/commercial complexes/residential complexes/workshops/engineering industry etc. including General Electrification, Area Lighting, Sub-Station, DG Set, Solar system, Air-conditioning, Lifts, fire Alarm, Data Networking, EPBX, CCTV, PA System, Airport Runway lighting works etc.

Planning & Design of Electrical Works – Internal & External Works. Estimation, installation, testing and commissioning of such works.

Inspection and testing of electrical equipment, components, fittings, types of tests, sampling of components, test methods for different electrical equipment, components, cables, wires, insulators etc.

### Communication with RITES

Any information regarding this recruitment process would be made available on the email address provided by the candidate at the time of registration and/or shall be uploaded on RITES website. Candidates are advised to periodically check the site for further updates.

Candidates are encouraged to go through the detailed advertisement and read the “Frequently Asked Questions (FAQs)” uploaded on RITES website under Career section to solve their queries.

Queries if remaining should be sent to [rectt@rites.com](mailto:rectt@rites.com) only and contain the following particulars:

- i. **VC No.**
- ii. **REGISTRATION/ROLL NO.**
- iii. **NAME OF CANDIDATE IN FULL AND IN BLOCK LETTERS.**
- iv. **Valid email address as given in the application Communications not containing above particulars shall NOT BE ATTENDED TO.**

Communications not containing above particulars shall NOT BE ATTENDED TO. Any query/ issue should be brought to notice of RITES well in advance of the due date.

RITES will not be responsible for non-submission of application due to issues brought to notice at the last moment. Queries related to information already provided in the advertisement may not be attended to.

### Important Dates

S. No.	Particular	Date
1	Commencement of submission of online application and online payment of fees	01.03.2024
2	Last date of submission of online application and online payment of fees	14.03.2024
3	Issue of Admit Card	15.03.2024
4	Date of written examination	19.03.2024
5	Date of Document scrutiny followed by Interview	To be announced later