



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 16-05-2023


To

All Heads of Telecom Circles/Administrative Units,  
BSNL

Subject: **Scheme and Syllabus of LICE for promotion from SDE(C) to EE(C) of Civil Stream.**


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

Encl: As above

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

Copy to:

1. PPS to CMD, BSNL.
2. PPS to functional Directors of BSNL Board.
3. 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 Executive Engineer (EE) of Civil Stream**

**1. Scheme of Examination**

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

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

Note:

- (a) The examination will be conducted in one shift comprising Written test (Technical) for 150 minutes and Aptitude Test for 60 minutes.
- (b) 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.
- (c) Minimum qualifying marks in Written Test (Technical) and Aptitude Test put together shall be 40% for OC and 35% for SC/ST and PwBDs if sufficient PwBD candidates are not available on prescribed standards i.e. out of total 150 marks, OC candidate has to obtain minimum 60 marks and SC/ST & PwBD candidates have to obtain minimum 52.50 marks to qualify the examination.
- (d) Evaluation of APARs shall be done only in respect of candidates obtaining minimum qualifying marks in Written Test (Technical) and Aptitude Test put together.
- (e) Reservation in promotion to PwBD category candidates shall be available as per latest DoPT guidelines.

**1.2 Evaluation of APARs**

- (i) 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 qualified in written examination, 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
- (ii) 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
- (iii) 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.

- (iv) 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 Determination of final merit list** (Weightage- Written Test 60%, Aptitude Test 20% & APAR 20%):

Score A = 0.6 * Candidate marks in Written Test
Score B = 0.2 * Candidate marks in Aptitude Test * 2
Score C = 0.2 * Candidate average APAR score * 10
Total Score = Score A + Score B + Score C
Final merit list shall be published based on Total Score as per vacancies published for that particular LICE subject to obtaining minimum overall qualifying marks in Total Score.
Qualifying Marks in total score: OC-50%; SC/ST-45% and PwBD-45% if sufficient PwBD candidates are not available on prescribed standards.

**2. Syllabus:**

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

Sl. No.	Topic	Topic sub heading	Weightage (in %)
1	Building Materials	Stone, Lime, Glass, Plastics, Steel, FRP, Ceramics, Aluminum, Fly Ash, Basic Admixtures, Timber, Bricks and Aggregates: Classification, properties and selection criteria; Cement: Types, Composition, Properties, Uses, Specifications and various Tests; Cement Mortars and Concrete: Properties and various Tests; Design of Concrete Mixes: Proportioning of aggregates and methods of mix design.	5
2	Solid Mechanics	Elastic constants, Stress, plane stress, Strains, plane strain, Mohr's circle of stress and strain, Elastic theories of failure, Principal Stresses, Bending, Shear and Torsion.	2
3	Structural Analysis	Basics of strength of materials, Types of stresses and strains, Bending moments and shear force, concept of bending and shear stresses; Analysis of determinate and indeterminate structures; Trusses, beams, plane frames; Free and Forced vibrations of single degree and multi degree freedom system; Concepts and use of Computer Aided Design.	8
4	Design Principles	Determination of dead, live, wind and earthquake forces; Factor of safety, load factors & load combinations; Use of relevant BIS codes, Provisions of important BIS codes – IS 456, 800, 875, 1893 & 13920; Ductile design and detailing.	5
5	Design of	Principles of Working Stress methods & Limit State	6



	Steel Structures	method, Design of tension and compression members, Design of beams and beam column connections, built-up sections, Girders, Industrial roofs. Principles of Ultimate load design.	
6	Design of Concrete and Masonry structures	Limit state design for bending, shear, axial compression and combined forces; Design of Beams, Columns, Slabs, Lintels, Foundations, Retaining walls, Tanks, Staircases; Principles of pre-stressed concrete design including materials and methods; Earthquake resistant design of structures; Design of Masonry Structure.	10
7	Construction Practice and Planning	Construction - Planning, Equipment, Site investigation and Management including Estimation as per CPWD practice, Cost Index; General details of building construction including centering & shuttering, RCC work, foundation, flooring, masonry, plumbing, steel work, wood work, finishing, sanitary installation & terracing including mode of measurements as per CPWD specifications. Analysis of Rates of various types of works as per CPWD practice; Tendering Process and Contract Management; Quality Control and testing of common building materials as per CPWD specifications; Labour safety & Welfare; General Conditions of Contract for Civil Works in BSNL (BSNL W-7/8) and interpretation of clauses.	10
8	Environmental Engineering:		
(a)	Water Supply Engineering	Sources, Estimation, quality standards and testing of water and their treatment; Physical, chemical and biological characteristics and sources of water, Pollutants in water and its effects; Institutional water supply system; Estimation of water demand; Drinking water Standards, Water Treatment Plants, Water distribution networks, valves & fittings.	5
(b)	Waste Water Engineering	Planning & design of domestic waste water, sewage collection and disposal; Plumbing Systems. Components and layout of sewerage system; Planning & design of Domestic Waste-water disposal system; Sludge management including treatment, disposal and re-use of treated effluents.	5
(c)	Solid Waste Management	Sources & classification of solid wastes along with planning & design of its management system; Disposal system.	2
9	Geo-technical Engineering and Foundation Engineering:		
(a)	Geo-technical Engineering	Soil exploration - planning & methods, Properties of soil, classification, various tests and inter-relationships; Permeability, Compressibility, consolidation and Shearing resistance. Earth pressure theories and stress distribution in soil.	4
(b)	Foundation Engineering	Types of foundations & selection criteria, bearing capacity, settlement analysis, design and testing of shallow & deep foundations. Foundation on expansive soils.	6
10	Surveying, Geology:		
(a)	Surveying	Classification of surveys, various methodologies, instruments & analysis of measurement of distances, elevation and directions; Survey Layout for road	4



		alignment and buildings, Setting out of Curves.	
(b)	Geology	Basic knowledge of Engineering geology & its application in projects.	2
11	Roads and Pavements	Planning & construction methodology, Alignment and geometric design; Principles of Flexible and Rigid pavements design.	3
12	Miscellaneous:		
(a)	Waterproofing works	Types of waterproofing, materials & their specifications, construction practices.	2
(b)	Repair, Rehabilitation and Retrofitting	Repair, Rehabilitation and Retrofitting of Buildings and Towers.	4
(c)	Valuation of land and buildings	Methods of valuation, Procedure of Valuation, depreciation & obsolescence, scrap value/ residual value, salvage value, assessed value, sinking fund.	3
(d)	Monetization of Land and Buildings	Management of Estate, Monetization of Assets, Rent Assessment; BSNL CROP policy.	6
(e)	REM Module	Various T-Codes and reports generation	5
13	Green Buildings	Green Buildings Constructions, Green Rating Integrated Habitat Assessment (GRIHA) green building rating system	3

## 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/Rol)</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>