

Syllabus of Common *Preliminary Screening Test* for recruitment to the post of **Assistant Professor of Electronics & Communication Engineering** for Govt. Engineering & Technological Colleges under the Higher Education Department, Govt. of West Bengal in West Bengal General Service:

Physical Electronics

Crystal structure , Semiconductor Statistics, Semiconductor Physics, Electron transport,

Computer Programming and Numerical Analysis

Computer programming, Numerical analysis,

Circuit Theory

Graph theory, Circuit elements, Circuit equations, Laplace transforms and related topics , Transient analysis , Sinusoidal steady state analysis , Network theorems.

Electron Device

Metal-semiconductors Junction, Semiconductor- semiconductor junction, Breakdown mechanisms in p-n junctions, Bipolar transistors, Junction field effect transistor (JFET), Insulated gate field effect transistor (IGFET), Power semiconductor devices, Basic optoelectronic devices,

Electromagnetic Theory

Network Synthesis

LC Filter Design,

Signal Theory & Noise

Introduction, Signal definition, different type of signals, Basis function and concept of generalized Fourier series, Sources of noise Noise calculations, Mathematical representation of noise,

Digital logic Circuits

Sequential Circuits flip-flops SR, JK, D and T. Registers, Counters, Interface circuits.

Analog Circuits-I

Diode Circuits, BJT Circuits, Regulated Power supply, FET Circuits, OPAMP Circuits, Feedback amplifier Circuits,

Analog Circuits-II

Digital Circuits & Systems

Analysis and synthesis of sequential circuits, Fault detection and location in combinational circuits, Digital system design, Timing circuits, Arithmetic circuits, Semiconductor Memory,

Analog Communication Systems

Signal transmission through linear systems, Amplitude modulation, Frequency and phase modulation, Demodulation, Radio receiver, System noise calculation,

Transmission Lines and Waveguides

Micro Processors and Microcontrollers

Control Engineering,

Digital Communication Systems

Signal detection, Formatting in base band transmission techniques, Digital modulation techniques, Information theory and coding,

Antennas & Propagation

Antenna, Propagation,

IC Technology

Crystal growth techniques and wafer preparation,

Computer Organization and Architecture

IC Design

Introduction Discrete and Integrated Circuit, VHDL and VERILOG Basic language elements, FPGA Design and Architecture.

Communication Switching Systems

Circuit switching, 3 stage matrix switching, resonant transfer method, Time slot interchange technique limitation, Digital space switching Time space time switch , Distributed switching network, Traffic engineering,

Digital Signal Processing

Signal and Systems, Sequences, LTI Systems, Fast Fourier Transform, Typical DSP Hardware,

Digital Control Systems

Z-transforms

Instrumentation and Measurements

Classification of transducers, Digital instruments, CRO, measurement of voltage frequency and phase, Pulse measurement,

Computer Communication Networks

VLSI Design

CMOS circuit design

Microwave Engineering

Microwave passive components and subsystem

Microwave Sources

Microwave Measurement

Wireless Communication **Systems**

Optical Fiber Communication

Embedded Systems

Advanced Electron Device

Optoelectronic and Display Devices,

High Frequency Devices

Quantum devices

Industrial/Power Electronics

Regulated power supply, SMPS Silicon Controlled rectifier, Single phase,
Polyphase, Triggering Circuits, D.C. Motor control, PLC, TRIAC, Power FET,

Inverters using SCRs, UPS, Industrial timer circuits, Induction and Dielectric heating ,

Optical Networks

SONET/SDH- multiplexing,

Advanced Mobile Communications

Modulation techniques in wireless communications,

GSM, GPRS, 3G UMTS,

Wireless LAN, IEEE 802.11, WiMAX standard.

Mobil IP, MIP, agent Advertisement and discovery, Tunneling, Encapsulation, ,
Reverse Tunneling , MIP v6.

Monolithic Microwave Integrated Circuits

Rader & Navigation.

Satellite Communication, Digital Image Processing.

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Scheme of Examination

Commission's Advertisement no. : 9[1C(iii)]/2013 & 5[1C]/2013

Name of the Examination: *Common Preliminary Screening Test* for recruitment to the post of **Assistant Professor of Electronics & Communication Engineering** for Govt. Engineering & Technological Colleges under the Higher Education Department, Govt. of West Bengal in West Bengal General Service

Date of Examination: 13th August, 2015 (Thursday)

Time of Examination: 3.00 p.m. to 4.30 p.m.

Total no. of questions: 100 multiple choice questions carrying 1 mark each.