

**Date: 8<sup>th</sup> January 2025**

**NAME OF THE POST: Assistant Professor (Grade –II) Level-10 [On Contract]**

**Department Name: Electronics and Communication Engineering**

**Schedule for Reporting, written Test/Verification/Seminar/Interview**

	<b>Assistant Professor (Grade II) (level-10)</b>	
<b>Reporting</b>	5 <sup>th</sup> February 2025 at 8.30 AM	<ul style="list-style-type: none"><li>• Reporting at the Venue.</li><li>• Submission of one set of signed application, Self-attested certificates and other essential documents.</li></ul>
<b>Written Test</b>	5 <sup>th</sup> February 2025 (9.00AM to 11.00 AM)	<ul style="list-style-type: none"><li>• Written Test (only MCQs) based on the GATE syllabus.</li></ul>
<b>Verification</b>	5 <sup>th</sup> February 2025 12:30 PM onwards	<ul style="list-style-type: none"><li>• Verification of documents for only candidates shortlisted based on the written test performance.</li></ul>
<b>Seminar</b>	5 <sup>th</sup> February 2025 from 2:00 PM onwards	<ul style="list-style-type: none"><li>• Seminar presentation for only the shortlisted candidates based on the written test performance.</li></ul>
<b>Interview</b>	6 <sup>th</sup> February 2025 from 9.00 AM onwards	<ul style="list-style-type: none"><li>• Interview only for candidates shortlisted based on Seminar performance.</li></ul>

**Venue for Written Test/Seminar/Interview:**

**Written Test Venue:** Manipur Public Service Commission, North AOC, Imphal West

**Seminar/Interview :** HOTEL IMPHAL, North AOC, Imphal West, MANIPUR

**Provisionally shortlisted candidates**

S.No	Application Number
1.	R222410EC001
2.	R222410EC002
3.	R222410EC003
4.	R222410EC004
5.	R222410EC005

6.	R222410EC006
7.	R222410EC007
8.	R222410EC008
9.	R222410EC009
10.	R222410EC010
11.	R222410EC011
12.	R222410EC012

13.	R222410EC013
14.	R222410EC014
15.	R222410EC015
16.	R222410EC016
17.	R222410EC017
18.	R222410EC018
19.	R222410EC019

20.	R222410EC020
21.	R222410EC021
22.	R222410EC022
23.	R222410EC023
24.	R222410EC024
25.	R222410EC025
26.	R222410EC026
27.	R222410EC027
28.	R222410EC028
29.	R222410EC029
30.	R222410EC030
31.	R222410EC031
32.	R222410EC032
33.	R222410EC033
34.	R222410EC034
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36.	R222410EC036
37.	R222410EC037
38.	R222410EC038
39.	R222410EC039
40.	R222410EC040
41.	R222410EC041
42.	R222410EC042
43.	R222410EC043
44.	R222410EC044
45.	R222410EC045
46.	R222410EC046
47.	R222410EC047

48.	R222410EC048
49.	R222410EC049
50.	R222410EC050
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94.	R222410EC094
95.	R222410EC095
96.	R222410EC096
97.	R222410EC097
98.	R222410EC098
99.	R222410EC099
100.	R222410EC100
101.	R222410EC101
102.	R222410EC102

**INELIGIBLE CANDIDATES : Nil**

**Note:**

- 1) Any grievance/objection w.r.t the non-eligible candidates only are to be sent through e-mail: **recruit\_faculty@nitmanipur.ac.in** **on or** before January 11, 2025.
- 2) The grievance/objection sent to the above mentioned email-id within the stipulated date will **ONLY** be considered.
- 3) Correspondence sent to any other email Id of the institute will not be entertained.
- 4) Syllabus for written Test for **Assistant Professor (Grade –II) Level-10** [**On Contract**] is enclosed in **Annexure I**.

## Annexure I: Syllabus for Written Test:

### Section 1: Engineering Mathematics

**Linear Algebra:** Vector space, basis, linear dependence and independence, matrix algebra, eigen values and eigen vectors, rank, solution of linear equations - existence and uniqueness.

**Calculus:** Mean value theorems, theorems of integral calculus, evaluation of definite and improper integrals, partial derivatives, maxima and minima, multiple integrals, line, surface and volume integrals, Taylor series.

**Differential Equations:** First order equations (linear and nonlinear), higher order linear differential equations, Cauchy's and Euler's equations, methods of solution using variation of parameters, complementary function and particular integral, partial differential equations, variable separable method, initial and boundary value problems.

**Vector Analysis:** Vectors in plane and space, vector operations, gradient, divergence and curl, Gauss's, Green's and Stokes' theorems.

**Complex Analysis:** Analytic functions, Cauchy's integral theorem, Cauchy's integral formula, sequences, series, convergence tests, Taylor and Laurent series, residue theorem.

**Probability and Statistics:** Mean, median, mode, standard deviation, combinatorial probability, probability distributions, binomial distribution, Poisson distribution, exponential distribution, normal distribution, joint and conditional probability.

### Section 2: Networks, Signals and Systems

**Circuit Analysis:** Node and mesh analysis, superposition, Thevenin's theorem, Norton's theorem, reciprocity. Sinusoidal steady state analysis: phasors, complex power, maximum power transfer. Time and frequency domain analysis of linear circuits: RL, RC and RLC circuits, solution of network equations using Laplace transform.

Linear 2-port network parameters, wye-delta transformation.

**Continuous-time Signals:** Fourier series and Fourier transform, sampling theorem and applications.

**Discrete-time Signals:** DTFT, DFT, z-transform, discrete-time processing of continuous-time signals. LTI systems: definition and properties, causality, stability, impulse response, convolution, poles and zeroes, frequency response, group delay, phase delay.

### **Section 3: Electronic Devices**

Energy bands in intrinsic and extrinsic semiconductors, equilibrium carrier concentration, direct and indirect band-gap semiconductors.

**Carrier Transport:** Diffusion current, drift current, mobility and resistivity, generation and recombination of carriers, Poisson and continuity equations.

P-N junction, Zener diode, BJT, MOS capacitor, MOSFET, LED, photo diode and solar cell.

### **Section 4: Analog Circuits**

**Diode Circuits:** Clipping, clamping and rectifiers.

**BJT and MOSFET Amplifiers:** Biasing, AC coupling, small signal analysis, frequency response. Current mirrors and differential amplifiers.

**Op-amp Circuits:** Amplifiers, summers, differentiators, integrators, active filters, Schmitt triggers and oscillators.

### **Section 5: Digital Circuits**

**Number Representations:** Binary, integer and floating-point- numbers. Combinatorial circuits: Boolean algebra, minimization of functions using Boolean identities and Karnaugh map, logic gates and their static CMOS implementations, arithmetic circuits, code converters, multiplexers, decoders.

**Sequential Circuits:** Latches and flip-flops, counters, shift-registers, finite state machines, propagation delay, setup and hold time, critical path delay.

**Data Converters:** Sample and hold circuits, ADCs and DACs.

**Semiconductor Memories:** ROM, SRAM, DRAM.

**Computer Organization:** Machine instructions and addressing modes, ALU, data-path and control unit, instruction pipelining.

### **Section 6: Control Systems**

Basic control system components; Feedback principle; Transfer function; Block diagram representation; Signal flow graph; Transient and steady-state analysis of LTI systems; Frequency response; Routh-Hurwitz and Nyquist stability criteria; Bode and root-locus plots; Lag, lead and lag-lead compensation; State variable model and solution of state equation of LTI systems.

## **Section 7: Communications**

**Random Processes:** Auto correlation and power spectral density, properties of white noise, filtering of random signals through LTI systems.

**Analog Communications:** Amplitude modulation and demodulation, angle modulation and demodulation, spectra of AM and FM, super heterodyne receivers.

**Information Theory:** Entropy, mutual information and channel capacity theorem.

**Digital Communications:** PCM, DPCM, digital modulation schemes (ASK, PSK, FSK, QAM), bandwidth, inter-symbol interference, MAP, ML detection, matched filter receiver, SNR and BER. Fundamentals of error correction, Hamming codes, CRC.

## **Section 8: Electromagnetics**

**Maxwell's Equations:** Differential and integral forms and their interpretation, boundary conditions, wave equation, Poynting vector.

**Plane Waves and Properties:** Reflection and refraction, polarization, phase and group velocity, propagation through various media, skin depth.

**Transmission Lines:** Equations, characteristic impedance, impedance matching, impedance transformation, S-parameters, Smith chart. Rectangular and circular waveguides, light propagation in optical fibers, dipole and monopole antennas, linear antenna arrays.

**Recruitment Section**