

**Bharat Sanchar Nigam Limited**  
(A Govt. of India Enterprise)  
Corporate Office  
(Personnel-IV Section)

[Establishment Branch]

Bharat Sanchar Bhawan, New Delhi-110 001

No. 5-11/2009-Pers.IV  
Dated: Oct. 20<sup>th</sup>, 2009.


TO,

CGMs All Telecom Circles,  
CGMs Kolkata & Chennai Telephone Districts,  
CGMs Project/ Mtce./ Telecom Factories/ Q&A/ Inspection/ NCES/ Broad  
Band Network/ IT/ ITPC/ NATFM/ NETF/ Telecom Stores Circles,  
CGMs ALTTC/BRBRAITT,  
All Other Administrative Units,  
Bharat Sanchar Nigam Limited.

**Subject:- Scheme and Syllabus for Limited Internal Competitive Examination (LICE) for filling up posts in the cadre of JTO(Telecom) under both 35% and 15% quota.**

The Scheme and Syllabus for Limited Internal Competitive Examination (LICE) for filling up posts in the cadre of JTO (Telecom) under both 35% and 15% quota will be as per the enclosed Annexure-I.

It has the approval of the Competent Authority.

  
20.10.09

(P.M.VERMA),

Asstt. General Manager (Pers-IV),

TF: 011-23734152 FAX: 011-23734051.

Copy to:-

1. P.S. to MOC&IT/ MOS (C&IT).
2. CMD, BSNL, New Delhi.
3. DIRECTOR, BSNL CO.  
(HR)/ (CFA)/ (CM)/ (Finance)/ (Enterprise).
4. EXECUTIVE DIRECTOR, BSNL CO. (CA)/(CN)/(F)
5. GM  
(Pers.)/ (Estt.)/ (TF)/ (Trg.)/ (Rectt.), BSNL CO.
6. DDG(Estt)/ Director (Staff), DoT.
7. DGM  
(Pers.)/ (Estt.)/ (TF)/ (Trg.)/ (Rectt.), BSNL CO.
8. ADG (PAT)/ (SNG), DoT.
9. AGM (Pers-I)/ (Pers-II)/ (Pers-III)/ (Pers-IV)/ (Pers-V), BSNL CO.
10. All Unions/Associations concerned.
11. OL section for Hindi version.
12. Intranet BSNL.
13. Spare copy.

  
20/10/09

(D.S.BEDI)

Dy. Manager (Pers-IV)

**Subject: Scheme and Syllabus for the Limited Internal Competitive Examination (LICE) for filling up vacancies in the cadre of Junior Telecom Officer (Telecom.) under 35% and 15% Internal Quota**

**1. SCHEME OF EXAMINATION :-**

**1.1 The Question Paper will consist of two parts as given under:**

Subject	Maxi. Marks- 150	Duration
Part A- General English & General Studies (Objective Multiple Choice Questions)	50 Marks (50 Questions of one Mark each)	3 Hrs.
Part B - Technical Paper (Specialization) (Objective Multiple Choice Questions)	100 Marks (100 Questions of one Mark each)	

**1.2. The minimum qualifying marks in the examination will be 40% of total marks for General candidates and 33% of total marks for SC/ST candidates.**

**2. SYLLABUS:**

**2.1. Part A- General English & General Studies- 50Marks.**

**Standard of the paper:-Standard of the paper will be such that of CBSE Xth Standard.**

**2.1.1 General English- 25 Marks.**

The question paper in General English shall be designed to test the candidate's understanding of English.

The pattern of question shall be broadly as follows:-

- (i) Comprehension of given passages.
- (ii) Usages and vocabulary
- (iii) Grammar

**2.1.2 General Studies – 25 marks.**

The paper on General Studies shall include questions on the following topics:-

- (1) General Science.
- (2) Geography of India and its natural resources.
- (3) Current Events of National & International Importance.
- (4) General Mental Ability Test.

Questions of General Science will cover General Appreciation and understanding of Science including matters of everyday observations and experience, as may be expected of an educated person, who has not made a special study of any scientific discipline.

Questions in the Geography of India and its natural resources will relate to Physical Social & Economic Geography of India.

Questions on the General Mental Ability Test will include questions on Analogies, similarities, differences, space visualization, problem solving, analysis, Judgment, decision making, visual memory, discrimination, observation, relationship, concepts, arithmetical reasoning, verbal & figure classification, arithmetical number series etc.

## **2.2 Part B- TECHNICAL PAPER-(SPECIALIZATION) (100 Marks)**

**Standard of paper : The standard of Paper shall be that of an Engineering Diploma**

### **Computer Architecture:**

Computer architecture, basic computer organization and design programming, CPU, I/O organization, memory organization. Control unit design. Familiarization with DOS and Windows-concept of file, directory, folder, Number systems, Programming-Elements of a high level programming language, PASCAL , C:Use of basic data structures. Web Page Design; Scripting Language - Perl / CGI / JavaScript; Fundamentals of JAVA Programming; Advanced Features of JAVA Programming.

### **Data Communication and Computer Network:**

Data Network and Networking Basics; MAC & Data Link Layer Network, Transport (TCP/IP). Introduction to Computer Network, LAN, MAN, WAN, Network essentials, Internet addresses, ARP, RARP, Internet protocols, user data, gram protocol, transmission control protocol, routines, internet multi testing, socket interface, domain name system, applications.

### **Data Structure and Algorithms :**

Basis concepts of data representation, introduction to algorithms design and data structure, Arrays stacks and queues, linked lists, storage allocation and garbage collection, symbol tables, Searching, Sorting and Merging Techniques.

### **Database Management System :**

Database, Data models, rational algebra and normalization, statistical quality level, distributed and object data basis.Introduction to the Relational Model; Normalisation and Query Processing; Recovery, Concurrency Management and Database Security.

## Electronic / Electrical Measurement & Measuring Instrument :

Electrical Measuring Instruments, Watt meters and energy meters, measurement of resistance, measurement of inductance and capacitance, electronic voltmeters, audio and radio frequency measurements, A F & R F Power measurements, digital instruments.

## Electrical Installation & Maintenance :

Single-Phase supply vs. 3 Phase supply, Star Delta connections, relation between phase & line voltage power factor. All types of motor and generators-AC & DC transformers, starters, rectifiers, inverters, batteries. Installation, commissioning, earthing, insulation testing and maintenance, preventive maintenance, electrical accidents and safety measures, switchgear, sub-stations, maintenance of relays and circuit breakers. A.C. Circuits, Circuit Theorems, Four Terminal Passive Networks, Coupled circuits and their analysis, Passive filters, Lightning protection, power electronics application in control of drivers, Refrigeration & air-conditioning.

## Fundamentals of Digital Circuits :

Fundamentals of digital electronics , Transistor as a switching elements; Boolean algebra, Simplification of Boolean functions, Karnaugh Map and applications; Number System, IC Logic Gates, Logic-Circuits, Encoders and Decoders, binary code converters, Arithmetic Logic Units (ALU), DTL, TTL, NMOS, PMOS AND CMOS gates and their comparison; Combination logic circuits; Half adder, full adder; Digital Comparator, Multiplexer Demultiplexer; ROM and their applications. Flip-flops, R-S, J-K, D and T Flip-flops; Different type of counters and registers; A/D and D/A converters;

## Communication Systems:

Amplitude, frequency and phase modulation, their generation and demodulation, Noise. PCM, basic principles of SPC Exchanges. Quantization & Coding; Time division and frequency division multiplexing; Equalization; Optical communication- in free space & fibre optic; Propagation of signals at HF, VHF, UHF and Microwave frequency; Satellite Communication.

## Foundation in Information Technology :

Information System - Hardware; Software; Software Engineering; Operating Systems.

### Computing:

An Object Oriented Approach : Introduction to Object Oriented Concepts; Object Oriented Programming Language; Object Oriented Analysis and Design.

### Discrete Electronic Devices & Circuits :

The P-N Junction, Junction Diode, Zener Diode, B.J.T. configurations and biasing, low frequency low signal Hybrid Models of BJT; JFET, MOSFET, C-MOS, Photo-Electric Devices, Feed back Amplifiers, Oscillators, R.F. Voltage Amplifiers using BJT, Special Semiconductor Devices.

### Microprocessors:

Architecture & programming of 8086/8088, Microprocessor based data acquisition, memory address & DMA controllers, arithmetic co-processor, other micro processors, micro processor applications. Study of Peripheral Chips : 8255, 8279, 8155, 8259. Study of ADC 0808, DAC 0800.

### Radio Communication Systems :

Principles of Radio Communication, A.M., F.M. Radio, Phase Modulation. Signal conditioning and Transmission Study of special chips, output interfacing, output instruments-indicators, recorders, data acquisition systems, data loggers, servo mechanism, electronic process control instrumentation. Wave propagation, Microwave devices & components, microwave measurements, antenna fundamental & their characteristic. Audio Engineering, sound transducers, sound recording & reproduction, sound transmission, radio transmission, radio reception.

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**(Personnel-IV Section)**  
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**Bharat Sanchar Bhawan, New Delhi-110 001**

**No. 5-11/2009-Pers.IV**  
**Dated: Nov. 01, 2011.**

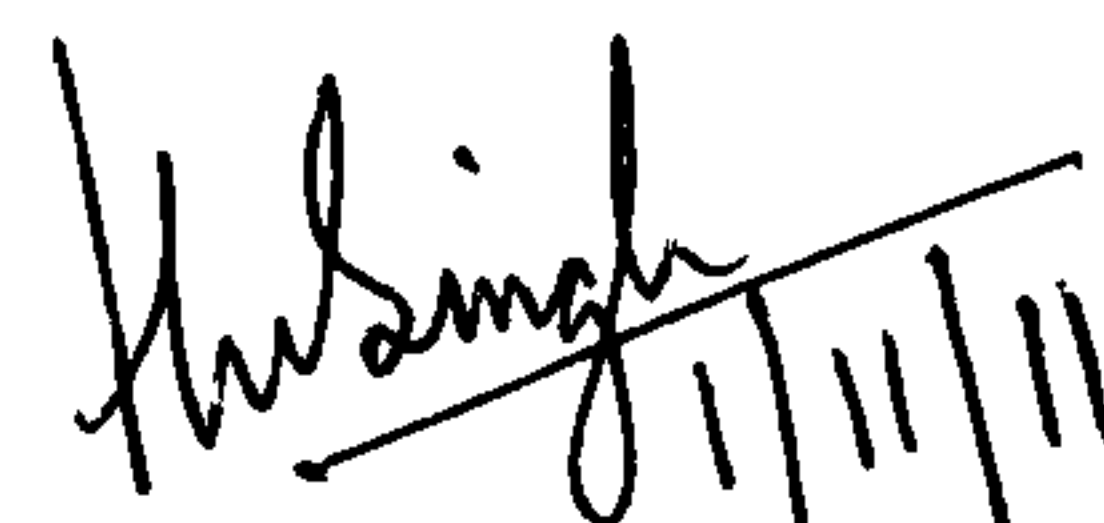
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**Network/ IT/ ITPC/ NATFM/ NETF/ Telecom Stores Circles,**  
**CGMs ALTTC/BRBRAITT,**  
**All Other Administrative Units,**  
**Bharat Sanchar Nigam Limited.**

**Subject:- Forwarding of Revised Scheme and Syllabus for Limited Internal**  
**Competitive Examination (LICE) for filling up posts in the cadre of**  
**JTO(Telecom) under both 35% and 15% quota-**

In partial modification to this office letter of even No dated 20-10-2009, I am directed to enclose herewith a copy of revised Scheme for Limited Internal Competitive Examination (LICE) for filling up posts in the cadre of JTO (Telecom) under both 35% and 15% quota for favour of further necessary action at your end please. The Revised scheme shall be applicable for the examinations to be held in future.

**Encl: As above (Four pages)**



**(Harsh Vardhan Singh)**  
**Addl. Genral Manager (Estt)**

**TF: 01123734152 FAX: 01123734051**

**Copy to:-**

- 1. P.S. to MOC&IT/ MOS (C&IT).**
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Subject: Scheme and Syllabus for the Limited Internal Competative examination (LICE) for filling up vacancies in the cadre of Junior Telecom Officer (Telecom.) under 35 % 15% Internal Quota

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1.2 The minimum qualifying marks in the examination will be 30% in each part and 37% in aggregate for OC category candidates and 23% in each part and 30% in aggregate for SC/ST category candidates . There would be negative marking and for each wrong answer 25% of the mark of that question would be deducted.

### 2 . SYLLABUS :

#### 2.1 Part A General English & General Studies - 50 Marks.

Standard of paper :- Standard of the paper will be such that of CBSE Xth Standard.

##### 2.1.1 General English-25 Marks

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## Electrical Installation & Maintenance :

Single-Phase supply vs. 3 Phase supply, Star Delta connections, relation between phase & line voltage power factor. All types of motor and generators-AC & DC transformers, starters, rectifiers, inverters, batteries. Installation, commissioning, earthing, insulation testing and maintenance, preventive maintenance, electrical accidents and safety measures, switchgear, sub-stations, maintenance of relays and circuit breakers. A.C. Circuits, Circuit Theorems, Four Terminal Passive Networks, Coupled circuits and their analysis, Passive filters, Lightning protection, power electronics application in control of drivers, Refrigeration & air-conditioning.

## Fundamentals of Digital Circuits :

Fundamentals of digital electronics, Transistor as a switching elements; Boolean algebra, Simplification of Boolean functions, Karnaugh Map and applications; Number System, IC Logic Gates, Logic-Circuits, Encoders and Decoders, binary code converters, Arithmetic Logic Units (ALU), DTL, TTL, NMOS, PMOS AND CMOS gates and their comparison; Combination logic circuits; Half adder, full adder; Digital Comparator, Multiplexer Demultiplexer; ROM and their applications. Flip-flops, R-S, J-K, D and T Flip-flops; Different type of counters and registers; A/D and D/A converters;

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Principles of Radio Communication, A.M., F.M. Radio, Phase Modulation. Signal conditioning and Transmission Study of special chips, output interfacing, output instruments-indicators, recorders, data acquisition systems, data loggers, servo mechanism, electronic process control instrumentation. Wave propagation, Microwave devices & components, microwave measurements, antenna fundamental & their characteristic. Audio Engineering, sound transducers, sound recording & reproduction, sound transmission, radio transmission, radio reception.

