



Detailed Syllabus for BSNL Exam - JE Recruitment 2016

Bharat Sanchar Nigam Ltd. (BSNL) has released its notification this year for recruitment of **2700 Junior Engineers** (JE) (erstwhile TTA). BSNL will conduct an **online examination** for filling up these posts. This post gives you details of the **Detailed Syllabus for BSNL Exam for JE Recruitment 2016**.

First let us take a look at the Exam pattern for BSNL Exam:

Paper	Subjects	No of Questions	Marks	Duration
Part-I	General Ability	20	20	3 hours
Part-II	Basic Engineering	90	90	
Part-II	Specialization	90	90	
TOTAL		200	200	

Get complete details of the Exam Pattern below:

Complete Details of BSNL Exam Pattern & Marking Scheme

Also read the Complete Notification for BSNL JE 2016 Exam

BSNL Recruitment Notification 2016 for Junior Engineer

Detailed Syllabus for BSNL Exam - JE Recruitment 2016

Note that the standard of the paper will be approximately that of Diploma Level of an Indian Polytechnic.











Syllabus for BSNL Exam - Part-I: GENERAL ABILITY - 20 Marks

General English: Your comprehension and understanding of General English will be tested. This will be done through simple exercises in -

- Synonyms & Antonyms
- Fill in the Blanks
- Multiple Choice Exercises

General Awareness: There are certain things you should know as a Diploma holder. These are -

- Current Events
- General Knowledge
- Matters of Everyday Observation & Experiences

Syllabus for BSNL Exam - Part-II: BASIC ENGINEERING - 90 Marks

I. Applied Mathematics

- Co-ordinate Geometry
- Vector Algebra
- Matrix & Determinant
- Differential Calculus
- Integral Calculus
- Differential Equations of Second Order
- Fourier Series
- Laplace Transform
- Complex Numbers
- Partial Differentiation

II. Applied Physics

- Measurements Units and Dimensions
- Waves









- Acoustics
- Ultrasonic
- Light
- Laser and its Applications
- Atomic Structure and Energy Levels

III. Basic Electricity

- Electrostatics
- · Coulomb's Law
- Electric Field
- Gauss's Theorem
- Concept of Potential Difference
- Concept of Capacitance and Capacitors
- Ohm's Law
- Power and Energy
- Kirchoff's Voltage
- Current Laws and their Application in Simple DC Circuits
- Basic Magnetism
- Electro Magnetism
- Electromagnetic Induction
- Concept of Alternating Voltage & Current
- Cells and Batteries
- Voltage and Current Sources
- Thevenin's Theorem
- Norton's Theorem & Applications

IV. Electronic Devices and Circuits

- Classification of Materials into Conductors, Semi Conductors, Insulators etc.
- Electrical Properties
- Magnetic Materials
- Various Types of Relays, Switches and Connectors
- Conventional Representation of Electrical and Electronic Circuit Elements
- Active and Passive Components

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- Semiconductor Physics
- Semiconductor Diode
- Bipolar Transistor & their Circuits
- Transistor Biasing
- Stabilization of Operating Point
- Single Stage Transistor Amplifier
- Field Effect Transistor
- Mosfet Circuits Applications
- Multistage Transistor Amplifier
- Transistor Audio Power Amplifiers
- Feedback in Amplifier
- Sinusoidal Oscillators
- Tuned Voltage Amplifiers
- Opto Electronics Devices and their Applications
- Operational Amplifier
- Wave Shaping and Switching Circuits
- Block Diagram of I.C. Timer (such as 555) and its Working
- Motivation Circuits
- Time Based Circuits
- Thyristor and UJT
- Regulated Power Supply

V. Digital Techniques

- Applications and Advantages of Digital Systems
- Number System (Binary and Hexadecimal)
- Logic Gates
- Logic Simplification
- · Codes and Parity
- Arithmetic Circuits
- Decoders
- Display Devices and Associated Circuits
- Multiplexers and De-multiplexers
- Latches and Flip Flops











- Counters
- Shift Registers
- Memories
- A/D and D/A converters

Syllabus for BSNL Exam - Part-III: SPECIALIZATION - 90 Marks

I. Electrical

- 3 Phases Vs. Single-Phase Supply
- Star Delta Connections
- Relation Between Phase and Line Voltage Power Factor and their Measurements
- Construction and Principles of Working of Various Types of Electrical Measuring Instruments
- All Types of Motor and Generator-AC & DC Transformers
- Starters
- Rectifiers
- Inverters
- Battery Charges
- Batteries
- Servo and Stepper Motors
- Contactor Control Circuits
- Switchgear
- Relays
- Protection Devices and Schemes
- Substation
- Protective Relaying
- Circuits Breaker
- Generator Protection
- Transformer Protection
- Feeder and Lightening Protection
- Feeder and Bus Bar Protection
- Lightening Arrestor









- Earthing
- Voltage Stabilizer and Regulators
- Power Control Devices and Circuits
- Phase Controlled Rectifiers
- Inverters
- Choppers Dual Converters
- Cycloconverters
- Power electronics Application in Control of Drivers
- Refrigeration and Air-conditioning

II. Communication

- Modulation and Demodulation Principles and Operation of Various Types of AM, FM and PM Modulators/Demodulators
- Pulse Modulation TDM, PAM, PPM, PWM, Multiplexing
- Principles and applications of PCM
- Introduction of Basic Block Diagram of Digital and Data Communication Systems
- Coding Error Detection and Correction Techniques
- Digital Modulation Techniques ASK, ICW, FSK, PSK
- Characteristics/Working of Data Transmission Circuits
- UART
- USART
- Modems
- Protocols and their Functions
- Brief Idea of ISDN Interfaces
- Local Area Network
- Carrier Telephony Features of Carrier Telephone System
- Microwave Engineering
- Microwave Devices
- Wave-guides
- Microwave Components
- Microwave Antennas











 And Microwave Communication Systems - Block Diagram & Working Principals of Microwave Communication Link

III. Network, Filters and Transmission Lines

- Two Port Network
- Attenuators
- Filters
- Transmission Lines and their Applications
- Characteristic Impedance of Line
- Concept of Reflection and Standing Waves on a Transmission Line
- Transmission Line Equation
- Principles of Impedance Matching
- Bandwidth Consideration of a Transmission Line

IV. Instruments and Measurements

- Specification of Instruments
- Accuracy
- Precision
- Sensitivity
- Resolution Range
- Errors in Measurements and Loading Effect
- Principles of Voltage
- Current and Resistance Measurements
- Transducers
- Measurement of Displacement and Strain
- Forces and Torque Measuring Devices
- Pressure Measuring Devices
- Flow Measuring Devices
- Power Control Devices and Circuits
- Types of AC Mili Voltmeters Amplifier Rectifier and Rectifier Amplifier
- Block Diagram Explanation of Basic CRO and a Triggered Sweep Oscilloscope
- Front Panel Controls
- Impedance Bridges and Q-meters

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- Principles of Working and Specifications of Logic Probes
- Signature Analyzer and Logic Analyzer
- Signal Generator
- Distortion Factor Meter
- Spectrum Analyzer

V. Control Systems

- Basic Elements of Control System
- Open and Closed Loop System
- Concept of Feedback
- Block Diagram of Control System
- Time Lag
- Hysteresis
- Linearity Concepts
- Self-regulating and non-self Regulating Control Systems
- Transfer Function of Simple Control Components
- Single Feedback Configuration
- Time Response of Systems
- Stability Analysis Characteristics Equation
- Routh's Table
- Nyquist Criterion
- Relative Stability
- Phase Margin and Gain Margin
- Routh Hurwitz Criterion
- Root Locus Techniques
- Bode Plot
- Power Plot
- Gain Margin and Phase Margin

VI. Microprocessors

- Typical Organization of a Microcomputer System & Functions of its Various Blocks
- Architecture of a Microprocessor

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- Memories and I/O Interfacing
- Brief Idea of M/C Assembly Languages
- Machines and Mnemonic Codes
- Instruction Format and Addressing Mode
- Concept of Instruction Set
- Programming Exercises in Assembly Language
- Concept of Interrupt
- Data Transfer Techniques Sync Data Transfer
- Interrupt driven Data Transfer
- DMA
- Serial Output Data
- · Serial Input Data

VII. Computer

- Computer and its Working
- Types of Computers
- Familiarization with DOS and Windows
- Concept of File, Directory, Folder, Number Systems
- Data Representation
- Programming Elements of a High Level Programming Language
- PASCAL
- C: Use of Basic Data Structures
- Fundamentals of Computer Architecture
- Processor Design
- Control Unit Design
- Memory Organization
- I/o System Organization
- Microprocessor Architecture, Instruction Set and Simple Assembly Level Programming
- Microprocessor Based System Design: typical Examples
- Personal Computers and their Uses
- Data Communication Principles
- Types and Working Principles of Modems











- Network Principles
- OSI Model
- Functions of Data Link Layer and Network Layer
- Networking Computer Communications Protocols a-X.25
- TCP/IP
- Database Management System Basic Concepts
- Entity Relationship Model
- DBMS Based on a Relational Model

Because you know what the Syllabus for BSNL Exam is like, you should cracking! You should also get some good practice for BSNL Exam. So don't fret! You are almost there!







