

12.0 Selection Process :

12.1 Selection Process for the post of ET 2026 (I&FS) :

The selection process of ET 2026 (Industrial & Fire Safety) shall be in two stages as follows:-

- A] Stage I** - Computer Based Test (CBT)
B] Stage II - Personal Interview

A] Stage I – CBT

(a)	Time allotted for test	:	120 Minutes
(b)	Number of Questions	:	100
(c)	Marking system	:	3 (Three) marks for each correct answer and 1 (One) negative mark (-1 mark) for each wrong answer. No marks will be allotted to questions which are not attempted.
(d)	Qualifying marks for test (Out of 300)	:	100 marks for UR category 90 marks for reserved category (SC/OBC(NCL)/EWS) No post is reserved for ST. Hence, they will be considered at par with UR category.
(e)	The online test for ET (Industrial & Fire Safety) will consists of questions relating to professional qualification based on the following syllabus :		
	<ol style="list-style-type: none"><i>Fire Engineering Fundamentals</i> : Chemistry of Fire, Combustion Process, Limits of Flammability, Flame Spread, Effects of Heat, Fire Resistance, Fire Load etc.<i>Fire Fighting Chemicals</i>: Water, Foam, DCP, Clean agents etc.<i>Fire Detection & Control</i> : Fire Detection principles, classification of detectors, Fire Extinction methods, water based, chemical based, clean agent systems, operation and maintenance of detection / alarm systems<i>Fire Protection – I (Special Hazards: Industrial Fire)</i> : Fire Suppression Systems, Fire Water Systems, sprinkler systems, Fire resistant construction, Emergency exits<i>Fire Protection – II (Special Hazards : Flammable Liquid Storages)</i> : Plant Siting considerations, Ignition source control, Hazards of Bulk storages, Fire Protection for Flammable storages, Passive barriers		

	vi. <i>Fire Services Hydraulics</i> : Sprinkler system demand, hydraulics of sprinkler systems etc. vii. <i>Fire Safety Laws</i> : Doctrine of Sovereign immunity; Factories Act, Explosives act, etc. viii. <i>Fire Codes and Standards</i> : Standards for Fire equipment, Personal Safety equipment etc. ix. <i>Paramedics/First Aid</i> : Management of Burns, Fractures, wounds, trauma handling etc. x. <i>Inspection & Testing of Fire Fighting Systems</i> : Fire Sprinkler testing, OISD/NFPA standards for testing & Inspection, Fire Pumps testing etc. xi. <i>Safety Management</i> : Goals & Need of Safety, Accident Prevention, Accident Investigation, Personal Protection equipment etc. xii. <i>Safety in Construction</i> : Safety in welding & gas cutting, excavations, work at height, electrical, material handling, lifting / hoisting etc. xiii. <i>Safety Engineering</i> : Accident trends in Industry, Safety Indices, Frequency & Severity Rates, Job Safety Analysis, work permit administration etc.
	<i>The syllabus/topics mentioned are indicative in nature. Candidates are expected to possess significant knowledge/proficiency pertaining to the relevant subjects and their qualifying degree.</i>
(f)	Depending upon the no. of applications received, venue will be decided.
(g)	Depending upon the number of vacancies, only those candidates who rank sufficiently high in the order of merit, based on the total marks scored in the CBT shall be shortlisted and called for personal interview.

B] Stage II – Personal Interview

- a) Shortlisting of candidates for personal interview for the posts of Executive Trainees - 2026 (I&FS) will be done in the order of merit drawn on the basis of Computer Based Test (CBT) marks by applying ratio of 1:12.
- b) If there are more than 01 candidate with the same cut off mark (while short listing for interview), then all the candidates with the same mark will be shortlisted for interview.
- c) Category wise cut off shall be displayed on recruitment web portal of NPCIL. Result of shortlisting for interview shall be made available to candidates under 'Application Status' link through individual login on www.npcilcareers.co.in.
- d) Intimation of interview date/time/venue will be communicated to shortlisted candidates through Email/SMS. Call letter for appearing for interview will be

made available for shortlisted candidates in the website for downloading.

- e) **Final selection will be done on the basis of performance in the Personal Interview subject to medical fitness.**
- f) No weightage will be given to CBT marks during the final selection. Total marks for Personal Interview – 100. The qualifying marks for interview are as follows :

Unreserved	-	70 %
EWS/SC/OBC (NCL)	-	60 %

No post is reserved for ST. Hence, ST candidates applying against the above post will be considered at par with UR category.

12.2 **Selection Process for the post of ET 2026 (Physics)**

The selection process of ET 2026 (Physics) shall be in two stages as follows:-

- A] Stage I** - Computer Based Test (CBT)
- B] Stage II** - Personal Interview

A] Stage I – CBT

(a)	Time allotted for test	:	120 Minutes
(b)	Number of Questions	:	100
(c)	Marking system	:	3 (Three) marks for each correct answer and 1 (One) negative mark (-1 mark) for each wrong answer. No marks will be allotted to questions which are not attempted.
(d)	Qualifying marks for test (Out of 300)	:	100 marks for UR category 90 marks for reserved category (SC/ST/OBC(NCL)/EWS/PwBD)
(e)	The online test for ET (Physics) will consists of questions relating to professional qualification based on the following syllabus :		
	i. Mathematical Physics Vector algebra and Calculus: Linear vector space: basis, orthogonality and completeness; matrices; similarity transformations, diagonalization, eigen values and eigen vectors; linear differential equations: second order linear differential equations and solutions involving special		

functions; complex analysis: Cauchy-Riemann conditions, Cauchy's theorem, singularities, residue theorem and applications; Laplace transform, Fourier analysis; elementary ideas about tensors: covariant and contravariant tensors; Elements of probability theory, error analysis.

ii. Classical Mechanics

Newton's laws, conservation of energy and momentum, collisions; Lagrangian Formulation: D'Alembert's principle, Euler-Lagrange equation, Hamilton's principle, calculus of variations; symmetry and conservation laws; central force motion: Kepler problem and Rutherford scattering; small oscillations: coupled oscillations and normal modes; rigid body dynamics: inertia tensor, orthogonal transformations, Euler angles, Torque free motion of a symmetric top; Hamiltonian and Hamilton's equations of motion; Liouville's theorem; canonical transformations: action-angle variables, Poisson brackets, Hamilton- Jacobi equation. Special Theory of Relativity: Lorentz transformations, relativistic kinematics, mass-energy equivalence.

iii. Electromagnetic Theory

Solutions of electrostatic and magnetostatic problems including boundary value problems; method of images; separation of variables; dielectrics and conductors; magnetic materials; multipole expansion; Maxwell's equations; scalar and vector potentials; Coulomb and Lorentz gauges; electromagnetic waves in free space, non-conducting and conducting media; reflection and transmission at normal and oblique incidences; polarization of electromagnetic waves; Poynting vector, Poynting theorem, energy and momentum of electromagnetic waves; radiation from a moving charge.

iv. Quantum Mechanics

Postulates of quantum mechanics; uncertainty principle; Schrodinger equation; Dirac Bra Ket notation, linear vectors and operators in Hilbert space; one dimensional potentials: step potential, finite rectangular well, tunneling from a potential barrier, particle in a box, harmonic oscillator; two and three dimensional systems: concept of degeneracy; hydrogen atom; angular momentum and spin; addition of angular momenta; unitary transformations, Hermitian operators; variational

method and WKB approximation, time dependent and independent perturbation theory; elementary scattering theory, Born approximation; symmetries in quantum mechanical systems.

v. Thermodynamics and Statistical Physics

Laws of thermodynamics, work and heat, thermodynamic potentials; macrostates and microstates; phase space; ensembles; partition function, free energy, calculation of thermodynamic quantities; classical and quantum statistics; degenerate Fermi gas; black body radiation and Planck's distribution law; Bose- Einstein condensation; first and second order phase transitions, phase equilibria, critical point.

vi. Atomic and Molecular Physics

Spectra of one-and many-electron atoms; spin-orbit interaction: LS and JJ couplings; fine and hyperfine structures; Zeeman and Stark effects; electric dipole transitions and selection rules; rotational and vibrational spectra of diatomic molecules; electronic transitions in diatomic molecules, Franck-Condon principle; Raman effect; EPR, NMR, ESR, X-ray spectra; lasers: Einstein coefficients, population inversion, two and three level systems.

vii. Solid State Physics

Elements of crystallography; diffraction methods for structure determination; bonding in solids; lattice vibrations and thermal properties of solids; free electron theory; band theory of solids: nearly free electron and tight binding models; metals, semiconductors and insulators; conductivity, mobility and effective mass; Optical properties of solids; Kramer's- Kronig relation, intra- and inter-band transitions; dielectric properties of solid; dielectric function, polarizability, ferroelectricity; magnetic properties of solids; dia, para, ferro, antiferro and ferri- magnetism, domains and magnetic anisotropy; superconductivity: Type I and Type II superconductors, Meissner effect, London equation, BCS Theory, flux quantization.

viii. Electronics

Semiconductors in Equilibrium: Electron and hole statistics in intrinsic and extrinsic semiconductors;

	<p>metal-semiconductor junctions; Ohmic and rectifying contacts; LCR circuits, PN diodes, bipolar junction transistors, field effect transistors; negative and positive feedback circuits; oscillators, rectifiers, operational amplifiers, active filters; basics of digital logic circuits, combinational and sequential circuits, flip-flops, timers, counters, registers, A/D and D/A conversion.</p> <p>ix. Nuclear and Particle Physics</p> <p>Nuclear radii and charge distributions, nuclear binding energy, electric and magnetic moments; semi-empirical mass formula; nuclear models; liquid drop model, nuclear shell model; nuclear force and two nucleon problem; alpha decay, beta-decay, electromagnetic transitions in nuclei; Rutherford scattering, nuclear reactions, conservation laws; fission and fusion; particle accelerators and detectors; elementary particles; photons, baryons, mesons and leptons; quark model; conservation laws, iso-spin symmetry, charge conjugation, parity and time-reversal invariance.</p>
	<i>The syllabus/topics mentioned are indicative in nature. Candidates are expected to possess significant knowledge/proficiency pertaining to the relevant subjects and their qualifying degree.</i>
(f)	Depending upon the no. of applications received, venue will be decided.
(g)	Depending upon the number of vacancies, only those candidates who rank sufficiently high in the order of merit, based on the total marks scored in the CBT shall be shortlisted and called for personal interview.

B] Stage II – Personal Interview

- a) Shortlisting of candidates for personal interview for the posts of Executive Trainees - 2026 (Physics) will be done in the order of merit drawn on the basis of Computer Based Test (CBT) marks by applying ratio of 1:12.
- b) 'Persons with Benchmark Disabilities' (PwBDs), will be shortlisted separately by applying 1:12 ratio in each category of disability for which vacancies are reserved. Please note that only Reactor Physics Stream is identified suitable for PwBDs. Therefore, PwBD candidates shall be considered only against Reactor Physics Stream.
- c) If there are more than 01 candidate with the same cut off mark (while short listing for interview), then all the candidates with the same mark will be shortlisted for interview.
- d) Category wise cut off shall be displayed on recruitment web portal of NPCIL. Result of shortlisting for interview shall be

made available to candidates under 'Application Status' link through individual login on www.npcilcareers.co.in.

- e) Intimation of interview date/time/venue will be communicated to shortlisted candidates through Email/SMS. Call letter for appearing for interview will be made available for shortlisted candidates in the website for downloading.
- f) **Final selection will be done on the basis of performance in the Personal Interview subject to medical fitness.**
- g) No weightage will be given to CBT marks during the final selection. Total marks for Personal Interview – 100. The qualifying marks for interview are as follows :

Unreserved	–	70 %
EWS/SC/ST/OBC (NCL)/PwBD	–	60 %

- h) Separate merit list based on interview marks will be prepared for each PwBD category for which vacancies are reserved & PwBDs will be selected in the order of merit from this list.

12.3 Tie Breaking Principle, waitlist operation and interview schedule for the post of ET (I&FS) and ET (Physics) -

- (a) Tie breaking principle:

In the event of a tie based on interview marks, following criteria will be adopted in sequence for deciding position in merit list:

- i) In case of candidates with equal interview marks, candidates with higher marks in CBT will be placed higher in the merit list
- ii) Wherever both CBT marks & interview marks are equal, candidate senior in age will be ranked higher.

- (b) Preparation and operation of waitlist :

- i) Waitlist will be limited to equal number of candidates as in the select main list.
- ii) Waitlist will be operated category wise in the order of merit.
- iii) Waitlist will remain valid till **21st September, 2026** only.

- (c) Interview Schedule & Venue :

Interviews are scheduled tentatively from 2nd week of June, 2026. Intimation of interview date/time/venue will be communicated to shortlisted candidates through Email/SMS. However, NPCIL reserves the right to change date/venue for interview as it may deem fit which will be duly informed to the candidate and no request for any change from the candidate shall be entertained in this regard.