

**BIRLA INSTITUTE OF TECHNOLOGY
MESRA, RANCHI-835215**

**REGULATIONS FOR RESEARCH PROGRAMMES LEADING TO THE
AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY
2010**

PREAMBLE

1. Consistent with the availability of the required infrastructure, the Birla Institute of Technology, Mesra, Ranchi, a deemed university u/s 3 of UGC act, 1956, hereinafter referred to as the Institute shall provide facilities for research in several areas of Science & Technology, Engineering, Architecture, Pharmacy, Management, Humanities and other interdisciplinary fields leading to the award of the Degree of Doctor of Philosophy, hereinafter abbreviated as Ph.D.
2. The Regulations, hereinafter specified, lay down the procedure to be adopted for the research programme for the Ph.D. Degree of the Institute.
3. Department, wherever mentioned in these Regulations refers to a Department of the Institute.
4. Technical Council, wherever mentioned in these regulations, refers to the Technical Council of the Institute.
5. A scholar is any eligible person, who is registered at the Institute for any specific Ph.D. programme. Prior to registration, this person is referred to as an applicant.
6. Guide/Co-guide/Internal guide/External guide is a person approved by the Technical Council for the guidance of the Scholar while pursuing the programme of research leading to Ph.D. degree of the Institute.

Objectives of the Ph.D. Programme

7. The objectives of this programme are to impart research training to the scholar, and prepare him for a career in independent investigation and original research so as to enable him to make a significant contribution to knowledge in his/her field and profession. The training programme shall ensure that it is not, an end in itself, but a means for a fruitful research career.
8. To achieve these objectives, the training programme shall ensure the following :
 - (a) Acquisition of fundamental knowledge in the chosen discipline.
 - (b) Acquisition of in-depth knowledge in the field of research.

(c) Training in the use of research tools of the field, and develop skill and capability to conduct original research.

9. The testing and examination procedure to measure the achievement of these objectives is prescribed in these Regulations under appropriate headings.

Eligibility Qualification for the Ph.D. Programme

10. An applicant for admission to the Ph.D. programme of this Institute shall possess, normally, an M.Phil./Master's degree in Technology/ Engineering/ Pharmacy/ Management/ Architecture/ or equivalent, with a minimum of 60% marks (55% in case of Full-Time Sponsored candidates with a minimum of three years professional experience, and SC/ST candidates) at Master's level or an M.Phil./Master's Degree in Science/Humanities with a minimum of 55% marks (50% in case of Full-Time Sponsored candidates with a minimum of three years professional experience, and SC/ST candidates) at Master's level or any other discipline approved by the Technical Council of the Institute from time to time.

11. (i) However, if there is an applicant with B.Tech /B.E./B.Sc. Engg./B.Arch./B. Pharm./M.B.B.S. having a minimum of 60% marks (55% in case of Full-Time Sponsored candidates with a minimum of three years professional experience, and SC/ST candidates), the Technical Council may at its discretion consider his/her application for admission to the Ph.D. programme.

(ii) However, an applicant having professional qualifications such as Associate Member of Institution of Engineers (India)/ Aeronautical society of India or equivalent may be considered for admission to the Ph.D. programme only after he/she completes M.E. programme of any recognized university with a minimum of 60% marks (55% incase of Full-Time Sponsored candidates with a minimum of three years professional experience, and SC/ST candidates) at Master's level.

12. An NRI/ a foreign national excluding ex-students and faculty/staff members of B.I.T. International Centres, possessing any of the qualification listed at 10, 11(i), 11(ii) shall be required to clear TOEFL or any other examination prescribed by the Technical Council of the Institute from time to time to become eligible for admission to the Ph.D. programme.

Application for Admission to the Ph.D. Programme

13. (i) The Ph.D. programme shall be open to candidates of any Nationality in true spirit of an University Education provided that the candidate satisfies any one of the clauses 10,11 or 12 and where equivalence of his/her qualifications is established by the Equivalence Committee of the Institute.

13. (ii) Any applicant satisfying clause 13 (i), and seeking admission to the Ph.D. programme shall in the first instance submit an application in the prescribed Application

Form to the Vice Chancellor, through the Dean (Doctoral Research) of the Institute. The prescribed Application Form may be obtained from the Dean (Doctoral Research) or from the institute website www.bitmesra.ac.in. The external candidate seeking admission to the Ph.D. programme, however, shall also enclose the bio-data of proposed external guide, alongwith application and no objection certificate from the competent authority of his/her Organisation/Institution. Also, No Objection Certificate, from a competent authority of the Organization/Institution of the external guide to supervise candidate's work be enclosed. A certificate for providing the required research facilities to the candidate by the competent authority of the organization/institution must also be enclosed.

13. (iii) In case of joint-supervision the applicant must justify the involvement of more than one guide.

13. (iv) The Extension Centres may also process the application of candidate seeking admission to the Ph.D. programme, normally within the domain of activities of the center or in areas as may be approved by the Chairman, Technical Council from time to time. Applications of such candidates satisfying any one of the clauses 10,11 or 12, will be forwarded to Dean (Doctoral Research) for the needful.

14. (i) After scrutiny, the Dean (Doctoral Research) will forward the application to the Vice-Chancellor with his observation(s) /recommendation(s) indicating the Department through which the application may be processed.

14. (ii) Normally, the Department of the domain of Research Topic shall be the processing Department.

14. (iii) In case a candidate is working under joint guidance of two teachers of sister departments of the institute, then also the research topic shall determine the processing one from among the two departments.

14. (iv) In case a candidate is working under the joint supervision of a teacher of this institute and a person of proven merit from industry/ R & D organization/another institution or university, the department of the teacher of this institute (Internal Guide) will be the processing department.

14. (v) In case the domain of Research topic is interdisciplinary in nature, the "Interdisciplinary Committee" shall process the application of the candidate.

15. The Vice-Chancellor may then refer the application to the Admission Committee of the concerned Department/interdisciplinary committee /Extension center for further necessary action.

Guide for the Scholar

16. There shall normally be a Guide for each scholar embarking on a programme of research for Ph.D. degree, approved by the Technical Council. He/She shall normally be:

- (a) a Full-time faculty member of the Institute and
 - (b) a Ph.D. degree holder in the Institute with evidence of sufficient research in the proposed field of research.
- or
- (c) a Professor of the Institute holding a Master's degree, and with considerable amount of proven research experience in the field.

For greater participation of the faculty in the research programme and to build wider R & D base in the Institute, the Technical Council normally may restrict the number of Ph.D. scholars at a time under a guide to three for a Lecturer and Sr, Lecturer, and six for a Reader and eight for an Associate Professor/Professor. In case of joint supervision the number would be counted as half.

17. If considered necessary, the Technical Council may approve another guide who could be a teacher of the Institute or an expert of the domain for joint supervision and guidance of the scholar, possessing qualifications consistent with clause 16 and preferably residing at a place accessible to the candidate. In such a case, teacher/expert so appointed, shall be designated as co-guide/external guide as may be the case.

18. Also, in the event, the Technical Council permits an applicant from another institution/organization to be admitted to the Ph.D. Programme at the institute, the Technical Council may approve joint supervision of scholar's work by a suitably qualified external guide after examining his/her biodata. The application of such an external candidate must be forwarded by a competent authority of applicant's institution/organization. In this case, the internal guide shall be in accordance with clause 16. However, for industries/organizations located in and around Ranchi, the Technical Council may waive the requirement of an external guide.

19. Notwithstanding the provisions contained in the above Clauses, a teacher of this Institute who has considerable experience in his/her chosen field of research, may be permitted by the Technical Council to pursue his/her Ph.D. programme on his/her own without a guide, provided that the Admission Committee has recommended such a course of action. In all cases, Chairman of the Doctoral Committee will perform all the duties of the guide except the detailed supervision of the Thesis.

Function of the Guide(s)

20. The functions of the Guide/Internal guide shall be as under:

- (a) Assessment of the suitability and aptitude of the applicant for the proposed research work and reporting on the same to the appropriate Admission Committee, and the facilities required for the same.

(b) Critical evaluation of the proposed research work of the applicant with a view to ensure that it would be a piece of original work, and when completed, it would positively contribute to the knowledge in the field.

(c) Guidance and supervision of the work of the scholars after the approval and registration by the Technical Council.

21. The External Guide/Co-guide (if any) shall undertake joint supervision/guidance of the work of the scholar under mutual consultations with the Internal guide/guide.

Residence Requirement for External Scholar at this Institute/Extension Centre.

22. The residential requirement is essential to build the research atmosphere in the Institute. The residential requirement for external Ph.D. candidate will, normally be 24 weeks at the Institute/Extension centre. The duration of residency may, however, be spread over the duration of research activity. However, the Technical Council may waive residency requirement for scholars from the Institution/organizations located in and around Ranchi.

Admission Committee

23. (i) Each department shall have a Ph.D. admission committee duly approved by the Technical Council with the following composition:

- (a) Head of the Department (Chairman)
- (b) All professors or two teachers of the Department who are eligible to become Ph.D. guide, where there is less than two professors – Members
- (c) Two teachers from allied department – Members
- (d) The guide(s) of the candidate – Member (s)

23. (ii) The interdisciplinary committee shall have the following composition:

- (a) Dean (Doctoral Research) - Chairman
- (b) Dean (P.G. Studies) - Member
- (c) Two Experts from the Departments
Related to the domain of research - Members
- (d) The guide(s) of the candidate - Member (s)

23. (iii) Extension Centers of the Institute, within India and abroad, shall also have Ph.D. admission committee duly approved by the Technical Council with the following composition.

- (a) The Director/The Coordinator of the centre - Chairman
- (b) Two professor/two Senior Faculty members of the centre - Members.

- (c) One eminent person from industry/R&D organization/
other institution of related field - Member
- (d) The guide(s) of the candidate - Member (s)

Action by the Admission Committee on receipt of the candidate's application

24. On receipt of the application from the Vice-Chancellor, the chairman of the committee shall call the applicant for an entrance test/seminar presentation and interview on a date and time convenient to the members of the Committee.

25. The Committee, when it meets, will conduct entrance test/seminar presentation and interview for the candidate, check his/her credentials, assess his/her suitability to undertake research in the field proposed by him/her, and submit its recommendations in the prescribed format (Annexure – I) to the Vice-Chancellor through the Dean (Doctoral Research) covering the following aspects:

- (a) Utility of the proposed research programme.
- (b) Suitability of the applicant to undertake the programme.
- (c) Availability of infrastructure for undertaking the research programme.
- (d) Extent of external assistance required (if any)

If all the requirements are met then recommendations alongwith the proposed Doctoral Committee for the candidate shall be sent to the Vice Chancellor for his perusal and placement before the Technical Council.

Once the Technical Council has approved the Guide(s) and Doctoral Committee, actual executive orders constituting the Committee will be issued by the Registrar.

26 (a) Soon after the approval of the Technical Council for the registration, the Registrar will advise the candidate to pay the required fees as decided by the Institute from time to time.

All concerned will be intimated of the registration of the candidate by the Registrar after the necessary fees are deposited by the candidate. The date on which fees are deposited shall be the date of registration.

26. (b) After the candidate is duly-registered, any change in the department or place or centre of the guide/internal guide, shall not alter the processing department/centre and the scholar may continue to work under the supervision of the same guide.

26. (c) In case of superannuation / resignation/demise of the guide/ external guide, the Technical Council may appoint a faculty member of the Institute/expert from the concerned organization as the guide/external guide as the case may be, on receiving a formal request from the scholar.

26. (d) However, if a guide/internal guide resigns from the institute or superannuates after the presentation of first annual progress report but prior to the submission of thesis by the scholar, the Technical Council may appoint him/her as a Co-guide on receiving a formal request from the scholar. Further, if a guide/internal guide resigns from the institute or superannuates after the submission of the Ph.D. thesis, the Technical Council may permit him/her to continue as guide on receiving a formal request by the scholar.

26 (e) The scholar/guide(s) should intimate the Institute regarding any change of his/her employment status, if any.

27. The Registration for Ph.D. Programme will normally be valid for a duration of 6 years. In case the candidate fails to submit his work within 6 years, he/she would be required to make a fresh application for Registration. However, the submission of thesis for such candidates may be done at any time after Registration, but within a maximum period of two years.

Pre-Ph.D. Qualifying courses:

28.(a) **All Ph.D. Scholars with M.E./ M.Tech. /M.Pharm/ M.Arch/ MBA (after B.E./B.Tech/M.Sc./M.A./M.Com. or equivalent) or equivalent qualification will be required to complete the following courses in one year (two semesters) after registration to the Ph.D. Programme.**

First Semester:

- (i) Theory courses related to the discipline of research : 2 unit
- (ii) Term papers related to the discipline of research. : 3 unit

Second Semester:

- (i) Theory courses related to research methodology/
Computational Technique/Scientific Computing/
Data analysis, etc. : 2 unit
- (ii) Project based on Literature Review/ Research
Methodology, etc. related to the domain of research: 3 unit

28.(b) **All Ph.D. Scholars with MBA (after B.A./B.Sc./B.Com. or equivalent)/M.Sc./MCA qualification will be required to complete the following courses in one year (two semesters) after registration to the Ph.D. Programme.**

First Semester:

- (i) Theory courses related to the discipline of research : 2 unit
- (ii) Term papers related to the discipline of research : 4 unit

Second Semester:

- (i) Theory courses related to research methodology/
Computational Technique/Scientific Computing/
Data analysis, etc. : 2 unit
- (ii) Project based on Literature Review/ Research
Methodology, etc. related to the domain of research : 4 unit

28.(c) **All Ph.D. Scholars with B.E./B.Tech./B.Pharm/B.Arch./M.B.B.S. will be required to complete the following courses in two years (four semesters) after registration to the Ph.D. Programme.**

First Semester:

- (i) Theory courses related to the discipline of research : 2 unit
- (ii) Term paper related to the discipline of research. : 1 unit
- (iii) Laboratory course work/seminar : 2 unit

Second Semester:

- (i) Theory courses related to research methodology/
Computational Technique/Scientific Computing/
Data analysis, etc. : 2 unit
- (ii) Term paper(s)/projects related to the discipline of
research. : 2 unit
- (iii) Seminar : 1 unit

Third Semester:

- (i) Theory courses related to the domain of research : 2 unit
- (ii) Term paper/project related to the domain of research.: 1 unit
- (iii) Laboratory Course work/Seminar : 2 unit

Fourth Semester:

- (i) Comprehensive Report on the domain of research : 5 unit

The maximum duration for completion of the course programmes will be two years for categories 28.(a) & (b) and three years for category 28.(c).

The theory courses shall be offered through class room instructions/directed studies.

29. **If a scholar successfully completes his/her Pre-Ph.D. qualifying courses as mentioned in Clause 28.(a) , 28.(b) or 28 (c) above, as the case may be, he/she will be awarded the Degree of Master of Philosophy (M.Phil.) of the Institute.**

30.(a) Scholars will be encouraged to take up a foreign language such as French/German/Russian, etc. as a Non-credit course during the programme.

30.(b) A scholar of the Ph.D. Programme may be advised to take appropriate/audit courses at the postgraduate levels at the Institute, without payment of any fees, to make up for his deficiencies or as a help in preparation for the written qualifying examination.

30.(c.i) However, in case of a teacher of this Institute pursuing the Ph.D. programme, the Doctoral Committee may exempt the scholar from taking the written qualifying examination in the courses, provided he/she has been teaching the courses at the postgraduate level for a minimum of two years.

30.(c.ii) Similar exemption may be granted to a scholar if he/she had passed an examination on the subject(s) in his/her P.G. course and has secured not less than B grade (50% marks) in the subject/subjects, provided that he/she had taken the examination not earlier than **three** years from the date of his/her application.

30.(c.iii) Similar exemption may be granted to a scholar if he/she had passed an examination on the subjects in his/her M.Phil. course with specialization related to the domain of proposed research, provided that he/she had taken the examination not earlier than **three** years from the date of his/her application.

30. (c.iv) However, the scholars availing exemption under section 30.(c.i), 30. (c.ii) or 30. (c.iii) will not be eligible for the award of the Degree of Master of Philosophy (M.Phil.) of Institute.

Doctoral Committee

31. (i) The Doctoral Committee for a scholar in any department of the institute shall consist of normally five members as given below:

- (a) The Head of the Department which processed the application, he/she or his/her nominee shall be the Chairman of the Committee.

- (b) The Guide(s) – Member (s)
- (c) One teacher of the Department – Member
- (d) Two experts from the Departments related to the domain of research – Member(s)

31. (ii) For Scholars registered by the interdisciplinary committee, the Doctoral Committee shall have the following composition:

- (a) Dean (Doctoral Research) - Chairman
- (b) Dean (P.G. Studies) - Member
- (c) The Guide(s) - Member
- (d) Two Experts from the Departments Related to the domain of research - Members

31. (iii) For Extension Centres, the Doctoral Committee shall consist of the following members:

- (a) The Director/Coordinator - Chairman
- (b) The Guide(s) - Member(s)
- (c) One teacher of the centre - Member
- (d) Two faculty members nominated by the Vice-Chancellor - Members

The members of the Doctoral Committee other than the Chairman drawn from the faculty should normally possess a research degree/research experience of proven merit.

Function of the Doctoral Committee

32. After the registration of the scholar for the programme, the Doctoral Committee shall perform the following functions:

- (a) Shall recommend the qualifying courses for the scholar as specified in clause 28 to 30 and as approved by the Technical Council. The recommendaton in the prescribed format (Annexure II) shall be submitted to the Dean (Examinations) through Dean (Doctoral Research) for conducting the qualifying examination.
- (b) Shall make at least yearly review of the scholar in his/her research work, in association with the guide/guide and co-guide/internal & external guides, if any, as may be feasible.
- (c) Shall forward annual report to the Vice-Chancellor, through Dean (Doctoral Research) on the progress of scholar’s research programme in the prescribed format (Annexure III).

(d) Suggest suitable remedial action to the appropriate authority if the scholar's progress is not satisfactory for any reason.

(e) Shall organize a Pre-Ph.D. submission Seminar after the completion of the research work of the scholar where the candidate should submit the complete text of his/her thesis in **typed and unbound form** and present the seminar. The Doctoral Committee shall submit its recommendation on the seminar in the prescribed format (Annexure – IV) through the Dean (Doctoral Research), to the Vice Chancellor.

(f) When scholar submits his/her thesis, the Doctoral Committee, after due verification of the compliance requirements under clause 33, shall recommend names of examiners for the evaluation of the Thesis. These names shall be in the form of a panel, and this shall be submitted through Dean (Doctoral Research) to the Vice-Chancellor for approval by the Technical Council.

(g) On receipt of the observations/recommendation of the examiners of the thesis, shall submit these with the Committee's recommendations to the Vice-Chancellor through the Dean (Doctoral Research) for further necessary action. In the event, the reports of the examiners are favourable to the scholar as provided for in clause 41, then the doctoral Committee would also recommend names for the Viva-voce Board of the Scholar.

Compliance Report:

33. Prior to the submission of the thesis, the scholar registered for the Ph.D. Programme either at the Institute or its Extension Centres should have complied with the following requirements:

(a) He/she must have carried out the research work for a minimum period, counted from the date on which the admission fee has been deposited, as specified below, after his/her registration for Ph.D. programme.

- (i) Master's degree holder – Two years
- (ii) Bachelor's degree holder or equivalent – Three years
- (iii) Teacher of the Institute permitted to work independently for Ph.D. degree – Two years

(b) He/She should have satisfied the minimum residence requirement, if applicable, as provided for in Clause 22 of these Regulations.

(c) He/She should have taken and passed the prescribed qualifying examination and course works as provided for in Clauses 28 and 30.(a & b) of these Regulations, if so decided by the Technical Council.

- (d) He/She must have published at least one research paper in a referred journal of repute.
- (e) He/She must have made Pre-Ph.D. thesis submission seminar presentation of his/her thesis work in the concerned Department of the Institute at the main campus. However, for International Centres, the Doctoral Committee shall decide the venue of presentation.

Organization of the Thesis:

34. The thesis shall be a factual record of the scholar's research work characterized by discovery of facts, or fresh interpretation of facts and theories, or an independent design or development of new product. It should bear evidence of the scholar's judgement and ability to carry out independent investigation, design or development work.

35. The thesis must contain besides the text and common matters like Bibliography/References and summary/Conclusions:

- (i) A Preface/Introduction in which the scholar shall state whether the thesis is based on discovery of new facts or new interpretation of established facts by others, or based on exhaustive study and critical analysis of published work of others, or design, or development work undertaken;
- (ii) The scholar shall further furnish a statement indicating the sources from which the information has been derived, and the extent to which he/she has based his/her work on the work of others, and shall indicate which portion of the thesis is claimed as original.
- (iii) An Abstract of the thesis (about 500 words) with key words (about 10);
- (iv) References

References in the thesis should be as per standard of International Journals (e.g. Springer, Elsevier, etc. journals) but they must be uniform throughout the thesis.

The scholar may adopt the following standard.

Citation in text

The Scholar must ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Citation of a reference as "in press" implies that the item has been accepted for publication.

Web references

As a minimum, the full URL should be given. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

Reference style

Text: All citations in the text should refer to:

1. *Single author*: the author's name (without initials, unless there is ambiguity) and the year of publication;
2. Two authors: both authors' names and the year of publication;
3. Three *or more authors*: first author's name followed by "et al." and the year of publication.

Citations may be made directly (or parenthetically). Groups of references should be listed first alphabetically, then chronologically.

Examples: "as demonstrated (Allan, 1996a, 1996b, 1999; Allan and Jones, 1995). Kramer et al. (2000) have recently shown..."

List: References should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters "a", "b", "c", etc., placed after the year of publication.

Examples:

Reference to a journal publication:

Coffey, C.S., 1994. Quantum-mechanical aspects of dislocation motion and plastic flow. *Phys. Rev.* 49, 208-214.

Sklad, P.S., Gibala, R. and Mitchell, T.E., 1973. Amplitude dependent internal friction of molybdenum single crystals. *J. Phys. F: Metal Phys.*, 3, 1789- 1795.

Reference to a paper in the proceedings of a conference:

Holzwarth, U. and Seeger, A., 1991. in: Brandon, D.G., Chaim, R. and Rosen, A. (Eds.), *Proceedings of the 9th International Conference on Strength of Materials*, Freund Publications House, London, p. 577-576.

Reference to a book:

Hull, D. and Bacon, D.J., 2001. Introduction to Dislocations, 4th Edition, Butterworth – Heinemann, Oxford, pp. 182 – 187.

Reference to a chapter in an edited book:

Mettam, G.R., Adams, L.B., 1999. How to prepare an electronic version of your article, in: Jones, B.S., Smith, R.Z. (Eds.), Introduction to the Electronic Age. E-Publishing Inc., New York, pp. 281-304.

(v) A Certificate (in standard format, Annexure V) from the Guide(s) that (a) the work has been carried under his/her/their supervision, (b) the candidate has fulfilled all prescribed requirements and (c) the thesis which is based on candidate's own work has not been submitted elsewhere for a Degree/Diploma.

(vi) The cover page of the thesis shall be sky – blue in colour and in the standard format as given in Annexure VI.

(vii) The text in the thesis shall be Times New Roman font size 12. All Figures and Tables shall have appropriate legend .

36. The Thesis submitted for the Ph.D. degree shall not be one for which a degree or diploma had already been awarded other than that submitted for the course works in the Ph.D. programme at the Institute.

37. Nothing contained in these regulations, shall preclude a scholar from publishing either independently or jointly with his/her supervisor(s), the results of the work incorporated in the thesis, at any time before the submission of the thesis.

Adjudication of Thesis:

38. On successful completion of his/her research programme, the scholar shall submit FOUR (FIVE in case of joint supervision) hard copies and one soft copy in CD of his/her thesis and synopsis to the Chairman of the Doctoral Committee through his/her guide(s) after paying examination fees as decided by the Institute from time to time.

39. The Evaluation of the thesis submitted by a scholar for the Ph.D. degree shall be carried out by a board of Examiners appointed for the purpose by the Technical Council. The Doctoral Committee shall submit a panel of examiners for this Board.

The Board of Examiners shall normally consist of the following experts:

(a) The Guide/Guide and Co-guide/Internal Guide and External guide for scholar

- (b) Two external experts, one from within the country and the other from outside the country

40. Correspondence with the Examiners will be undertaken only by the Vice-Chancellor or by any other officer of the Institute specifically delegated with the power. Each examiner shall be required to examine the thesis independently and forward his/her report with his/her recommendations directly addressed to the Vice-Chancellor. All the reports, so received shall be considered by the Doctoral Committee which will then forward these reports with its own observations/recommendations to the Vice-Chancellor through the Dean (Doctoral Research).

41. If all these reports are unanimously favourable to the scholar, the Doctoral Committee will also submit to the Vice-Chancellor through Dean (Doctoral Research), its recommendations for the constitution of the Viva-voce Board for the scholar. The Viva-voce board shall be approved by the Technical Council.

42. If there is no unanimity in the recommendation of the Board of Examiners, and if the majority of them do not recommend outright rejection of the thesis, the Technical Council may permit resubmission of the thesis after revision within two years from the date of the Technical Council's decision. The revised thesis will then be sent to the same set of examiners for their opinion. If, however, any of the previous examiners decline to examine the resubmitted thesis the same will then be sent to another examiner of the same category.

43. Also, if there is no unanimity in the recommendation of the examiners of the Board but the majority of them have submitted recommendations favourable to the Scholar, the Vice-Chancellor may send the thesis alongwith the observations of the examiners (but without disclosing the name of the examiners) to an eminent person in the field, for his opinion on the thesis. His opinion shall be final and binding.

44. For unanimous/majority rejection of the thesis, the scholar shall be dropped automatically from the Ph.D. programme.

Viva-voce Board

45. In the event, the Technical Council is satisfied with the recommendations of the Board of Examiners setup for adjudication of the thesis, the Technical Council will appoint a Viva-voce Board as per the recommendations of the Doctoral Committee, composed as under.

- (a) Chairman (Doctoral Committee) : Chairman
- (b) One external examiner preferably : Member
from within the country
- (c) All members of the Doctoral Committee : Members
- (d) Guide(s) : Member(s)
- (e) Dean (Doctoral Research) : Observer

46. The Viva-voce Board shall conduct an oral examination of the scholar normally in the Institute with a view to test the scholar's insight and power of comprehension in his/her field of research , and his/her understanding of the allied fields. The Viva-voce Board shall submit its report(s) / recommendation(s) to the Vice Chancellor. The Vice Chancellor, in turn, will submit the document to the Technical Council which may recommend the award of the Ph.D. degree to the scholar if the recommendations are favourable to the scholar. If, for any reason, the recommendations of the Viva-voce Board are not favourable to the scholar, he/she will be permitted to appear before the Viva-voce Board again, within a period of one year from the date of the previous meeting of the Board.

47. In the case of a teacher permitted to work independently without any guide as per clause 19 for his/her Ph.D. degree, the Board of Examiners and the Viva-voce Board shall include a senior teacher of the Institute in the field of specialization or allied field or an outside expert appointed by the Technical Council on the recommendations of the Doctoral Committee.

48. Notwithstanding the provision contained in the clauses of the regulation, the Technical Council may cancel Ph.D. registration of any scholar at any time without assigning reason(s), if it is so satisfied.

Award of the Ph.D. Degree

49. The **basic discipline** of the scholar (Science/ Technology/ Engineering/ Architecture/ Pharmacy/Medical Sciences/Management/Humanities or any other discipline approved by the Technical Council) and his/her **domain of research** will jointly determine the discipline in which the Ph.D. degree will be awarded.

ANNEXURE – I

MINUTES OF THE Ph.D. ADMISSION COMMITTEE MEETING

1. **Date of Ph.D. Admission Committee Meeting**
2. **Name of the Department:**
3. **Name of the candidate and Affiliation:**
4. **Contact Address:**
5. **Qualification of the candidate** (Degree, Year of passing, % marks and University)
6. **Details of Guides** (Guide, Co-guide, Internal Guide, External Guide as applicable)
 - (a) Name
 - (b) Designation
 - (c) Qualification and Experience
 - (d) Contact Address
 - (e) No. of current Ph.D. scholars under his/her supervision
7. **Research Topic**
8. **Recommendation of Ph.D. Admission Committee [Clause 25]:**
 - (a) Utility of the proposed research programme
 - (b) Suitability of the applicant to undertake the programme
 - (c) Availability of infrastructure for undertaking the research programme
 - (d) Extent of External assistance required (if any)
 - (e) Recommendation for Ph.D. registration
 - (f) Doctoral Committee for the Scholar
9. **Any other Comments:**
10. **Signatures of the Ph.D. Admission Committee Members.**

ANNEXURE – II

MINUTES OF THE 1ST MEETING OF THE DOCTORAL COMMITTEE

1. Date of Doctoral Committee Meeting:
2. Name & Affiliation of Candidate:
3. Registration No.
4. T.C. Date:
5. Receipt No. & date of submission of Registration Fees: [Mandatory for conducting the meeting]
6. Research Topic:
7. Guides (Guide, Co-guide, Internal Guide, External Guide as applicable):
8. Recommendation of Doctoral Committee:
 - (a) Details of Qualifying courses: [Clause 28 & 29]

S.No.	Course No.	Course Title
.		

[Attach syllabus for approval of Technical Council]
 - (b) Details of any Audit course if recommended [Clause 30]
 - (c) Any other comments:
9. Signature of the Members of the Doctoral Committee:

ANNEXURE – III

ANNUAL PROGRESS REPORT

1. Date of Annual Progress Presentation:
2. Name of the Candidate and affiliation:
3. Registration Number :
4. Date of submission of Registration Fees:
5. Receipt No. & Date of submission of Annual Fees: [**Mandatory for conducting Seminar**]
6. Date of Seminar
7. Title of Ph.D. Thesis:
8. Status of Qualifying Examination (Clause 28 & 29)
9. Details of audit courses, if any (Clause 30)
10. Progress of Research Work including Publication if any:
11. Comments of the Doctoral Committee
12. Signature of the Members of the Doctoral Committee:

ANNEXURE – IV

MINUTES OF THE MEETING OF THE DOCTORAL COMMITTEE ON PRE-Ph.D. THESIS SUBMISSION SEMINAR

1. Date of Pre-Ph.D. Thesis Submission Seminar Presentation:
2. Name of the Department :
3. Name and Affiliation of Candidate:
4. Receipt No. & date of submission of Registration Fees: (Mandatory for conducting the meeting).
5. Title of the thesis:
6. Guides (Guide, Co-guide, Internal Guide, External Guide as applicable):
7. Comments of the Doctoral Committee:
 - (i) Does the title of the thesis require any modification:
 - (ii) Organisation of the thesis :
 - (iii) Corrections in punctuation, grammar, spelling, typing or language:
 - (iv) Whether the thesis is acceptable for submission in its present form:
 - (v) Whether the thesis requires any modification/improvement prior to its final submission:
 - (vi) If the thesis requires modification/improvement, please specify:
(please attached separate sheet if required).
7. Recommendation of the Doctoral Committee:
8. Signatures of the members of the Doctoral Committee:

ANNEXURE – V

APPROVAL OF THE GUIDE(S)

Recommended that the thesis entitled “

.....” prepared by
Mr/Ms under my/our supervision and guidance be accepted as
fulfilling this part of the requirements for the degree of Doctor of Philosophy.

To the best of my/our knowledge, the contents of this thesis did not form a basis
for the award of any previous degree to any body else.

Date:

Signature
(Name of the External Guide/Co-guide, if any)
Affiliation

Signature
(Name of the guide)
Affiliation

Margins:
Top: 1.25", Bot.:0.86"
Left: 1.5", Rt.: 1"
1.5 Line spacing throughout

18, Arial Black
Bold Upper Case

HYDRO JET SYSTEM FOR MINING UNDER INDIAN ENVIRONMENT

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22, Monotype Corsiva

A Thesis

14, Arial, Bold Italics

SUBMITTED TO

16, Arial Black, Bold

BIRLA INSTITUTE OF TECHNOLOGY

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1"x1" Logo



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14 Arial Black, Bold

**FOR THE AWARD OF THE DEGREE OF
DOCTOR OF PHILOSOPHY**

14 Arial, Bold

in

ENGINEERING

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By

14 Verdana, Bold

VINAY SHARMA, M.E.

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**DEPARTMENT OF PRODUCTION ENGINEERING
BIRLA INSTITUTE OF TECHNOLOGY
MESRA: RANCHI, INDIA**

2004

APPLICATION FORMAT FOR Ph.D. PROGRAMME

Date: _____

To,

The Vice Chancellor
Birla Institute of Technology
Mesra, Ranchi – 835215

Through: The Dean (Doctoral Research)

Dear Sir,

1. I am an applicant for the Ph.D. Programme of the Institute. I am enclosing herewith my biodata for your kind perusal and needful.

2. My proposed field of research will be

- (a) Discipline : _____
- (b) Subject : _____
- (c) Proposed Research Topic: _____

The synopsis* of my research topic is attached at Annexure 1 to this applications.

3. I would like to work under (name) of the Department of as my guide and his/her consent for this is attached at Annexure 2(a) of this application. My external guide (if any) is (Name) of (organization/Institute/..... His/her consent and his/her Bio-data are attached at Annexure 2(b).

The forwarding letter of my organization (for external candidate only) is attached at Annexure 2(c). The No Objection Certificate of my external guide's organization/Institution to supervise my work is attached at Annexure 2(d). The certificate for providing the required research facilities by my organization/institution is attached at Annexure –2 (e).

4. I certify that the particulars given above are correct and I undertake to

- (a) abide by the Rules of the Institute during the Ph.D. Programme.
- (b) appear before the relevant Admission Committee whenever directed to do so,
- (c) take any test or qualifying examinations as specified for the Ph.D. programme, and
- (d) withdraw myself from the Ph.D. programme of the Institute, if asked to do so (under clause 48 of Ph.D. regulation).

5. The proof of my date of birth, caste (General/OBC/BC/SC/ST) and qualifications are attached at Annexure 3.

6. I shall also comply with any residence requirement specified for the Ph.D. programme.

7. If my admission is approved. I further request that I may be registered for the Ph.D. programme, for which I shall pay any fees prescribed for the purpose.

Thanking you,

Yours faithfully,

Singnature
(Name)

*[N.B.: The synopsis of the proposed research work should include briefly the motivation, objective, state-of-art, methodology and references]

BIO-DATA OF THE CANDIDATE

1. (a) NAME IN ENGLISH (BLOCK CAPITALS):
(b) NAME IN HINDI (IN DEVNAGRI SCRIPT):
2. ADDRESS FOR COMMUNICATION:
3. E-MAIL ID AND CONTACT NO:
4. DATE OF BIRTH :
5. SEX (M/F):
6. CASTE (SC/ST/OBC/GENERAL):
7. MARITAL STATUS & NATIONALITY:
8. IF EMPLOYED, DETAILS OF EMPLOYMENT:
9. ACADEMIC QUALIFICATIONS:

Sl.No.	Qualifications	Year acquired	Class & % marks	Univ/Institute
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10. RESEARCH EXPERIENCE (if any):
11. TEACHING EXPERIENCE (if any):
12. Details, if at any time prior to this application the candidate had applied for Ph.D. Registration in any University/Institute and if so, the result of that application.

Place & Date

Signature
(Name)