

MeitY

Information Brochure July 2017

Ph.D. Admission
under Visvesvaraya Ph.D. Scheme of
Ministry of Electronics & Information Technology
(MeitY)
Govt. of India

for

A. Ph.D. (Full Time) with stipend.

*(Benefits in addition to Stipend → HRA per month +
Contingency Rs. 30000/- per year + Support upto Rs.
50000/- for attending International Conference on
approval)*

B. Ph.D. (Full Time) Industry Sponsored.



Visvesvaraya National Institute of Technology,
South Ambazari Road,
Nagpur – 440 010

1. PREAMBLE

VISVESVARAYA PhD SCHEME FOR ELECTRONICS AND IT

Department of Electronics and Information Technology, Government of India has conceived a scheme to enhance the number of PhDs in the Electronic Design and Manufacturing (ESDM) and IT/IT enabled Services (ITES) sector. Cabinet Committee on Economic Affairs (CCEA) has approved the scheme with a total estimated cost of Rs 401 crore (Rupees Four Hundred One Crore only) over a period of nine years. Media Lab Asia (a Section-25 not-for-profit organization of Department of Electronics and Information Technology, Ministry of Communications and Information technology, would be responsible for providing implementation support to the scheme.

Salient Features of this PhD Scheme are as follows:

- ❖ Thrust to R&D, create innovative ecosystem and enhance India's competitiveness in these knowledge intensive sectors.
- ❖ To fulfill the commitments made in National Policy on Electronics (NPE) 2012 and National Policy on Information Technology (NPIT) 2012.

1.1 Programmes Offered by The Institute

| Type | Programme | Departments |
|------|--|---|
| A | Ph.D. (Full Time) with Stipend | Electronics and Communication Engineering |
| B | Ph.D. (Full Time) Industry Sponsored * | Centre for VLSI & Nano Technology |

***Sponsored candidates will be required to submit a separate sponsorship certificate given in Annexure- I**

1.2 Important Dates To Remember –

| | |
|--|--------------|
|) Date of notification | - 23.06.2017 |
|) Last date of submission of application | - 12.07.2017 |
|) Display of list of eligible candidates | - 14.07.2017 |
|) Written test for eligible candidates | - 20.07.2017 |
|) Interview for short listed candidates | - 20.07.2017 |

1.3 Schedule For Written Test & Interview (in respective department)

| Department | Written Test (Date & Time) | Interview (Date & Time) |
|---|------------------------------------|----------------------------------|
| Centre for VLSI & Nano Technology | 20.07.2017 11.30 am to 12.30 pm | 20.07.2017 2.30 pm to 5.00 pm |
| Electronics & Communication Engineering | 20.07.2017 10.00 am to 11.00 am | 20.07.2017 2.30 pm to 5.00 pm |

2. ELIGIBILITY CRITERIA

| Sr. No. | Name of the Department | Eligibility for Ph.D |
|---------|---|---|
| 1 | Centre for VLSI & Nano Technology | 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. Candidate should have qualified GATE score or equivalent national level exam in past. |
| 2 | Electronics & Communication Engineering | B.E. / B. Tech. /AMIE/AMIETE/B.Sc.(Engg.) of four years duration in one of the following branches : Electronics and Communication /Electronics and Telecommunication/ Electronics/ Electronics and Instrumentation with a minimum of First Class or C.G.P.A. not less than 6.75/10 AND M.Tech/M.E./M.S.(at least two year program) with specialization in RF/Wireless/Antenna/ Signal and Image Processing/Communication Systems/ Embedded Systems/Biomedical Engineering with First class or CGPA not less than 6.75 out of 10. AND Candidate should have qualified GATE score in past. |

Candidates, whose M.E./ M.Tech. Result is awaited, can also apply for Ph.D. program. They will have to submit the result of M.E./M.Tech. exam before July 31, 2017, till that time their registration will be provisional; or else cancelled.

2.1 Special Instructions for Type B (Ph.D. Full time, Industry sponsored)

The candidates desirous of seeking admissions for Ph.D. program under “MeitY Industry sponsored candidate” scheme should meet the following requirements:

1. Candidate possessing M.E. / M.Tech. degree having qualified GATE exam in past or any equivalent national level examination and he/she should have minimum 5 years experience in industry.

OR

Candidate possessing M.E. / M.Tech. degree should have minimum 8 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. In case wherever co-supervisor is not available, candidate would interact with supervisor regularly.
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 pre submission 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 candidates from academic institutes are 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)

In case candidate fails to complete the course work within one year from the date of registration, his/her admission will stand cancelled automatically.

2.2 Essentials Requirements for Type B (Ph.D. Full time, Industry sponsored)

1. The supporting Industry must give No Objection cum financial support certificate for the candidate citing his availability for the minimum contact period for completion of course work (given in *Annexure I*)
2. The supporting industry must certify the available research facility with specifications (**point no. 9 in application form**).
3. The desirous candidate must submit a SoP justifying his/her worthiness by giving the details of research contributions and achievements so far, Research Interests and other professional competencies (**point no. 8 in application form**).

3.0 ADMISSION PROCEDURE

3.1 The application form is available on institute website www.vnit.ac.in.

Candidate has to pay application fee of Rs 500/- online through "State Bank Collect". After payment, SBI Collect generates receipt mentioning **SB Collect Ref. No.** (e.g.: DU65.....) Candidate shall mention this **SB Collect Ref. No** in the application form & also print a copy of the receipt.

Last date of payment of application fee (Online) - **Tuesday 11th July, 2017**

The duly filled application form, along with Xerox copies of the certificates (self-attested) & photograph, and copy of SBCollect receipt, should be sent to –

Dy Registrar (Academic), VNIT, South Ambazari Road, Nagpur – 440010

Last date of receiving application - **Wednesday 12th July, 2017**

Incomplete application and/OR applications received after the last date are liable to be rejected. Candidates should mention the department name on the Envelope.

3.2 All candidates will be required to appear for the written test, which will 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 appear for written test / interview at their own cost.

3.3 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 (Acad)/ Professor from other department - Director's Nominee
3. All faculty members from the concerned department/ discipline who are recognized Ph.D. supervisors– Members

3.4

(i) Candidate 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 = $(0.40) \times (\text{percentile GATE score of the candidate})$

Percentile GATE score = $100 \times ((\text{Number of candidate appeared in the exam} - \text{candidate's rank}) / (\text{Number of candidate appeared in the exam}))$

3.5 The provisional list of selected candidates will be displayed on Institute's website on 21st July, 2017 and no separate intimation will be sent to the candidates. Registration will be w.e.f. **July 24, 2017**. Selected candidates shall report to Dy. Registrar (Academic) for admission and payment of prescribed fees latest by 31st July (Monday), 2017.

3.6 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. program. 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)

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

4. SPECIALIZATION FOR PH.D. STUDENTS UNDER MEITY SCHEMES

(i) 5G Mobile Networks:

- a) Massive MIMO, Carrier Aggregation, millimeter wave
- b) Energy efficiency at UE (10 x longer battery life) and BS
- c) 100x scaling of connected devices per BS using low data rate low power communication
- d) Low latency mobile communication (5x reduction in end-to-end latency) to provide real time applications
- e) 1000x scaling of mobile data volume per sq km to handle high density areas like stadium, city centers
- f) HetNet consisting of licensed and unlicensed band technologies and involving enhanced Inter-Cell Interference Coordination (eICIC)
- g) Cognitive radios and Self-organizing networks (SON)
- h) Device-to-Device (D2D) communication

(ii) Internet of Things

- a) Signal and Image Processing
- b) Medical Imaging
- c) SoC (System-on-chip) with integrated communication module, sensors and battery/chargers for various verticals like eHealth (Monitor SP, Heart rate etc) , eTransportation (tracking vehicles and goods), and others (monitoring calorie consumption and burn rate, tracking of balls in games like cricket football etc with integrated sensors)
- d) Energy harvesting and energy efficiency
- e) Remote operations of excavators, crane, warehouse, logistics etc through robotics and reliable communication
- f) Signal Processing on IOT

(iii) Chip Design and Related Areas

(iv) Nano Electronics, MEMS

5. Financial Assistance for Candidates Seeking Admission as Type A

- i. The fellowship is available only for the maximum duration of 3.5 years.
- ii. Fellowship of Rs 31,500 p.m. (I&II Yr); Rs 35,000 p.m. (later on)
- iii. Annual Contingency grant/support: @Rs 30,000 per year for consumables, etc.
- iv. Reimbursement of Rent (ROR): These Ph.D candidates shall not be provided accommodation on VNIT Campus. ROR would be on reimbursement basis, based on actual and subject to Government of India norms.

Support for attending International conferences: Support for attending up to two renowned international conferences for full time candidate: @ up to maximum support of Rs.50,000/- for each international conference would be provided subject to approval from MeitY. No support from institute would be provided for contingency, conferences (National / International) etc., in any form (e.g. TEQIP) for these candidates from the institute.

6. REQUIREMENT OF COURSE WORK and OTHER REQUIREMENTS

Requirement of course work for Ph.D.

| Program | Qualification | Courses to be completed |
|---------|-----------------|--|
| Ph.D. | M.E. / M. Tech. | 06 credits (Two Courses of 3 credit each) |

RPC may recommend more course work if 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.

7. MINIMUM DURATION OF PROGRAM

The minimum duration for Ph.D. Program is **THREE** Years.

8. VALIDITY OF REGISTRATION

- 8.1 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.
- 8.2 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. In case the candidate fails to do so, he will be required to register again following the procedure for fresh candidates.

9. PAYMENT OF FEES AND DEPOSITS

a) The following table gives the existing fee structure for Ph.D. students. It may be noted that, this is subject to the revision from time to time.

| | Head | Ph.D. Admission (One Time) | Ph.D. Full Time (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 and Rs. 30200/- for Ph.D. Full Time (Sponsored)).

Examination Fee : The examination fee of **Rs. 30,000/- for Ph.D. full time/ Sponsored** shall be paid by the candidate prior to the submission of the thesis.

10. SYLLABUS FOR WRITTEN TEST

The syllabus for written test to be conducted) / Areas of Research for Admission to Ph.D. degree under MeitY.

| SN | Name of Department | Syllabus for Written Test |
|----|---|--|
| 1. | Centre for VLSI & Nano Technology | VLSI Implementation of Following Topics a) Electronics Devices & Circuits, Analog Circuits b) Digital Circuits & Microprocessors c) Electromagnetics d) Electronic measurements e) Analog & Digital Communication f) Digital Signal Processing g) Computer Organization h) UHF & Microwave i) Linear Networks |
| 2. | Electronics Communication Engineering & | a) Electronic Devices & Circuits, Analog Circuits b) Signals and systems c) Electromagnetics d) Electronic measurements f) Analog & Digital Communication g) Digital Signal Processing h) Wireless Communication i) Digital Image Processing j) Linear Networks |

Annexure – I

1. No teaching assistantship will be paid to candidates admitted **industries sponsored scheme under MeitY** 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. 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 4 section 2.2 (point no.1).

Date : _____

Signature : _____

Name : _____

Designation : _____

Office Seal : _____