



राष्ट्रीय प्रौद्योगिकी संस्थान, राउरकेला
NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA

NITR/AC/RES/2023/M/2010

1st Dec, 2023

**Notice for Admission to PhD Program
Commencing in Spring (January) Semester of AY 2023-24**

Applications are invited **online** from eligible candidates for admission to PhD Program of the Institute in Spring (January) Semester of the Academic Year 2023-24. Admission will be given preferably to the applicants who are eligible for Institute fellowship or have qualified for External fellowship. However, admission may also be considered without fellowship. Students with external fellowship like JRF-NET are especially encouraged to apply.

Sl.	Name of the Department	Code	Indicative Broad Area of Research Available
1	Biotechnology and Medical Engineering	BM	Medical Electronics & Instrumentation, Biomedical Signal and Image Processing, Tissue Engineering & Biomaterials, Cell & Molecular Engineering, Bioprocess Engineering, Environmental & Plant Biotechnology, Biomechanics & Bio-transport Engineering, Artificial Intelligence, Microfluidics.
2	Civil Engineering	CE	Structural Engineering
3	Chemical Engineering	CH	Nanomaterials, Interfacial Phenomenon, Heat Transfer & Separation Technology, Soft Sensor , Control and Environment, Waste water treatment , Mass Transfer and fluid mechanics, Pollution, CFD, Mass Transfer operations , Molecular Modelling & Simulation.
4	Ceramic Engineering	CR	Ceramics, Structural Ceramics, Nano-Ceramics, BioCeramics, Electroceramics, Ceramics for energy sector and environmental Engineering, Refractory, Glass.
5	Computer Science & Engineering	CS	Information Security, Computer Networks, Cloud Computing, Network Security, Content based Information Retrieval, Internet of Things (IoT), Machine Learning, Deep Learning, Artificial Intelligence, Soft-computing, Time Series Forecasting, Natural Language Processing, Computer Vision, Signal and Image Processing, Computer Architecture, Wireless Sensor Networks , Robotics & Autonomous System, Embedded Systems, Low Power VLSI, Computer Architecture.
6	Chemistry	CY	Inorganic Chemistry/ Bio- inorganic/ Organometallic Chemistry.
7	Electronics & Communication Engineering	EC	VLSI (Semiconductor Device), Communication, Signal & Image Processing, VLSI, Internet of Things, VLSI Design, Secure architecture for Embedded system, Modeling of Semiconductor Devices, Device to Circuit Co-optimization, Nanoelectronics Optional

			networking, Machine Learning for Image and Video Applications, Signal processing , Signal processing for communication engineering, Signal processing for radar engineering, Signal and Image processing , Artificial Intelligence, Communication, Internet of things.
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Sl. No.	Name of the Department	Code	Indicative Broad Area of Research Available
8	Electrical Engineering	EE	Control & Automation, Power Electronics & Drives, Electronic Systems & Communication, Power Systems Engineering.
9	Earth and Atmospheric Science	ER	Geology, Geochemistry.
10	Food Process Engineering	FP	Computer Aided Engineering, Food Properties, Food Quality & Safety, Post-Harvest Operations, Product Development & Ingredients, Transport Process & Kinetics Innovation, Food Packaging & Storage Engineering.
11	Humanities & Social Sciences	HS	Economics, Anthropology, Sanskrit.
12	Industrial Design	ID	CAD, Ergonomics, Product Design, Assistive Devices, Human Factors, HCI, Robotics Vibration, Rotor Dynamics, Meta materials, Noise Control etc.
13	Life Science	LS	Human Molecular Genetics, Molecular Genetics, Epigenetics, Applied Nanobiotechnology and Immunology.
14	Mathematics	MA	Analysis, Algebra, Numerical Analysis, Differential Equations, Number Theory, Fluid Dynamics, Probability and Statistics.
15	Mechanical Engineering	ME	Production Engineering., Machine Design, Thermal Engineering, Heat Transfer and fluid flow, Metal Additive Manufacturing, Tribology and Rotordynamics, Materials Science and Tribology, Energy / Renewable energy/ cryogenics, Turbulent flow and modeling, CFD, Modelling of Machining , extrusion, micro-machining, Dynamics.
16	Metallurgical & Materials Engineering	MM	Composite Materials, Computational Materials, Powder Metallurgy, Nanomaterials.
17	Mining Engineering	MN	Remote Sensing and GIS, Mine Environment, Mine Safety, Coal Bed Methane, Strata Control.
18	Planning and Architecture	PA	Housing, Neighbourhood Planning, Urban and Regional Planning, Cultural and Creative economic Planning, Urban Heritage, Global Cities, Energy efficient building, Sustainable urban communities, Age friendly neighbourhood, Environmental Psychology.
19	Physics and Astronomy	PH	Condensed Matter Physics, High Energy Physics Astrophysics (external fellowship only), Particle Physics (external fellowship).
20	School of Management	SM	Finance and Accounting, Corporate Governance, Sustainability, General Management. For JRF only – Finance and Accounting, Human Resource Management, Operations, General Management, Marketing.

B. Eligibility Criteria for PhD Program

The minimum qualification required for admission to PhD programs in Engineering, Science, Planning & Architecture, Management, and Humanities & Social Sciences is one of the following:

- a) ME/MTech/MScEngg/MPharm/MArch/MPlan/MDes in relevant discipline with at least 6.5 CGPA or 60% marks or 1st class in both BE/BTech/BScEngg/MSc/BPharm/MCA/BArch/ BDes or equivalent, and ME/MTech/MScEngg/MPharm/MArch/MPlan/MDes from a recognized Technical Institute or University.
- b) BE/BTech/BScEngg/MSc/BPharm/MCA/BArch/BDes or equivalent in relevant discipline with CGPA of 7.0 or 65% marks.
- c) MSc in Basic Sciences with CGPA 7.0 or 65% marks in relevant disciplines. For applicants with valid GATE/NET/GPAT or equivalent score, requirement may be relaxed by maximum 0.5 CGPA or 5% marks.
- d) MBBS/BVSc with CGPA 6.5 or 60% marks or 1st class.

Further, candidates having the following qualification can also apply for PhD in Management and Humanities & Social Sciences:

- e) MA/MCom/MBA/MSc in Humanities and Social Sciences or Management or BTech with 6.5 CGPA or 60% marks or 1st class for PhD in Management, and Humanities and Social Sciences only.

In addition to the above eligibility criteria (based on BTech, BArch, MSc, MBA, MA, MCom, MTech, MArch, MPlan, MDes and MPharm, etc. examinations), the following additional criteria will also be applicable:

- a) A candidate should score minimum 6.5 CGPA or 60% marks or 1st class throughout career to be eligible for admission to PhD programme. The Departmental Research Committee (DRC), however, may make exception (marks < 60% or CGPA < 6.5) at its discretion in only one among the results of 10th, +2, BA, BSc, BCom, Diploma etc. (except qualifying degree) if the candidate has qualified in GATE/NET/GPAT or other national level fellowship tests like DST-INSPIRE, etc. or joined as JRF/SRF in any research project.
- b) For admission to Engineering and Science disciplines (except Life Science), a candidate should have passed Mathematics in +2 Science or Diploma.
- c) Science students admitted to PhD programme in Engineering/Physics/ Mathematics must have passed Mathematics at +3 level. Students without Mathematics at +3 level may be admitted under the condition that they will have to register for 14 credits of 1000 and 2000 level Mathematics and 1000 level Computer Science courses (Theory and Practical) in addition to their normal course requirement, and secure at least C grade in each course.
- d) A student should have passed Life Science or Biological Science either at +2 or +3 level for admission to PhD in Life Science department.
- e) Students without having qualifying degree in the primary discipline will be required to take up

additional course work of 6 credits to gain adequate knowledge on the subject so as to be considered to qualify along with students with specialization in a primary discipline, unless explicitly exempted by the Senate. List of primary disciplines for specializations under various departments is given in Clause “D” below.

However, a higher shortlisting criteria (possibly different for different departments and for different categories of students) may be set by the Department during scrutiny of applications depending on departmental requirement, number and quality of applicants. Therefore, merely satisfying the minimum eligibility criteria does not guarantee a candidate to be called for interview and also mere attending an interview does not guarantee admission.

C. Applicants Awaiting Results

- a) For thesis based Postgraduate degrees [(M. Tech. (Research), MS or equivalent)], a student is permitted to submit the final result within one year from the date of thesis submission. However, one documentary evidence (proof of thesis submission) from the candidate’s Institute/University is required to be submitted at the time of admission.
- b) For all course based degrees [B. Tech., M. Sc., MA, M.Com, MBA, M. Tech. (Regular), etc.] results need to have been published before admission is granted. In exceptional cases when a university will not be in a position to publish result by the time of admission, submission of qualifying degree result may be permitted till **31st January, 2024** but not beyond.

D. Qualifying Degrees and Primary Disciplines for Admission

Different academic eligibility across the departments has been made considering the departmental requirement, availability of candidates in the respective departments and uniform growth of all departments in the Institute.

Onus of proving a Degree / Specialization / Discipline as equivalent with any of the above mentioned Degree / Specialization / Discipline shall lie with the applicant claiming equivalency. However, decision of the Institute shall be final and binding in this matter.

Department	Academic Eligibility / Primary Disciplines
Biotechnology and Medical Engineering (BM)	A Master’s degree in Engineering (any branch) / Medicine / Dental / Pharmacy / Veterinary OR a bachelor’s degree in Engineering (any branch) / Medicine / Dental / Pharmacy / Veterinary with valid GATE / NET / BET / GPAT score OR a MSc degree in Biotechnology / Life Sciences / Physics / Chemistry / Allied Sciences with 1 st class in UG and PG degree with a valid GATE / NET / BET / GPAT score or any National level eligibility test.
Civil Engineering (CE)	B. Tech in Civil Engineering (with GATE Qualified) or B. Tech in Civil Engineering with M. Tech in relevant specialization.
Chemical Engineering (CH)	B Tech or equivalent/M Tech or equivalent in Chemical Engineering/Chemical Technology/ Biotechnology/ Petrochemical Engineering/ Petroleum Technology/ Process Control and Instrumentation/Polymer Technology / Biochemical Engineering/ Energy Engineering /Nanotechnology/ Environmental Engineering and allied branches OR M.Sc in Chemistry/Physics/Maths/

	Environment/Polymer/ Nanoscience and allied discipline with Mathematics in +2 level. (For Fellowship category, valid GATE score is mandatory for B Tech & M Sc qualifications).
Ceramic Engineering (CR)	BTech (with GATE) / MTech in Ceramic / Metallurgical and Materials / Chemical / Mechanical Engg. / Biomedical Engg / Nanotechnology / Biotechnology OR MSc (with GATE) in Physics / Chemistry / Materials Science / Nano Science.
Computer Science & Engineering (CS)	BTech (with GATE/Any National Level fellowship) / MTech in Computer Science and Engineering / Information Technology OR MCA OR MSc (with GATE/ Any National Level fellowship) in Computer Science / Information Technology.
Chemistry (CY)	MSc in Chemistry / Physics / Biochemistry / Biotechnology / Nanoscience and Nanotechnology / Bioinformatics / Industrial Chemistry / Applied Chemistry / Environmental Chemistry / Food Science and Technology / Nutrition OR MPharm OR BTech / MTech in Chemical / Ceramic / Metallurgical and Materials Engineering / Biotechnology.
Electronics & Communication Engineering (EC)	BTech (with GATE) / MTech in Electronics / Electrical / Electronics and Communication / Electronics and Telecommunication / Electronics and Instrumentation / Applied Electronics and Instrumentation / Electrical and Electronics Engineering.
Electrical Engineering (EE)	MTech/ME/M.S. in Electrical/ Electronics/ Communications/ Computer Science/ Instrumentation / Control Engineering or equivalent or Microelectronics/Solid-state Technology/MEMS/Nano Science/Nano Technology/Material Science/Engineering Physics or equivalent, relevant to the area of research OR BTech/BE in Electrical/Electronics/Communications/ Computer Science/ Instrumentation / Control Engineering or equivalent or Microelectronics/Solid-state Technology/MEMS/Nano Science/Nano Technology/Material Science/Engineering Physics or equivalent, and having a CGPA/CPI score of 8.00 (out of 10.0) and above with valid GATE score can apply for admission to PhD programme.
Earth & Atmospheric Science (ER)	MSc / MTech in Geology / Applied Geology / Geophysics / Environmental Science / Remote Sensing / Chemistry / Physics / Atmospheric Science / Meteorology / Oceanography / Mathematics OR related disciplines in Science OR BTech / MTech in Civil / Mining / Electronics and Computer Science Engineering.
Food Process Engineering (FP)	B. Tech with MTech in Food Processing Engineering / Food Technology / Agricultural Process Engineering / Post Harvest Engineering / Agricultural Engineering or any other relevant branch of Engineering/Technology.
Humanities and Social Sciences (HS)	MSc / MA in relevant subjects OR BTech / MTech in any branch of Engineering OR MBA. Candidates with UGC NET/JRF qualification will be preferred.
Industrial Design (ID)	B.Des (with GATE)/ BE (with GATE)/ B.Tech (with GATE)/ M.Des/ ME/ M.Tech in any discipline/ M.Arch.
Life Sciences (LS)	MSc in Life Sciences / Botany / Zoology / Microbiology / Biotechnology / Biochemistry / Bioinformatics / MBBS / BVSc./ Bio-Physics / Food Science and Technology, BTech / Integrated MTech / MTech in Biotechnology or any branch of biological sciences, BPharm/MPharm, MS in any branch of biological sciences.
Mathematics (MA)	MSc in Mathematics / Statistics / Computer Science / Information Technology / MCA and First class Honours or equivalent in B.Sc. with Mathematics / Statistics as Honours subject. OR BTech / MTech in any branch of Engineering or equivalent.
Mechanical Engineering (ME)	BTech (with GATE)/MTech in Mechanical / Machine Design / Thermal / Cryogenic / Mechatronics / Robotics / Mechanical Vibrations / Automobile / Production / Manufacturing / Industrial Engineering / Industrial System Engineering/ Aerospace/ Aeronautical/ Composites / Tribology / Fluid Flow and Heat Transfer/Energy Technology/ Energy Engineering.

Metallurgical & Materials Engineering (MM)	BTech/MTech in Metallurgy / Metallurgical and Materials Engineering / Ceramic / Chemical / Mechanical / Production / Manufacturing Engineering OR MSc in Physics/ Chemistry /Materials Science.
Mining Engineering (MN)	BTech/MTech in Mining / Civil / Environmental / Chemical / Electronics / Electrical / Instrumentation / Computer Science / IT / Mechanical / Metallurgical and Materials Engineering OR MSc in Geology / Geo-Physics / Environmental Science / Remote Sensing / Mathematics / Statistics / Chemistry / Physics.
Planning & Architecture (PA)	B.Arch (with GATE)/ B.Plan (with GATE)/ M.Arch/ M.Plan / MCP / MURP / MUP / MOP/ M.Tech/ MBA (Urban Management) or equivalent.
Physics and Astronomy (PH)	MSc in any branch of Science with Mathematics and Physics at B.Sc. level OR BTech in any branch of Engineering.
School of Management (SM)	Master degree in Technology, Business Administration, Arts, Science, Commerce, Pharmacy OR Bachelor degree in Technology in any discipline OR CA(FINAL) from ICAI OR LLM(LAW)

E. Notes

1. Where regular mode of education is available for any Degree/Qualification then Degree/Qualification obtained through any modes other than regular mode, i.e. Distance Learning, Correspondence Course, etc. will NOT be considered for the purpose of admission to PhD program of the Institute.
2. For selection of research scholars in any engineering discipline, students with BTech degree will be given preference over students with MSc degree, even if the latter may have an MTech Degree.
3. Students with any other relevant background may be eligible, but only with approval of the Senate or Chairman, Senate on the recommendation of the Departmental Research Committee (DRC).
4. There is no relaxation in academic requirement for SC/ST/OBC/EWS/PWD students, because the minimum academic requirements have been set to meet the basic challenges of the academic program. Also, the academic eligibility shall be same across all studentship categories (Institute fellowship, External fellowship, Project fellowship, Sponsored, etc.).
5. If the evaluation system is in grades, CGPA value will be considered and if the evaluation system is in marks, percentage value will be considered.
6. Students of one discipline may seek admission in a related department which will be considered on the basis of merit of the individual case(s).
7. Selection will be made on the basis of academic record, relevance of qualification, candidate's research interest, existing research programs and facilities of the departments, and performance of the candidate in tests and/or interviews. Therefore, merely attending a tests and/or an interview does not guarantee admission.

F. Financial Support

Institute Fellowships are available to the PhD students of all the departments. Prevailing rate of fellowship is given in the following table:

Program	Eligibility	Duration	Rate of Fellowship
PhD	M. Tech. / M. Pharm / M. Arch. / M. Des. / MD / MS / MDS / M. V. Sc. (or)	1 st & 2 nd year	Rs. 31,000/- p.m.
	B. Tech. / B. Arch. / B. Des. / B. Pharm. / MBBS / B. V. Sc. / BDS / M.Sc. / MA / M.Com / MBA / MCA with a valid GATE/NET/GPAT score	3 rd , 4 th & 5 th year*	Rs. 35,000/-* p.m.

* Subject to clearing the Progress Seminar to be conducted by the department.

Payment of Institute fellowship is effective from date of enrollment or starting date of biometric attendance whichever is later, but will be paid only after submission of all required documents by the scholars. Financial support is initially for a period of one year and will be renewed on year to year basis on satisfactory performance/progress.

However, fellowship **will NOT be awarded** to candidates above 32 years of age for PhD (35 years for SC/ST, and women candidates with at least one child) on the closing date of receipt of application. This restriction shall not apply to fellowships awarded by external agencies or sponsored projects.

Individual External Fellowships

Candidates with individual external fellowships (CSIR-NET/UGC-NET/DST-INSPIRE/RGNF/ICSSR/Women Scientist, etc.) are especially encouraged to apply. The selection process will be same as that for other candidates. The rate and mode of payment of fellowship to such students will be governed as per the rules of the Sponsor / Funding Agency.

Important Note

1. If a student with Institute fellowship or project fellowship leaves the Institute in the mid-session on his own accord without completing the program, the entire amount paid to him/her towards fellowship **need to be returned** by the student before leaving the Institute. S/he will not receive any certificate from the Institute unless s/he refunds the fellowship received in full. Students with project fellowship may not be required to refund only if sponsor's rule permit him leaving the project without refunding fellowship. Students receiving external fellowships will be governed as per the rules of the Sponsor / Funding Agency.
2. All students, with or without fellowship or receiving any other financial support are required to assist faculty members of their department in teaching and research activity. They may be required to take tutorial and laboratory classes, assist in student projects or other R & D activities as assigned by the HOD/Coordinator.
3. **Accommodation**
Hostel accommodation to the admitted candidates against this advertisement may be provided subject to availability. However, due to paucity of hostel room, all students may not be provided with hostel accommodation. Such students will stay outside at their own cost and no HRA will be admissible to them. Once new hostels are ready, they will be provided hostel accommodation with payment of appropriate fee.

4. Students with external fellowships like NET-JRF, CSIR, DST-INSPIRE and project fellows may get HRA if provided by the said agencies/sponsor. Others including full time student with Institute fellowship will not be eligible for HRA.

G. Fee Structure

Fees to be paid at the time of admission to PhD Program is as follows: -

APPLICANTS NOT PROVIDED WITH HOSTEL ACCOMMODATION

#	Fee Particulars	Amount
1.	Admission fee (One time)	Rs.2500/-
2.	Tuition fee	Rs.7500/- [Nil for SC/ST students]
3.	Other fees (Exam., Library, Electricity etc.)	Rs.3000/-
4.	Student activity fee	Rs.2000/-
5.	Medical fee	Rs.2000/-
6.	Caution Money (One time) (Refundable if program is completed)	Rs.10000/-
TOTAL FEE		Rs.27,000/- (Rs. 19,500/- for SC/ST students)

Notes

1. The above fee is only for the 1st semester. For remaining semesters the approximate fee will be Rs.14,500/- per semester (Rs.7,000 /- for SC/ST students) which is excluding Mess dues. However, **the Institute reserves the right to amend the fee structure from time to time, which will be implemented with immediate effect for all students irrespective of the date of admission.**
2. Those who will be provided with hostel accommodation will pay hostel establishment fee of Rs. 5000/-, mess dues of Rs. 19,500/-, hostel seat rent of Rs. 5000/- or as per hostel seat rent applicable to hostel type in addition to the mentioned fee in the table above.
3. Fee will be paid by the selected students online in the Institute payment portal, details of which will be notified along with selection result.

Refund of Fee

If a student is removed or withdraws/leaves himself/herself from the Institute after admission without completing the entire program, all fees paid including the caution money deposit will be forfeited by the Institute. Mess advance, if paid, may be refunded after deduction of dues, if any. This clause is applicable even before formal registration to the 1st semester and starting of classes.

H. Sponsored / Local Sponsored Candidates

The Institute welcomes candidates from reputed academic Institutes, Industry, R & D Institutions, and from Government organizations.

- a) A sponsored candidate is expected to work full time in the Institute till completion of his/her program, or at least 3 years from beginning in the Institute. However, in deserving cases, if facilities exist at his/her place of employment and his/her job assignment matches with the research problem, s/he may be permitted to work at the place of employment after satisfying minimum residential requirement (normally 6 months to a year).

- b) Local sponsored candidates (working in and around Rourkela having permanently non-transferable jobs) must have enough time and flexibility in their job assignment in order to continue the program applied for. Their working hours to be suitably adjusted in the sponsoring organization so that s/he can work on his/her studies at NIT Rourkela for at least 120 days and 500 hours per semester [25 days and 75 hours in case the scholar has a Co-Supervisor in his/her work place, his research work is related to his work in the job place and availability of adequate research facility in the work place].
- c) **Sponsored candidates must have completed at least two years of continuous service in the sponsoring organization**, which must be an Institution of Repute employing good number of engineering/science professionals. The completion of two years continuous service shall be counted **as on Nov 30, 2023**.
- d) Sponsored students are expected to serve their sponsoring organization on completion of their degree in NIT, for at least 3 years after completion of the academic program.

Sponsored candidates may apply for PhD program of any discipline.

I. Application Fee and Procedure

Interested candidates satisfying the eligibility criteria may submit their **online application at <http://eapplication.nitrkl.ac.in>**. The applicants are advised to:

- a) Read this advertisement and the instructions to fill up the online application form given in the online portal carefully,
- b) Pay non-refundable Application Fee of Rs. 500/- through SBI Collect only. No other mode of payment is acceptable. The applicant has to search SBI COLLECT -> EDUCATIONAL INSTITUTIONS -> ODISHA -> DIRECTOR NIT ROURKELA -> APPLICATION FEE PHD and EPTP. Note down the SB Collect Reference Number. Application fee once paid shall not be refunded under any circumstances.
- c) Fill up the online application form and enter the SB Collect Reference Number in the appropriate column of Application Fee section and submit the same.
- d) Sponsored candidates are required to submit the scanned copy of the sponsorship certificate while submitting online application.

Applicants are **NOT** required to send hard copy of the application form or any other document(s) to NIT Rourkela. However, candidates who will be called for interview will be required to submit signed copy of the application form, a set of photo copies of all certificates and original Sponsorship Certificate (for Sponsored/Local Sponsored candidates only) at the time of interview. They also need to produce original certificates from HSC onwards for verification.

J. Tentative Schedule

Sl. No.	Event	Tentative Date
1	Application form will be available in the Institute website for online submission	01.12.2023 (Friday) to 17.12.2023 (Sunday)
2	Publication of result of scrutiny in the website	20.12.2023 (Wednesday)
3	Test and/ Interview (Venue – NIT, Rourkela)	26.12.2023 (Tuesday)
4	Publication of result of Interview in the website	28.12.2023 (Thursday)
5	Admission	02.01.2024 (Tuesday)
6	Semester Registration	03.01.2024 (Wednesday)
7	Starting of Class / Research work	03.01.2024 (Wednesday)

The list of selected candidates will be displayed in our Institute website www.nitrkl.ac.in and no postal intimation will be sent to the selected candidates. **The applicants are required to visit the "Notice Board" section in the "Home Page" of the Institute website regularly for further updates.**

K. How to reach the Institute

Rourkela is located in the Howrah-Mumbai main Train route. Train connections are also available from Bhubaneswar and Ranchi. Night AC/Non-AC bus services are available from all major cities of Odisha (Bhubaneswar/Berhampur/Balasore, etc.). The Institute is located around 8 km. away from the Railway Station and 2 km away from Sector-3 Bus Stop. Usual rate of auto fare at present is approx. Rs.150/- to Rs. 200/- and Rs. 100/- respectively. App based taxi services are also available in Rourkela.

For any queries mail to: - admission@nitrkl.ac.in

Sd/-

Assistant Registrar (Academic)