राष्ट्रीय प्रौद्योगिकी संस्थान नागालैंड
NATIONAL INSTITUTE OF TECHNOLOGY NAGALAND
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Ref: **No. NIT-N/RECT-NT/2023/10-01 dt. 04/10/2023 and its corrigendum**
Ref. No. NIT-N/RECT-NT/COR/2023/11-001 Dated 18-11-2023 29/12/2023

General Instructions for the candidates shortlisted for appearing the Written Examination for the Post of Technicians Chemistry Laboratory in response to Advt. No. No. NIT-N/RECT-NT/2023/10-01 dt. 04/10/2023 and its corrigendum Ref. No. NIT-N/RECT-NT/COR/2023/11-001 Dated 18-11-2023:

1. In addition to the conditions stipulated as a part of general information, which were already provided in the Advertisement of the Institute as above, the following conditions shall also be adhered which may kindly be noted by all concerned.

2. Personal Interviews will not be conducted for the posts of Technicians/ Laboratory Assistant in accordance with the communication **vid**e Ref. F.No.35 – 4/2016–TS.III dtd. 11/12/2019 of Ministry of Education under the extant rules.

3. The candidates have to appear for Skill Test or Physical Test. The tests Skill Test or Physical Test will only be qualifying nature and assessment will not be done on the basis of marks for such tests.

3.1. Skill Tests or Physical Tests:

3.1.1. Syllabus for Skill Tests or Physical Tests:

S. No.	Discipline	Skill Tests or Physical Tests
1	Chemistry	Senior secondary (10+2) level Chemistry; e.g: Preparation of standard Solution, Titration, inorganic complex preparation and Determination water quality parameters.

3.1.2. On the date specified as date of Written Examination, Skill Tests or Physical Tests will be conducted for about 45 minutes to 1 Hour duration. This Skill Tests or Physical Tests will only be of qualifying nature.

3.1.3. In the Skill Tests or Physical Tests are practical examination in nature. The candidates asked to perform three experiments in the Chemistry laboratory including setting up of the apparatus, calibration of the instruments and periodic minor maintenance of the equipment units. The marks obtained in the best two of the given three experiments will be taken for qualifying in the Skill Tests or Physical Tests. The candidates shall obtain/score minimum of 50% marks in the Skill Tests or Physical Tests for qualifying in the Skill Tests or Physical Tests.

4. The candidates who were qualified in the Skill Test shall or Physical Test, have to appear for the written examination, which consists of:

(i) Theory Examination (Written) of 2 to 3 hours duration for 100 marks. The theory paper contains Questions of MCQs / Short Descriptive type.

(ii) No negative marks will be given for attempting wrong answers.

(iii) The selection of candidate for offering Appointment is based upon the performance in Written Examination. The minimum marks required for consideration for offering the appointment is 60%. The candidate who has scored highest mark in this examination (i.e., top scorer) is eligible for considering for offering appointment. If more than one candidate scores same marks (i.e., more than one person scored same highest marks), the rank will be decided based on an additional fresh test on Civil Engineering of 1 hour duration.

(iv) The Skill Tests or Physical Tests are only be qualifying nature and the marks obtained in the Skill Test or Physical Test will not be considered for ranking the candidates.

(v) The syllabus for the Theory Examination (Written) is enclosed.

5. General Instructions:

a) The list of the shortlisted candidates for appearing the scheduled written test as in para 3 above for the above posts have been uploaded on the Institute website. However, if any candidate whose name has appeared in the said list is unable to receive the intimation of the examination through e-mail or speed post, he/she may appear for the test with the proof of his/ her identity along with copy of the application/ copy of the DD / proof of payment made for making such application against the above advertisement for the said post of Technicians.

b) No request for change of venue for the written examination/ date shall be considered under any circumstances.

c) The shortlisted candidates are to abide by the Protocol as well as SOP in connection with COVID-19 as adopted by the Government of Nagaland as on date of their travel and appearing for the afore mentioned test in this Institute.

d) The candidates needing special assistance, are required to inform the undersigned through e-mail registrar@nitnagaland.ac.in or over Phone No. 09840778590/09443208298 or Dr. J. Arul Valan, Assistant Professor & OSD (Recruitment), NIT Nagaland through e-mail: valan@nitnagaland.ac.in over Phone No. 09443109434 at least 5 days before the scheduled date of examination so that necessary arrangements can be made.

e) Electronic devices of any form shall not be allowed during the Examination. The decision of the Institute Authorities about the nature of such electronic devices are final and binding upon the candidates appearing the test/ examination.

f) The candidates those are currently serving in the State Government, Central Government, Quasi-Government, Public Sector Undertakings/Units/Enterprises, Autonomous Institutes of State and Central Governments, etc., are required to produce "No Objection Certificate (NOC)" from their Head of the Institution for attending the written examination otherwise they will not be eligible to attend the written examination.

Registrar

ii. Syllabus for the Theory Examinations (Written):

Unit – I (General Chemistry)

Fundamentals of atomic structure. Periodicity of the elements – shielding - effective nuclear charge - Slater's rule - atomic, covalent and van der Waals radii - ionization energy - electron affinity – electronegativity - Electronic and steric effects - Inductive effect – resonance – hyper-conjugation - steric effect, covalent and ionic bonding – Electrophiles and nucleophiles. Ionization of water - pKw and pH - solubility product - common ion effect - Buffer solutions - standard solution – concept of normality, formality, molarity and molality.

Unit –II (Organic Chemistry)

Fundamentals of organic chemistry: Hydrocarbons, Alcohol, Phenol and Ether, Aldehydes, Ketones and Carboxylic Acid - Aromaticity and Hückel Rule - Concept of hybridization of organic compounds and shapes of molecules - Reactive intermediates: Carbocation, carbanion, free radical and benzyne, Friedel-Crafts alkylation/acylation, nitration, sulfonation, halogenation - Grignard reagents. Basics of stereochemistry of organic molecules, symmetry elements - molecular chirality - optical activity - optical purity - meso compounds - racemic mixture – resolution – enantiomers – diastereomers, basic concepts of stereo-chemical nomenclatures: threo/erythro, syn/anti, R/S, cis/trans and E/Z.

Unit – III (Physical Chemistry)

Laws and terms of Thermodynamics; State & path functions - concept of heat and work - internal energy, enthalpy, entropy, free energy, heat capacities & their applications. Electrochemistry: Conduction in electrolyte solutions-ionic mobility-dilution principle-transport number- electrochemical cells - EMF, Nernst equation - Primary & Secondary cells - Ionic equilibrium - Ion conductance - Measurement of conductance - cell constant. Specific conductance & molar conductance and their variation with dilution for strong and weak electrolytes - Kohlrausch's law of independent migration of ions - Equivalent and molar conductance at infinite dilution and their determination for strong and weak electrolytes - Ionic mobility.

Unit – IV (Inorganic Chemistry)

Structure and Bonding - bonding in homo-nuclear diatomic molecules (e.g.: H2, N2, O2, F2) VSEPR model, Concepts of Lattice energy and its application - s, p and d block elements, their properties (physical and chemical), compounds and reactions General Principle and Process of Isolation of Elements - Acid -Base concept: Arrhenius concept, Brønsted-Lowry acids and bases - Lewis acids and bases - Acid and base strength - Dissociation constant of week acids and bases, Coordination chemistry: Werner's theory, classification of ligands, coordination number, nomenclature of coordination compounds, isomerism. Environmental Chemistry.

Unit-V (Chemistry in everyday life)

Importance of Chemistry in daily life - basis of classification of drugs and their function(s) in the body – Antipyretics – analgesics – antibiotics - tranquilizers – Chemotherapy and its applications - drug-target interaction of enzymes and receptors - antiseptics and disinfectants. Artificial sweetening agents - Food Preservatives and synthetic detergents.