



भारत संचार निगम लिमिटेड  
भारत सरकार का उद्यम)  
कार्मिक शाखा, निगम कार्यालय  
चौथा तल, भारत संचार भवन,  
जनपथ, नई दिल्ली

No. BSNLCO-PERS/15(12)/1/2022-PERS1

Dated || -08-2023

To

All Heads of Telecom Circles/Administrative Units,  
BSNL


Subject: **Scheme and Syllabus of LICE for promotion from EE(E) to SE(E) level of Electrical Stream.**

Sir/Madam,

The undersigned is directed to enclose herewith the Scheme and Syllabus of LICE for promotion from EE(E) to SE(E) level of Electrical Stream for wide publicity among the executives of BSNL.


This issues with the approval of competent authority.

Encl.: As above.

  
(जी.पी.विशनोई/ G.P. Vishnoi)  
उप महाप्रबंधक(कार्मिक-डीपीसी-एसएम)  
Dy. General Manager (Pers-DPC-SM)

Copy to:

1. Sr. PPS to CMD, BSNL.
2. Sr. PPS to functional Directors of BSNL Board.
3. Sr. PPS to CVO, BSNL.
4. All CGMs/PGMs/Sr.GMs/GMs, BSNL CO.
5. All Heads of cadre controlling authorities.
6. General Secretary, AIGETOA/SNEA/SEWA.
7. OL Section for Hindi version.
8. BSNL Intranet portal.

  
(मूल चंद/Mool Chand)  
सहायक महाप्रबंधक(कार्मिक नीति)  
Assistant General Manager (Pers. Policy)

**Scheme and syllabus for the Limited Internal Competitive Examination (LICE) for promotion to the grade of Superintending Engineer (SE) level of Electrical Stream**

**1. Scheme of Examination**

**1.1. The examination (Computer Based Test-Objective type) will consist of two papers as given below:**

Paper	Particulars	Maximum Marks	Duration
Written Test (Technical)	(i) Core	50 marks (50 Questions)	150 Minutes
	(ii) Common	50 marks (50 Questions)	
<b>Total</b>		<b>100 marks</b>	
Aptitude Test	One Section	50 marks (50 Questions)	60 Minutes

Note:

- The examination will be conducted in one shift comprising Written Test (Technical) for 150 minutes and Aptitude Test for 60 minutes.
- The examination will be objective type with negative marking. For each correct answer 01 mark will be awarded and for each wrong answer (-)0.25 marks will be awarded.
- Minimum qualifying marks in Written Test (Technical) and Aptitude Test put together shall be 40% i.e. out of total 150 marks, candidate has to obtain minimum 60 marks to qualify the examination.
- Evaluation of APARs shall be done only in respect of candidates called for interview (2.5 times of the number of vacancies) subject to obtaining minimum qualifying marks in Written Test (Technical) and Aptitude Test put together.

**1.2 Evaluation of APARs:**

- For assessment of APARs and calculating APAR score (No. of years of reckoning APARs and procedure to be followed for incomplete APAR will be as followed in DPC for seniority quota promotion) in respect of executives called for interview, the composition of Assessment Committee will consist of following officers:
  - PGM/GM (Rectt.) - Chairman
  - PGM/GM of concerned Cadre - Member
  - CLO(SCT)/DGM(SCT) - Member
  - DGM(Rectt.) - Member/Convener
  - Approving authority - Director(HR), BSNL Board
- The Assessment Committee will assess the APARs in respect of adverse remarks, integrity and score in each of the reckoning APARs. In reckoning APARs, numeric score below 04 in any APAR being considered and/or the adverse remarks and/or doubtful integrity in any of the APARs will render the executive unsuccessful for promotion in that particular LICE, provided that final decision in the matter has been taken by the Competent Authority
- Where adverse remarks in APAR have already been communicated but the decision of Appellate Authority on the appeal is pending, the result of such executives will be deferred until final decision on the appeal is taken by the competent authority.
- While considering the deferred case as above, if the committee finds that adverse remarks are toned down or expunged, it would place him at the appropriate place in the relevant merit list of qualified executives.



(v) Matter being confidential, Recruitment branch shall be the coordinating Branch for Assessment Committee and cases of incomplete APAR/Adverse remarks/doubtful integrity cases will be dealt by them in coordination with concerned Circle/Cadre authorities, if required.

**1.3 Interview & determination of final merit list (Weightage- Written Test 50%, Aptitude Test 15%, APAR 20% & Interview 15%):**

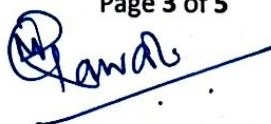
Number of candidates to be called for Interview	2.5 times the number of vacancies
Methodology of selecting candidates for Interview	Post written test, candidates obtaining prescribed minimum qualifying marks {i.e. 40% in Written Test (Technical) and Aptitude Test put together (out of total 150 marks candidate has to obtain minimum 60 marks to qualify the examination)} shall be listed in descending order of their Total Score and top N number of candidates shall be called for interview where N = 2.5 times the number of vacancy notified for that particular exam. Total Score shall be calculated as below : Score A = 0.5 * Candidate marks in Written Test (Technical) Score B = 0.15 * Candidate marks in Aptitude Test*2 Total Score = Score A + Score B
Maximum Marks for Interview	100
Score of Interview	Score C = 0.15*Candidate Interview Marks
Evaluation of APARs	Score D = 0.2 *Candidate Average APAR score * 10
Final merit list for DGM	FINAL SCORE = Score A + Score B + Score C + Score D Final merit list will be prepared based on FINAL SCORE as per vacancies published for that particular LICE provided the candidate obtains overall minimum qualifying marks.
Qualifying Marks overall (FINAL-SCORE) for DGM	50% of maximum FINAL SCORE (100)

**2. Syllabus:**

**2.1 Syllabus for Written Test Technical (Core) – Electrical:**

Sl. No.	Topic	Topic sub heading	Weightage (in %)
1	Acts and rules	<ul style="list-style-type: none"> <li>• Contract Act /Company Act/IE Rules/NBC</li> <li>• ECBC Code</li> <li>• Labour Laws and Act</li> </ul>	15
2	CPWD norms	<ul style="list-style-type: none"> <li>• CPWD Works Manual</li> <li>• EW-6/8</li> <li>• PAR</li> <li>• DSR</li> <li>• Estimation</li> <li>• Clauses</li> <li>• Arbitration and conciliation</li> </ul>	10

3	Power electronics	<ul style="list-style-type: none"> <li>• Semi conductor devices (Diodes/Thyristor/MOSFET and characteristic)</li> <li>• AC DC convertor</li> <li>• Principal of single phase and three phase Inverter</li> <li>• Inverter duty transformer</li> <li>• UPS and SMPS</li> <li>• Calculation of battery size</li> </ul>	5
4	Electrical machine	<ul style="list-style-type: none"> <li>• Basic concept of machine (magnetic circuit /regulation/power transformer )</li> <li>• Generators and motors</li> <li>• Motors (DC motor /AC motor) construction and working principal and application</li> <li>• Transformer (Type/ working principal and application)</li> <li>• Motor protection system</li> </ul>	5
5	Earthing	<ul style="list-style-type: none"> <li>• Design and type of earthing system (plate/pipe/grid/piles &amp; TT /IT and TN)</li> <li>• Earth values in telecom installation</li> <li>• Measurement of earth value</li> <li>• Installation procedure /exchange/exchange earth</li> <li>• Lighting and surge protection</li> </ul>	5
6	Substation	<ul style="list-style-type: none"> <li>• Space requirement layout and various component (transformer / panel/cabling /HT /LT panel)</li> <li>• Substation capacity calculation</li> <li>• Factor governing the location of substation</li> <li>• Short circuit calculation (short circuit calculation symmetric and unsymmetrical faults)</li> <li>• Power factor improvement , Capacitor and their selection</li> <li>• Rating of circuit breaker and switch gears</li> <li>• Protection devices and safety. Testing and calibration</li> </ul>	5
7	DG Set	<ul style="list-style-type: none"> <li>• DG Set selection (space /capacity)</li> <li>• base load/peak load / choice of set (water/air cooled)</li> <li>• Protection and safety devices</li> <li>• AMF panel</li> <li>• Class of governor and turbo charger</li> <li>• CPCB norms</li> </ul>	5
8	Lighting	<ul style="list-style-type: none"> <li>• Concept of illumination in telecom building (indoor and outdoor)</li> <li>• Design and type of luminaries</li> <li>• Concept of light management system</li> <li>• Latest trend in efficient lighting</li> <li>• Advantage /disadvantage of CFL/LED lighting</li> </ul>	5





9	Pumps	<ul style="list-style-type: none"> <li>Type of pump(centrifugal/submersible/mono block/fire pumps )</li> <li>Design of pumps</li> <li>Maintenance and trouble shooting and safety</li> <li>Starter (DOL/semi/automatic)</li> </ul>	5
10	Fire detection and Fire fighting	<ul style="list-style-type: none"> <li>Type of fire and protection methods and NBC guidelines</li> <li>Fire detection system, concept and design (Manual fire/auto/ VESDA)</li> <li>Detectors and their selection</li> <li>Fire protection method as per NBC (Dry riser/wet riser/sprinkler/ gas flooding system)</li> <li>Fire drill and rescue process</li> </ul>	5
11	Lift and elevator	<ul style="list-style-type: none"> <li>Lift space requirement and design and RTT calculation</li> <li>Type of lifts</li> <li>ARD features</li> <li>Fire protection requirement as per NBC</li> </ul>	5
12	IBMS and CCTV	<ul style="list-style-type: none"> <li>Concept of IBMS , Selection of components and sensors and controls</li> <li>Security and CCTV</li> <li>Type of camera and features</li> <li>Video management system and features</li> </ul>	5
13	Data center	<ul style="list-style-type: none"> <li>General guidelines of TIA</li> <li>Type/application of data center</li> <li>Space /infra structure requirement of data center</li> <li>Different Cooling concept of data center</li> <li>Cost estimation</li> </ul>	10
14	Energy conservation and RE	<ul style="list-style-type: none"> <li>LCM/HCM/NCM/Energy Conservation Act/Energy audit</li> <li>Energy conservation technique</li> <li>Solar energy concept/SPV type/ space requirement /RESCO/On grid/Off grid</li> <li>Wind energy concept /horizontal/vertical axis turbine</li> <li>Hybrid energy</li> <li>Green building concept</li> <li>Oorja App</li> <li>Infra Management automation</li> <li>Project OJAS</li> </ul>	5
15	Measurement and instrument	<ul style="list-style-type: none"> <li>Power factor and energy</li> <li>Electronic measurement instruments , transducer and application (frequency/temperature/pressure/flow rate displacement /noise level /humidity)</li> </ul>	5

16	HVAC	<ul style="list-style-type: none"> <li>• Component of HVAC</li> <li>• Selection and design of HVAC in telecom building</li> <li>• Selection and design of AC system i/c split/VRV/package/HPAC</li> <li>• Free cooling (turbo ventilator/ DC driven /natural cooling)</li> <li>• AHU and air quality management i/c ventilation for telecom building</li> </ul>	5
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## 2.2 Syllabus for Written Test Technical (Common):

1	IT Tools	<ul style="list-style-type: none"> <li>• MS office: Word, Excel, Power Point</li> <li>• E office: Configuration, Usage and Reports</li> <li>• ESS workflows</li> </ul>
2	Planning & Operation	<ul style="list-style-type: none"> <li>• ERP processes</li> <li>• IPMS</li> <li>• GeM, CPP, MSTC</li> <li>• BSNL CDA Rules</li> <li>• Energy Conservation OORJA APP (Project OJAS)</li> <li>• Procurement Manual</li> </ul>
3	General Admn.	<ul style="list-style-type: none"> <li>• RTI, PGRMS, Grievance Redressal Mechanism</li> <li>• Contract Management</li> </ul>
4	Spectrum & Licensing	<ul style="list-style-type: none"> <li>• Types of Telecom License</li> <li>• USO Framework</li> </ul>
5	TRAI regulations	<ul style="list-style-type: none"> <li>• TRAI QoS</li> </ul>
6	Project Management	<ul style="list-style-type: none"> <li>• Project evaluation (Payback / NPV/RoI)</li> <li>• Project Budgeting and RE/BE</li> <li>• Project monitoring (CPM/PERT)</li> <li>• Capitalisation, WIP, Depreciation and Scrapping</li> </ul>

## 2.3 Syllabus for Aptitude Test:

Topic	Sub-heading
General Aptitude	<ul style="list-style-type: none"> <li>• Quantitative Aptitude</li> <li>• Reading Comprehension</li> <li>• Reasoning Ability</li> </ul>

*Ramwal*  
.. 11/08/2023