



No.2-16/2007-Pers-II (DPC)
BHARAT SANCHAR NIGAM LIMITED

[A Government of India Enterprise]

CORPORATE OFFICE

PERSONNEL -II SECTION

4TH Floor, Bharat Sanchar Bhawan, Janpath, New Delhi- 110001

To

May 23, 2011

The Chief General Manager,
Telecom Factory Circles,
Bharat Sanchar Nigam Limited,
JABALPUR/KOLKATTA/MUMBAI.

Subject:- Limited Departmental Competitive Examination for promotion to the grade of Sub Divisional Engineer (Telecom Factory) under 33% quota. -Regarding circulation of syllabus, Scheme.

I am directed to forward the Syllabus and Scheme for the LDCE for promotion to the grade of SDE(Telecom Factory) under 33% quota for circulation among all concerned. The pattern of Exam will be on OMR evaluation basis.

2 The Scheme of written Exam for LDCE for promotion to the grade of SDE(T) is given below:-

Paper	Subject.	Pattern of exam	Maximum marks	Duration
I	Advanced Technical Paper	OMR evaluation basis	100	3 hours
II	Code Books and Labour Laws	OMR evaluation basis	100	3 hours


3 MINIMUM PASS MARKS:

Minimum pass marks prescribed for each paper is 50% in respect of 'OC' candidate and 45% for 'SC/ST' candidate.

4 The schedule date of the examination along with relevant procedure to be followed shall be issued by DE cell of BSNL separately in due course of time.

5 THIS LETTER MAY PLEASE BE GIVEN WIDE PUBLICITY.

6. The receipt of this letter may please be acknowledged.


(A.K.SINHA)


ASSISTANT GENERAL MANAGER (PERS-II)

Encl: Syllabus of Paper I & Paper II.

Continued-----2

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5. All Unions/Associations concerned.
6. OL Section for Hindi Version
7. Notice Boards
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(A.K.SINHA)

ASSISTANT GENERAL MANAGER (PERS-II)

**Subject:- Syllabus for the Limited Departmental Competitive Examination (LDCE)
for filling up of 33% posts in the cadre of Sub Divisional Engineer (TF).**

1. SCHEME OF EXAMINATION

S.No.	Paper No.	Subject	Duration	Max. Marks
1.	Paper-I	Advanced Technical Paper	3 Hrs.	100
2.	Paper-II	Code Books & Labour Laws	3 Hrs.	100

2. SYLLABUS

2.1 PAPER-I – ADVANCED TECHNICAL PAPER

Standard of the Paper :- The standard of the Paper will be that of an Engineering Degree Examination.

Type of Questions:- SECTION-A, B & SECTION-C will have Objective Multiple Choice Questions.

2.1.1

SECTION – A - 30 MARKS

(Objective Multiple Choice Questions)

Theory of Machines:-

(3 Marks)

Gears, bearings, governors, fly wheels and their functions.
Cams.
Belts and chain drives.
Linear automatic control systems.

Strength of Materials:-

(3 Marks)

Stress, Strain and Hook's Law.
Shear force and bending moments in beams.
Simple bending and torsion of beams, springs and thin walled cylinders.
Elementary concepts of elastic stability, mechanical properties and material testing.

Manufacturing Science:-

(5 Marks)

Mechanics of Metal cutting, Tool Life, economics of machine, cutting tool materials.
Basic types of machine tools and their processes.
Automatic Machine Tools, transfer lines, NC, CNC, Recent machining methods – EDM, ECM and ultrasonics.
Application of lasers and plasmas, analysis of forming processes.
Machines – shearing, drawing, spinning, rolling, forging, extrusion.
Types of casting and welding methods.
Galvanising.

Powder metallurgy and processing of plastics.
Jigs, fixtures, tools & gauges, Inspection of length, position, profile and surface finish.
CAD/CAM
Heat treatment of Steels

Manufacturing Management:-

(5 Marks)

Methods and time study, motion economic and work space design, operation and flow process charts.
Cost estimation, break even analysis.
Materials handling.
Capital budgeting, job shop and mass production, scheduling, dispatching, Routing.
Inventory Control – ABC analysis. EOQ Model. Materials requirement planning.
Value Engineering – Value analysis for cost/value.
PERT and CPM.
Statistical Quality Control – control charts. Acceptance sampling.

IC Engines:-

(2 Marks)

Spark ignition and compression ignition engines.
Four stroke engines and Two stroke engines.
Mechanical, Thermal and Volumetric efficiency, heat balance.
Detonation and knocking.
Choice of engine fuels.

Energy Conversion:-

(2 Marks)

Hydraulic Pumps.

Fluid Mechanics:-

(2 Marks)

Flow through pipes.

Refrigeration & Air conditioning:-

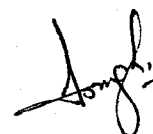
(3 Marks)

Lay out of vapour – compression and absorption refrigeration systems.
Refrigerants and their properties.
Operation and maintenance.
Air conditioning – Psychrometric chart, comfort zones.
Humidification and de humidification.
Cooling load calculations.

Industrial Safety :-

(5 Marks)

Electrical Safety
Hazard Identification and Evaluation
Occupational Health and Safety Management System.
Accident Reporting, Investigation and analysis.
Fire Prevention and Protection
Hazardous waste Management



2.1.2

SECTION – B – 30 MARKS

(Objective Multiple Choice Questions)

Electrical Circuits:-

(2 Marks)

RL, RC & RLC Circuits, balanced 3 phase circuits.
Filter theory: Design and application. Active Filters.

Signals & Systems:-

(2 Marks)

Representation of continuous – time and discrete – time signals and systems.
Sampling & Recovery of Signals DFT, FFT. Processing of analogue signals through discrete – time systems.

Control Engineering:-

(2 Marks)

Elements of control systems, block – diagram representations, open – loop and close – loop systems, principles and applications of feed-back
Control system components (Potentiometers, Technometers, Synchros and Servo motors).

E.M. Theory:-

(2 Marks)

Wave propagation and antennas, transmission lines, micro-wave resonators, cavities and wave guides.

Electrical & Electronic Measurement & Instrumentation:-

(4 Marks)

Basic methods of measurement. Error analysis, Electrical standards. Measurement of voltage, current, power, energy, resistance, inductance, capacitance and frequency. Indicating instruments. Bridge measurements, electronic measuring instruments, Electronic multimeter, digital voltmeter, frequency counter, Q-meter, oscilloscope Techniques, special purpose CROs. Transducers and their classification. Temp., Displacement, strain, pressure, velocity transducers, Thermo-couple, thermistor, LVDT, strain gauges, piezo-electric crystal etc. transducers. Application of transducers in the measurement of non-electrical quantities like pressure, temperature, displacement, velocity, acceleration, flow-rate etc. Data acquisition systems.

Analogue & Digital Electronics:-

(4 Marks)

Semiconductors and semiconductor diodes & zener diode, Bi-polar junction transistor and their parameters. Transistor biasing, analysis of all types of amplifiers including feedback and d.c. amplifiers. Operational amplifiers and their application, Analog computers, Feedback oscillators-colpitts and Hartley types, waveform generators. Multivibrators, Boolean algebra, Logic gates. Combinational and sequential digital circuits. Semiconductor memories, A/D & D/A Converters, Microprocessor, Number systems and codes, elements of microprocessor & their important applications.

Communication Systems:-

(2 Marks)

Amplitude, frequency and phase modulation, their generation and demodulation, Noise, Pulse, PCM and delta modulation. Lines and radio communication systems. Satellite communication, Television and Radar Engineering.

Electrical Machines:-

(4 Marks)

D.C. Machines : Commutation and armature reaction, characteristics and performance of motor and generators. Applications, starting and speed control. Synchronous generators: Armature reaction, voltage regulation, parallel operation. Single and three-phase induction motors: Principle of operation and performance characteristics starting and speed control.

Synchronous motors:-

(2 Marks)

Principle of operation, Performance analysis, Hunting. Synchronous condensers.

Transformers:-

(2 Marks)

Construction, Phasor diagram, equivalent circuit, voltage regulation, Performance, Auto transformers, instrument transformers. Three phase transformers.

Power Factor:

(2 Marks)

Improvement, types of faults, short circuit current for system of protection of transformers.

Power electronics & Drives:-

(2 Marks)

Various power semiconductor devices, single and polyphase rectifiers. Controlled convertors & invertors. Choppers. AC Voltage controllers. D.C. regulated power supply. Electric drives: fundamentals, electric braking rating estimation, Power Electronic control of D.C. Motors.

2.1.3

SECTION – C – 40 MARKS

(Objective Multiple Choice Questions)

The Questions in this Section will be related to the Manufacturing Process (including Industrial Engineering, Production, Planning & Control, Inspection & Quality Control, Maintenance & Safety) from the stage of Inwards Goods Inspection to the Final stage of acceptance of the product by the BSNL Quality Assurance Circle.

The candidates may answer Questions related to ANY ONE of the following:-

(a) SIM Card Manufacturing

OR

(b) C.T. Box, C.T. Block, D.P. Box, Line Jack Unit Manufacturing

OR

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(c) Tower Manufacturing.

OR

(d) OFC Accessories & FDMS Manufacturing.

OR

(e) INPCO, CBT, Buttenski Telephone

OR

(f) Mini Pillar & S.S. Drop Wire Manufacturing.

OR

(g) Electronic Assembly & Repair of Cards.

OR

(h) Galvanising, Welding, Painting, Powder Coating & Plating

OR

(i) Tool Manufacturing.

OR

(j) Plastic Moulding.

2.2 Paper-II – Code Books & Labour Laws :-

(Objective Multiple Choice Questions)

Note : The questions will be of practical nature having relevance to the working of the BSNL Telecom Factories.

2.2.1 Code Books -

40 MARKS.

1. BSNL Conduct, Discipline & Appeal Rules 2006. (10 Marks)
2. Financial Handbook Vol.III, Part – III – Factory Costing & Accounts. (10 Marks)
3. BSNL Procurement Manual for Telecom Equipments and Stores. (20 Marks)

2.2.2 Labour Laws & Other Legislations etc. 60 MARKS.

1. Certified Standing Orders of Telecom Factories. (12 Marks)
2. Factories Act & Rules. (12 Marks)
3. Industrial Disputes Act & Rules. (12 Marks)
4. Workmen Compensation Act & Rules. (12 Marks)
5. Contract Labour (Regulation & Abolition) Act, 1970 & Rules. (12 Marks)

END

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