Information Brochure-I

Admission

To

Ph.D. (Full Time)

- **with Teaching Assistantship**
- **Sponsored Programme**
- **Sponsored Candidate category from 100% centrally funded research laboratories including public sector and private industries**

January 2016

Visvesvaraya National Institute of Technology, Nagpur

1.1 PROGRAMMES OFFERED BY THE INSTITUTE

Sr. No.	Programme	Departments
1.	Ph.D. (Full Time) with Teaching Assistantship *	**Engineering :** Civil, Electrical, Electronics & Communication, Centre for VLSI & Nano Technology, Computer Science, Chemical, Mechanical, Metallurgical & Materials, Mining, Applied Mechanics. **Architecture & Planning** **Applied Sciences:** Physics, Chemistry, Mathematics, Humanities.
2.	Ph.D. (Full Time) Sponsored (place of research work VNIT only)	
3.	Ph.D. (Full Time) Sponsored Candidate category from 100% centrally funded research laboratories including public sector and private industries #	

NOTE : Institute will not provide any stipend or any other financial support to Ph.D. (Full Time) sponsored candidates.

*Candidates desirous of seeking admission to Ph. D. (Full Time) programme with teaching assistantship should note that

1. The emoluments for full-time Ph.D. scholar with Teaching Assistantship:

Sr. No.	Qualifying Degree	Emoluments per month
1.	Post Graduate (M. Sc. or equivalent) Degree in Basic Science with NET/GATE Qualification or Graduate Degree in Professional Course with NET/ GATE Qualification	Rs. 25,000/- (for maximum duration of 4 years)
2.	Post Graduate degree in engineering/ technology (M.E./M.Tech./M.Arch. or equivalent) with NET/GATE qualification	Rs. 25,000/- (1st & 2nd Year) Rs. 28,000/- (3rd & 4th Year)

2. Number of seats per department may change depending on availability of Ph.D. vacancy under Supervisor & suitability of the candidates.
3. Teaching assistantship shall be offered for a maximum period of four years only.

 # Special instructions to the candidates seeking admission under Ph.D. (full time) sponsored candidate category from 100% centrally funded research laboratories including public sector and private industries:

The candidates desirous of seeking admissions for Ph.D. program under the above scheme should meet the following requirements:

1. Candidate should posses M.E. / M. Tech. / M.Arch. / M.Plan. / M.Sc. degree having **qualified GATE / NET exam** in past and he/she should have minimum Five years experience in Industry.
2. VNIT committee shall examine the research facilities in research laboratory in which the candidate is employed where the candidate wishes to carry out part of his Ph.D. research. In case the committee report is favorable and suitable co-supervision (as certified by the committee) is available in the candidate's parent organization where the candidate proposes to carry out research, VNIT may exempt the stay requirement on campus on case to case basis.

3. In any case minimum stay at VNIT is **Six** months for completion of course work and other related research work. If he/she fails to do so, he/she has to stay another six months at VNIT Nagpur to complete the course work. It is candidate's responsibility to obtain deputation / leave from parent organization.

4. Candidate admitted under this program will be treated as a sponsored candidate at VNIT (degree will be awarded by VNIT).

5. He/she should appear for written test & interview as per Institute's norms.

6. Main Supervisor will be from VNIT and optional qualified Co-supervisor approved by VNIT will be from the candidate's parent organization.

7. All six monthly seminars should be delivered at VNIT only. Attendance record of the candidate will be maintained at VNIT. In this respect, it may be noted that the attendance in parent organization of candidate where he carries research, duly certified stating that the candidate has substantially (deemed to be full time) carried out research in the parent organization by Co-supervisor / immediate superior of the candidate, shall be submitted to VNIT before conducting six monthly seminar.

8. As far as possible, co-guide shall also attend the six monthly progress seminar. However, co-guide shall be present for progress seminar and thesis defense viva-voce. No financial assistance will be permissible from VNIT for travel of co-guide.

9. Institute will not provide any stipend or any other financial support (for conferences etc.) to these candidates.

10. Fees to be paid at VNIT as per the norms & policy of the institute as applicable to full time sponsored candidate(s).

11. Candidates should satisfy all degree requirements (including publications) as specified by VNIT for the award of Ph.D. degree.

12. It is clarified that candidate from academic institute is not considered under this scheme, since such candidates have the opportunity for doing full time Ph.D. program through schemes like Quality Improvement Program (QIP) and Full Time Ph.D. with teaching assistantship and Ph.D. full time sponsored (place of research will be VNIT only)

13. In case candidate fails to complete the course work within one year from the date of registration, his/her admission stands cancelled automatically and no further extension will be granted.

1.2.1 Important dates to remember –

- Date of notification   - **05.10.2015**
- Last date of submission of application   - **10.11.2015**
- Display of list of eligible candidates   - **20.11.2015**
- Written test for eligible candidates   - 2**7.11.2015**
- Interview for short listed candidates   - 2**7.11.2015 & 28.11.2015**

1.2.2 Schedule for Written Test & Interview

	Department	Written Test (Date & Time)	Interview (Date & Time)
1.	Applied Mechanics		
2.	Architecture and Planning		
3.	Chemical Engineering		
4.	Mathematics		
5.	Electronics & Communication Engineering	27.11.2015 10.00 am to 11.00 am	27.11.2015 2.30 pm to 5.00 pm
6.	Humanities and Social Sciences		
7.	Chemistry		
8.	Metallurgy and Materials Engineering		
9.	Mining Engineering		
10.	Physics		
11.	Civil Engineering		
12.	Computer Science and Engineering		28.11.2015
13.	Electrical Engineering	27.11.2015 11.30 am to 12.30 pm	10.00 am to 1.00
14.	Mechanical Engineering		pm
15.	VLSI & Nanotechnology		

* Written Test and Interview will be held in the respective department

1.3 ELIGIBILITY CRITERIA

The candidates having secured <u>Government Fellowship</u> i.e, DST fellowship, CSIR fellowship, UGC fellowship can apply for Ph.D program at VNIT even if candidate does not have valid GATE scores/NET qualification or candidate has not appeared

Sr. No.	Name of the Department	Eligibility for Ph.D
1.	Applied Mechanics	B.E. / B. Tech./ AMIE in Civil Engineering AND M E / M.Tech in Structural Engineering related specialization with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or Master's level. **Qualified GATE score or equivalent national level exam in past.**
2.	Chemical Engineering	BE / B. Tech. in Chemical Engineering / Chemical Technology/ Biochemical Engineering / Biotechnology AND M E / M. Tech in Chemical Engineering / Chemical Technology/ Biochemical Engineering / Biotechnology with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or Master's level. **Qualified GATE score or equivalent national level exam in past.**
3.	Civil Engineering	B.E. / B.Tech / AMIE (Civil) and M E / M.Tech in any branch of Civil Engineering with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or Master's level. **Qualified GATE score or equivalent national level exam in past.**
4.	Computer Science and Engineering	B.E. / B. Tech. / AMIE or equivalent in any branch of Engineering and M.E./M. Tech or equivalent in one of the following branches Computer Science/ Computer Technology/Computer Engineering/ Information Technology/ Information Science with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or Master's level. **Qualified GATE score or equivalent national level exam in past.**
5.	Electrical Engineering	M E / M. Tech in Electrical & Electronics / Power Systems/ Energy Systems / Control System/ Instrumentation & Control / Power Electronics / Electric Drives with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or Master's level. **Qualified GATE score or equivalent national level exam in past.**
6.	Electronics & Communication Engineering	B.E. / B. Tech. and M.E. / M. Tech in one of the following branches Electronics and Communication /Electronics/Industrial Electronics/ Instrumentation/Electrical and Electronics/ Embedded Systems with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or Master's level. **Qualified GATE score in past.**
7.	VLSI & Nanotechnology	M.E. / M. Tech in one of the following branches Electronics and Communication /Electronics/Industrial Electronics/ Bio-medical / Instrumentation/Power Electronics/Electrical and Electronics/ Embedded Systems with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or

		Master's level. **Qualified GATE score or equivalent national level exam in past.**
8.	Mechanical Engineering	M E / M. Tech in Mechanical Engineering / Production Engineering / Automobile Engineering / Industrial Engineering / Power Plant Engineering / Chemical Engineering / Aerospace Engineering / Energy Systems & Engineering with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or Master's level. **Qualified GATE score or equivalent national level exam in past.**
9.	Metallurgy and Materials Engineering	M E / M. Tech in Metallurgy / Material Engineering / Mechanical / Production / Industrial / Chemical with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or Master's level. **Qualified GATE score or equivalent national level exam in past.**
10.	Mining Engineering	M E / M. Tech in Mining Engg or related to Mining Engg / Civil Engineering / Env. Engg. / Geo-Tech Engg/ Mine Planning / Rock Mechanics / Opencast Mining / Mineral Engg. OR M.Sc. / M.Sc. Tech in Geology / Applied Geology/ Environment with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or Master's level. **Qualified GATE score or equivalent national level exam in past.**
11.	Architecture and Planning	B.Arch. / BE (Civil) / B.Tech.(Civil) / B.Plan. / B.Tech. (Plan) with M.C.P./M. Arch./M.Des. / M.Tech. (Urban Planning) / M. Plan./ M.U.R.P. / ME (T&C.P) / other masters in relevant field with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or Master's level. **Qualified GATE score or equivalent national level exam in past.**
12.	Chemistry	M.Sc. in Chemistry (Organic / Inorganic/ Analytical/ Physical Chemistry/ Biochemistry with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or Master's level. **Qualified GATE/NET score or equivalent national level exam in past.**
13.	Humanities and Social Sciences	M.A. / MBA in English / Sociology /Psychology / Management with a minimum of First Class. **Qualified GATE/NET score or equivalent national level exam in past.**
14.	Mathematics	M.Sc. in Mathematics / Applied Mathematics with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Master's level. **Qualified GATE/NET score or equivalent national level exam in past.**
15.	Physics	A Master's Degree in the concerned or an allied subject with a minimum of First Class (C.P.I. or C.G.P.A. greater than 6.75 on a 10 point scale) at Bachelor's or Master's level. **Qualified GATE/NET score or equivalent national level exam in past.**

Note: *Candidates, whose M.E. / M.Tech/ M.Arch. / M.Plan. / M.Sc. result is awaited, can also apply for Ph.D. program. They will have to submit the result of M.E. / M.Tech/ M.Arch. / M.Plan. / M.Sc. exam before Janaury 31, 2016, till that time their registration will be provisional.*

1.4 ADMISSION PROCEDURE

1.4.1 The application form is available on Institute website **www.vnit.ac.in**. The form, duly filled in by the candidate, along with xerox copies of the certificates and photograph duly attested and crossed DD/ Bankers Check of amount Rs. 500/- (non-refundable) towards processing fee drawn in favour of The Director, VNIT, Nagpur, payable at Nagpur, should be send to **Dy. Registrar (Academic), VNIT, South Ambazari Road, Nagpur-440 010** and must reach on or before the last date of submission of application form (clearly mention admission category and department on the envelop in bold letters). **Incomplete applications and applications received after the last date are liable to be rejected.**

1.4.2 All Candidates will be required to appear for written test to be conducted in the respective departments on the date specified in the information brochure. Further, the candidates shortlisted on the basis of performance in the written test shall be interviewed.

Top most scorer of the written test will be normalized to 100 and marks of other candidates will be scaled accordingly. Then depending on the number of candidates to be called for the interview, Department can set a cut-off normalized score. However, normalized cut-off below 40% is not allowed. Candidates will be required to appear for written test / interview at their own cost.

1.4.3. The interviews for the short listed candidates will be conducted in the concerned departments as per the schedule given in this brochure. The constitution of the interview committee will be as follows:

1. **HoD of the concerned department - Chairman**
2. **Dean(R&C) / Dean (Acd)/ Professor from other department - Director's Nominee**
3. **All faculty members from the concerned department/ discipline who are recognized Ph.D. supervisors– Members**

1.4.4
(i) He/ She should have qualified GATE/NET score. The GATE/NET score, percentile GATE score as well as qualified mark should be stated.
(ii) Candidate having M.E. / M. Tech. degree should have **qualified GATE or equivalent national level exam in past**.
(iii) Candidate should also score minimum 40% marks in Interview for selection.
(iv) Final list will be prepared based on following points
Written Exam (As per 1.4.2)	-	**40%**
Percentile Gate Score	-	**40%**
Interview	-	**20%**

Calculation of GATE/NET SCORE:
40% mark weightage for GATE = (0.40) x (percentile GATE score of the candidate)

Percentile GATE score = 100 x ((Number of candidate appeared in the exam – candidate's rank) / (Number of candidate appeared in the exam))

1.4.5 The provisional list of selected candidates will be displayed on Institute's website and no separate intimation will be sent to the candidates. Registration will be w.e.f. **January 1, 2016.** Candidates shall report to Dy. Registrar (Academic) for admission alongwith DD of prescribed fees.

1.4.6 Candidate shall report to the concerned department for allotted Supervisors. Candidate in consultation with the supervisor shall identify the area of research and prepare a synopsis. The supervisor will propose a **Research Progress Committee, (RPC)** for Ph.D. programme. The RPC shall monitor the progress of Ph.D. work of the candidate.
Following shall be the composition of RPC.

Head of the Concerned Department – (Chairman)
Supervisor(s)
Expert from Department (nominated by supervisor & approved by HoD)
Expert from allied Department/ Discipline (nominated by supervisor & approved by HoD)

1.4.7 RPC shall recommend the courses to be undertaken by a candidate as per norms.

1.5. REQUIREMENT OF COURSE WORK

Requirement of course work for Ph.D.

Program	Qualification	Courses to be completed
Ph.D.	M. Sc. / M.A.	24 credits
Ph.D.	M. Sc. / M.A. with M. Phil.	12 credits
Ph.D.	M.E. / M. Tech. / M. Arch./ M.Plan	12 credits

RPC may recommend more course work if feel necessary. In addition to above, candidate will be required to undergo course in **Research Methodology** (Audit Course). Ph.D. candidate will be required to complete the course work within **one year** of joining the program.

1.6 MINIMUM DURATION OF PROGRAM

1.	Ph.D. (Full Time) with Teaching Assistantship *	Three Years
2.	Ph.D. (Full Time) Sponsored (place of research work VNIT only)	Three Years
3.	Ph.D. (Full Time) Sponsored Candidate category from 100% centrally funded research laboratories including public sector and private industries #	Three Years

1.7 VALIDITY OF REGISTRATION

1.7.1 The registration will be valid for a period of 6 years from the date of registration and no further extension will be granted under normal circumstances.

1.7.2. After 6 years, if a candidate wishes to continue research, he / she will be required to register again. A candidate should apply for re-registration before completion of 6 years of registration period. Failure to do so a candidate will be required to register again following the procedure for fresh candidates.

1.8 PAYMENT OF FEES AND DEPOSITS

a) Application fee for Ph.D. registration **: Rs. 500/-** Nonrefundable (Through DD drawn in favor of **Director, VNIT Nagpur)**

b) This is subject to the revision from time to time.

	Head	Ph.D. Admission (One Time)	Ph.D. Full Time with teaching assistantship (Per Sem)	Ph.D. Full Time (Sponsored) (Per sem)
1.	Registration fees	4000	--	--
2.	Library Deposit (refundable)	2400	--	--
3.	Library Fees	--	1600	3200
4.	Tuition Fees	--	7500	15000
5.	Retention Fees	--	1600	1600
6.	Internet Charges	--	1000	2000
7.	Infrastructure Usage Fee	--	1000	2000
	Grant Total RS.	**6400**	**12700**	**23800**

 # At the time of joining candidate has to pay one time fees and per semester fees together (i.e Rs. 19100/- for Ph.D. full time with teaching assistantship and Rs. 30200/- for Ph.D. Full Time (Sponsored)).

* Institute has student's medical aid fund policy and premium (one time <u>Rs. 3000/-</u>) towards same will be <u>required to be paid in addition to above fees.</u> This is applicable to full time scholars.

Examination Fee : The examination fee of **Rs. 25000/- for Ph.D. full time/ Sponsored** shall be paid by the candidate prior to the submission of the thesis.

1.9 R&D project STAFF OF VNIT FOR ADMISSION FOR Ph.D.

The candidate after joining as R&D project staff without GATE score will be given an opportunity to appear for the Ph.D. selection process as per the procedure followed by VNIT. If the R&D project funding is over then, the institute funding of stipend will be given subject to qualifying GATE/NET/SET examination. Stipend from institute will be made available till four years are completed from date of Ph.D. registration.

Note:
1. *The delay in payment of annual fees may invite cancellation of registration. Payment of fees is annual. Six-monthly seminar will not be conducted without payment of fees.*
2. *Students who will be staying in quarters will be required to pay license fees, water & electricity charges, etc. as applicable for occupation of these quarters as per the Estate Office Rule.*
3. *If the thesis submission is done after 30th June, candidate will be required to pay the fees for next academic session.*

2.0 SYLLABUS FOR WRITTEN TEST

The syllabus for written test to be conducted (1.9.1) / Areas of Research (1.9.2) for Admission to Ph.D. (Full Time).

2.0.1. SYLLABUS (Department-wise)

SN	Name of Department	Syllabus for Written Test

1.	Civil Engineering	A. Environmental Engg
		  a) Water Supply & Treatment
		  b) Sewerage and Sewage Treatment
		  c) Air pollution & Solid waste
		B. Water Resources Engg.
		  a) Irrigation Engineering
		  b) Hydrology & Water Resources Engg.
		  c) Fluid Mechanics
		C. Transportation Engg.
		  a) Traffic Engg.
		  b) Pavement Design
		  c) Highway Construction Materials
		D. Construction Management & Concrete Engg.
		  a) Concrete Structure & Concrete Technology
		  b) Construction Management
		  c) Building Technology
		E. Geotechnical Engineering
		  a) Soil Mechanics
		  b) Foundation Engineering

2.	Mechanical Engineering	a) Engineering Thermodynamics b) Fluid Mechanics c) Heat Transfer d) Theory of Machines e) Machine design f) Production Technology g) Workshop Technology h) Measurements i) Computer Programming
3.	Electrical Engineering	a) Control Systems b) Electrical machines c) Power Systems d) Switchgear and Protection e) Power Electronics
4.	Electronics & Communication Engineering	a) Electronic Devices & Circuits, Analog Circuits b) Digital Circuits & Microprocessors c) Electromagnetics d) Electronic measurements f) Analog & Digital Communication g) Digital Signal Processing h) Computer Organization i) UHF & Microwave j) Linear Networks

5.	VLSI & Nanotechnology	a) Electronics Devices & Circuits, Analog Circuits b) Digital Circuits & Microprocessors c) Electromagnetics d) Electronic measurements f) Analog & Digital Communication g) Digital Signal Processing h) Computer Organization i) UHF & Microwave j) Linear Networks
6.	Computer Science Engineering	a) Programming & Data Structures b) System Programming/OS c) Compiler d) Theory of Computation e) Analysis of Algorithm f) Discrete Mathematics g) Computer Organization h) Database Management Systems i) Computer Networks
7.	Chemical Engineering	a) Mass Transfer, b) Heat Transfer, c) Chemical Reaction Engineering, d) Fluid Mechanics, e) Process Calculations, f) Process Control, g) Mechanical Operation, h) Chemical Engineering Thermodynamics
8.	Metallurgical & Materials Engineering	a) Physical metallurgy b) Extractive Metallurgy c) Foundry Technology d) Mechanical processing e) Testing of Materials f) Polymeric and Ceramic Materials g) Composites h) Advance Materials
9.	Mining Engineering	a) Rock Mechanics and Rock Engineering b) Surface and Mine Environment Engineering c) Rock excavation engineering and blasting d) Drilling, Exploration and Mineralogy e) Mining Methods : Surface and underground f) Mining Machinery
10.	Applied Mechanics	a) Engineering Mechanics and Strength of Materials b) Theory of Structures c) Design of Steel Structures d) Design of Concrete Structures e) Computer Programming
11.	Architecture & Planning	a) Architecture, Art & Designe b) Building sciences & Technology c) Issues in relation to built environment like sustainable development, behavioral aspects, cultural issues etc. d) Historical aspects of builts environment e) Issues related to urban areas like Housing, Urban Design, Conservation, Planning, Infrastructure, Transportation etc. f) Fundamentals of Social Research.

12.	Physics	Syllabus as that for NET in Physics
13.	Chemistry	Syllabus as that for NET in Chemistry
14.	Mathematics	a) Linear Algebra, b) Real Analysis, c) Complex Analysis, d) Ordinary Differential Equations, e) Partial Differential Equations, f) Integral Transforms, g) Numerical Analysis, h) Probability & Statistics
15.	Humanities	a) English – Syllabus as that for NET in English b) Sociology- Syllabus as that for NET in Sociology c) Management – Syllabus as that for NET in management d) Psychology - Syllabus as that for NET in Psychology

2.0.2. AREAS OF RESEARCH (Department-wise)

S N	Department	Area of Research
1)	Civil Engineering	1) Water Distribution Systems 2) Environmental Management 3) Water and Waste Water Treatment 4) Solid and Hazardous Waste 5) Traffic Engg. 6) Pavement Design 7) Highway Construction Materials 8) Durability of concrete 9) High Performance Concrete 10) Self-Compacting Concrete 11) Bond Strength of Concrete with Reinforcement 12) Building Construction & Technology 13) Water Resources Engineering 14) Green Building 15) Construction Management 16) Remote Sensing & GIS Applications 17) Geotechnical Engineering
2)	Mechanical Engineering	1) Design Engineering 2) Thermal Engineering 3) Production Engineering
3)	Electrical Engineering	1) Power Electronics 2) Switchgear & Protection 3) Renewable Energy Resources 4) Power System 5) Electric Drives 6) Electrical Machines 7) Control System
4)	Electronics & Communication Engineering	1) Embedded Systems 2) Communication Engineering 3) Signal Processing 4) Electronics Design & Manufacturing 5) Image Processing

		6) Antennas
		7) Microvave Engineering
5)	VLSI & Nanotechnology	1) Embedded Systems
		2) VLSI/ Nanoelectronics /MEMS
		3) Communication
		4) Signal Processing
6)	Computer Science	1) Parallel & Distributed Computing
		2) Data Mining & Warehousing
		3) Pattern Recognition
		4) Security
		5) Artificial Intelligence
		6) Soft Computing
		7) Mobile Computing
		8) Knowledge Management
		9) IT and IT enables services
7)	Chemical Engineering	Process Intensification, Advanced Separation Process, Computational Fluid Dynamics, Adsorption, Modeling and Simulation, Supercritical Fluid Extraction, Nanotechnology, Polymer, Nano Fluids, Nano Synthesis, Carbon Nano Tubes Chemical Reaction Engineering, Green Technology, Biotechnology and Biochemical Engineering, Agro based Nanomaterials and Applications
8)	Metallurgical and Materials Engineering	1) Wear of Composite and Metallic Materials
		2) Welding Metallurgy
		3) Development of Polymer Blends And Composite Materials
		4) Fatigue, Creep and Fracture Behavior of Materials
		5) Corrosion Science & Engineering
		6) Alloy Development
		7) Nano – Bio Materials/ SMART Materials
		8) Polymers Polymeric/Ceramics & Composite Materials
		9) Processing of Materials
		10) Waste Materials Utilization
9)	Mining	1) Blasting and Rock Fragmentation
		2) Dust and Other Environmental Pollution in Mines
		3) Slope Stability and Geo-Mechanics
		4) Applicability of System Engineering and Safety Engineering
		5) Reliability and Productivity Analysis of HEMM
		6) Numerical Modeling for Rock Mechanics Applications
		7) Mine Design
10)	Applied Mechanics	1) Earthquake Engineering
		2) Nonlinear Analysis of structures
		3) Structural Engineering
11)	Architecture & Planning	1) Urban Planning
		2) Environmental Planning
		3) Disaster Risk Management
		4) Green Infrastructures
		5) Urban Biodiversity Conservation
		6) Urban Design
		7) Urban Infrastructure
		8) Conservation
		9) Housing
		10) Energy Efficient Architecture

		11) Vernacular Architecture Settlements
		12) Building Acoustics and Illumination
		13) Pedagogy in Architecture
		14) Built Environment and Human Behaviour Studies
		15) Urban Heat Island Studies
		16) Urban Sustainability
		17) Human / User Responsive Design
		18) Universal Design
12)	Physics	1) Solid Electrolytes
		2) Glasses and Glass Ceramics
		3) Nanomaterials / Biomaterials
		4) Polymers Polymeric/Ceramics & Composite Materials
		5) Solar Cells
		6) Sensors
		7) Supercapacitors
		8) Quantum dots
		9) Magnetic Nanoparticles
		10) Solid Oxide Fuel Cells
		11) Thin films
		12) Heterojunctions
		13) Advanced Materials/SMART Materials
		14) Physics of Materials
		15) Advanced Processing
		16) Simulation and Modeling
		17) Theoretical Physics
		18) Quantum Mechanics
13)	Chemistry	1) Polymer Composite / Nano Composites
		2) Conducting Polymers / Nanomaterial, Photocatalysis
		3) Microwave / Ultrasound / Assisted Organic Synthesis
		4) Utilization / Modifications of Industrial Waste- Lignin
		5) Chromatographic Analysis (gc/hplc)
		6) Superamolecular polymers for industrial applications
		7) Chemical / Electrochemical Biosensors
		8) Photochemistry and Photobiology
		9) Biochemistry and Biophysical Chemistry
		10) Thermodynamics Chemistry/Green Chemistry/Heterogeneous Catalysis
		11) Elastometric composites
		12) Porous Materials, Hybrid System for Environmental Application
		13) Crystal Engineering & Superamolecular Chemistry, Organic Soft Materials and Liquid Crystals
		14) Advanced Materials/SMART Materials
		15) Biomaterials
		16) Ceramics Materials/ Composite Materials
		17) Advanced Processing
		18) Simulation and Modeling
14)	Mathematics	1) Relativity & Cosmology
		2) Numerical Analysis
		3) Singular Perturbation Problems
		4) Fluid Mechanics
		5) Operator Theory
		6) Functional Analysis

		7) Spectral Element Methods for Partial Differential Equations 8) Fixed Point Theory : Nonlinear Analysis 9) Singular Boundary Value Problems 10) Non linear dynamics 11) Mathematical Ecology
15)	Humanities	1) Psychology 2) Sociology 3) Organizational Behavior/ HRM 4) English Language & Literature 5) Entrepreneurship Development

ANNEXURE – I

Ph.D. (full time) sponsored (place of research work VNIT only) category candidates should note that :

1. No teaching assistantship will be paid to sponsored candidates.
2. Since it is a Full Time program, the candidate is required to be available for full time in the respective department for the entire duration of the program (i.e. minimum THREE YEARS from the date of registration).

CERTIFICATE FROM THE HEAD OF THE ORGANISATION
(On the letter-head of Industry / Organization / Institute)

Shri / Ms. _____ who is serving in this Industry/Organization/Institute from _____as (designation) _____ is hereby sponsored for Ph.D. (Full time) program in _____ Department of VNIT Nagpur. In case of his/her selection he/she will be relieved for the complete duration of the Ph.D. program (Minimum 3 years from the date of registration).

Date : _____   Signature : _____

                                          Name : _____

                                          Designation : _____

Office Seal : _____

ANNEXURE – II

Ph.D. (full time) sponsored candidate category from 100% centrally funded research laboratories including public sector and private industries candidates should note that:

1. No teaching assistantship will be paid to candidates admitted under this category.

CERTIFICATE FROM THE HEAD OF THE ORGANISATION
(On the letter-head of Industry / Organization / Institute)

Shri / Ms. ___ _____ who is serving in this Industry/Organization/Institute from _____as (designation) _____ is hereby sponsored for Ph.D. (Full time) program in _____ Department of VNIT Nagpur. In case of his/her selection he/she will be relieved for the completion of course work and minimum stay at VNIT, Nagpur for 6-12 months as per the condition given on page 2 section 1.1.

Date : _____   Signature : _____

                                     Name : _____

                                     Designation : _____

Office Seal : _____