



Regulations for Doctor of Philosophy 2010

**ANNA UNIVERSITY OF TECHNOLOGY MADURAI
MADURAI – 625 002**

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ANNA UNIVERSITY OF TECHNOLOGY MADURAI

REGULATIONS FOR DOCTOR OF PHILOSOPHY - 2010

DEFINITIONS AND NOMENCLATURE

In the Regulations, unless the context otherwise requires,

- i. “University” means Anna University of Technology Madurai, Madurai – 625 002
- ii. “Research Board” means the Board duly constituted by the Vice-Chancellor of the University to oversee the academic research activities of the University.
- iii. “Programme” means Doctoral Programme leading to the award of Ph.D. in Engineering / Technology / Science and Humanities / Management Sciences, etc.
- iv. “Chairman/Chairperson” means Head of the Faculty.
- v. “Supervisor” means any faculty member of the University or outside the University who has been recognized by the University to guide the research scholars.
- vi. “Joint Supervisor” means a recognized Supervisor to guide the scholars in interdisciplinary research that require more than one expert or to take care of the administrative and research responsibilities of the scholar, if the Supervisor retires from service.
- vii. “Doctoral Committee” means a Committee constituted by the University for each scholar to monitor the progress of his/her research work.
- viii. “Scholar” means any candidate admitted by the University either under Full-time or Part-time category for pursuing research for the award of Ph.D. degree of the University.
- ix. “Specialization” means the discipline of the Post Graduate Degree Programme such as Environmental Engineering, Applied Electronics, Physics, etc.
- x. “Course” means a theory subject of PG programme that is prescribed by the Doctoral Committee for the scholar to undergo as a part of the programme requirement.
- xi. “Special Elective” means any theory subject/laboratory/field work specific to the area of research designed by the Supervisor, recommended by the Doctoral Committee and approved in the Board of Study and Academic Council.

1 GENERAL ELIGIBILITY

- 1.1 Master's Degree of the University or any other qualification recognized as equivalent thereto in the fields of study notified from time to time by the University. Specific educational qualifications are given in Clause 2.
- 1.2 Bachelor's Degree in Engineering/Technology of the University or any other qualification recognized as equivalent thereto in the fields of study with a minimum of 15 years of R&D experience in National Research Laboratories / IIT / IISc / Public sector undertakings and with minimum of three publications in referred impact factor journals or two international patents in the last five years.
- 1.3 A minimum of 55% marks or CGPA of 5.5 on a 10 point scale in the qualifying examination (50% marks or CGPA of 5.0 on a 10 point scale for SC/ST candidates).
- 1.4 For M.A. (English) Degree holders including SC/ST candidates, a minimum of 50% marks or CGPA of 5.0 on a 10 point scale.
- 1.5 The Clause 1.3 does not apply, if the qualifying degree is M.S. (By Research) of the University or recognized as equivalent.
- 1.6 The candidates pursuing their Ph.D. with other Universities can transfer their registration to Anna University of Technology Madurai. The candidate's existing status regarding the coursework, confirmation of registration and duration of study shall be considered and suitably upheld at the discretion of Vice-Chancellor.

2 EDUCATIONAL QUALIFICATIONS

Programme		Qualification for Admission
(i)	Ph.D. Degree in Engineering/ Technology	M.E. / M.Tech. / M.S. (By Research) in the relevant branch of Engineering or Technology or equivalent
(ii)	Ph.D. Degree in Science and Humanities	M.Sc. / M.A. / M.S. (By Research) in the relevant branch of Science and Humanities / M.C.A. or equivalent
(iii)	Ph.D. Degree in Management Sciences	MBA / Post Graduate Diploma in Business Management or Administration awarded by Indian Institute of Management (IIM) / M.S. (By Research) in Management Sciences or equivalent
(iv)	Ph.D. Degree in Architecture and Planning	M.Arch. / M.Plan. / M.S. (By Research) in Architecture and Planning or equivalent.

3 Ph.D. PROGRAMME

Two categories of Ph.D. programme available are: Full-time and Part-time. Candidates who satisfy the eligibility criteria as in Clauses 1 & 2 are eligible to apply for Ph.D. Programme.

3.1 Full-time Ph.D. Programme

3.1.1 Candidates under Full-time shall do research work in the University and shall be available during the working hours for curricular, co-curricular and related activities.

3.1.2 Candidates working in the projects undertaken from State / Central / Quasi Government and totally funded through the projects in the University Departments / University Colleges / Colleges affiliated to the University. If the Principal Co-ordinator / Investigator of such projects are recognized Supervisor of the University, the scholar shall register for research programme under such Supervisor only. The scholar should be appointed in a project sanctioned by a funding agency/organization atleast for a period of two years. Part employments

in different spells or in different projects are not permitted. The Department/Centre where the project is undertaken should be a recognized research centre of the University.

- 3.1.3 Candidates in employment, who want to pursue Full-time study, should be sponsored by their employer and should avail leave for the minimum duration of the programme (Clause 10) and should get formally relieved from their duty to join the research programme.
- 3.1.4 Candidates who are sponsored by AICTE under Quality Improvement Programme for teachers of Engineering Colleges and who satisfy the eligibility conditions shall apply for Full-time category only, in the Specializations as notified in the AICTE guidelines.
- 3.1.5 Candidates who are selected at National level Fellowship programmes or by any recognized bodies and who satisfy the eligibility conditions as per the regulations shall apply for Full-time category in the respective Specialization.
- 3.1.6 Foreign Nationals sponsored by the Government of India on any exchange programme and who satisfy the eligibility conditions as per the regulations shall apply for Full-time category in the respective Specialization.

3.2 Part-time Ph.D. Programme

The following categories of candidates are eligible to apply under Part-time programme.

- 3.2.1 Full-time Faculty & Staff of University Departments / University Colleges / Colleges affiliated to the University / Polytechnics in the districts of Madurai, Dindigul, Theni, Sivagangai and Ramanathapuram.
- 3.2.2 Candidates working in Industrial Units / R&D Departments / National Laboratories / Units of Government / Quasi Government or any other research laboratories which are recognized by the University to do collaborative research with the University and sponsored by the respective employer.

Note (i): The categories of eligible candidates mentioned in Clause 3.2.1 working in the University Departments / University Colleges / Government Engineering Colleges are classified as Part-time (Internal). The nomenclature shall continue for the above scholars till they are in service in the above Institutions.

Note (ii): Teachers of affiliated colleges in Clause 3.2.1 and candidates as mentioned in Clause 3.2.2 are classified as Part-time (External). The nomenclature shall continue for the above scholars till they are in research.

3.3 Change of Category

- 3.3.1 The change of category of provisional registration shall be permitted subject to the recommendation of the Doctoral Committee.
- 3.3.2 The change of category shall be approved by the Director (Research) subject to submission of necessary documents along with the minutes of the Doctoral Committee.

4 PLACE OF RESEARCH

The place(s) of research in respect of Full-time/Part-time programme are as under:

4.1 Full-time Programme

- 4.1.1 The Full-time programme shall be undertaken in the University Departments / constituent colleges of the University / Government Engineering Colleges and approved research departments of the Colleges affiliated to the University.
- 4.1.2 The place of research for the project scholars mentioned in Clause 3.1.2 shall be the Department / Institution where the project is undertaken.
- 4.1.3 Full-time scholars shall necessarily sign in the attendance register on all working days at the respective place of research.

4.2 Part-time Programme

- 4.2.1 The place of research for teachers of Colleges affiliated to the University (as specified in Clause 3.2.1) shall be the College where the Supervisor is working.
- 4.2.2 The place of research for the scholars working as per Clause 3.2.2 shall be the College where the Supervisor is working. The facilities in Industrial Units / R&D Departments / Laboratories / Units of Government / Quasi Government / Recognized research laboratories shall also be availed for research.

5 MODE OF SELECTION

- 5.1 The candidates desirous of registering for Ph.D. Programme shall apply in the prescribed application form downloaded from the University website, fill-in all the necessary details and submit through proper channel wherever applicable, before the due date as indicated in the notification issued from time to time. Normally the University shall issue notification for Ph.D. admission twice in a year.

- 5.2 Incomplete and not eligible applications in any respect shall be summarily rejected without any intimation to the candidate.
- 5.3 The applications of the eligible candidates shall be processed by Committees constituted by the Director (Research) for the purpose of selection. The composition of such Committees shall be decided by the Director (Research) with the approval of Vice-Chancellor, taking into account the number and nature of applications received.
- 5.4 Such Committees shall screen the applications as per the eligibility norms. The candidates will be selected based on the oral presentation. Based on the performance in the interview, the successful candidates shall be shortlisted by the above Committees.

6 ADMISSION

- 6.1 The Research Board constituted by the Vice-Chancellor shall approve and recommend the selected candidates for admission to the doctoral programme in the appropriate Specialization, after giving due consideration to the interdisciplinary fields of research, if any, and the Faculty in which the candidate shall be registered.
- 6.2 Selected candidates shall be provisionally registered for Ph.D. programme with the approval of the Vice-Chancellor either in January or July session as decided by the candidate.
- 6.3 The date of provisional registration shall be normally 1st January or 1st July of the year in which the candidate is admitted.

7.SUPERVISOR RECOGNITION

- 7.1 The applicant should possess Ph.D. degree in the relevant area of research in which he/she proposes to guide the scholar.
- 7.2 The applicant for Supervisor recognition shall be working Full-time faculty in the University Departments / University Colleges / Colleges affiliated to the University or employed full - time in the places as indicated under Clause 3.2.2.

- 7.3 The applicant shall have a minimum of two publications to his/her credit in referred impact factor journals with a minimum of three years Teaching / Industry Research experience with Ph.D. degree **(or)** the applicant shall have a minimum of two publications to his/her credit in referred impact factor journals within a period of three years preceding his/her date of application for recognition.
- 7.4 Recognition as Supervisor for guiding research work shall be issued on the recommendation of the Research Board and approval of the Vice-Chancellor.
- 7.5 For interdisciplinary research that require more than one expert the Joint Supervisor shall be approved by the Research Board or the Director (Research) with the recommendation of the Doctoral Committee.
- 7.6 A Supervisor shall entertain fresh registration of scholars under him/her upto one year prior to his/her superannuation or leaves service, and a Joint Supervisor is mandatory in such cases.
- 7.7 Contact of Thesis examiners by the Supervisor/Joint Supervisor after the submission of Synopsis/Thesis of his/her scholar in connection with the evaluation report shall lead to the withdrawal of his/her supervisorship for a period of three years and he/she shall be debarred from guiding the scholars for any research programme in the University till such period.

8. CHANGE OF SUPERVISOR

- 8.1 When a Supervisor of a scholar happens to be away from the University, for more than six months and upto one year, he/she shall continue to guide the scholar, but a Supervisor-in-charge shall be nominated by the Director (Research) based on the request of the Supervisor and / or the recommendation of the Head of the Department of the Supervisor. The Supervisor-in-charge shall function till the Supervisor returns.
- 8.2 When a Supervisor of a scholar happens to be away from the University for more than one year, an alternate Supervisor shall be nominated by the Director (Research) based on the request of the Supervisor.

- 8.3 When a Supervisor retires from service on superannuation or leaves service, he/she shall make arrangements for an alternate Supervisor for his/her scholar. However, the Supervisor who retired from service shall continue to guide a scholar on his/her written request, provided he/she has guided the scholar continuously for two years and the provisional registration of the scholar is confirmed or the scholar has submitted the Synopsis. However a Joint Supervisor shall be nominated by the Director (Research) based on the request of the Supervisor and / or the recommendation of the Head of the Department of the Supervisor to take care of the administrative and research responsibilities of the scholar.
- 8.4 When a Supervisor migrates to other University / non-recognized department of the University, such Supervisors shall be permitted to guide the scholars already registered under him/her provided their provisional registration is confirmed, otherwise an alternate Supervisor shall be nominated by the Director (Research) based on the request of the Supervisor and / or the recommendation of the Head of the Department of the Supervisor. However a Joint Supervisor shall be nominated by the Director (Research) based on the request of the Supervisor to take care of the administrative and research responsibilities of the scholar.
- 8.5 If the Institution in which the scholar works becomes Private University or the scholar migrates to other University, such scholar shall be permitted to continue the research work in the University and to submit the Thesis under the same Supervisor, provided his/her provisional registration is confirmed.
- 8.6 If the Institution(s) affiliated to the University becomes Private University, then the recognized Supervisors working in such institutions shall be permitted to guide the scholars, if their provisional registration is confirmed. Such Supervisors cannot be permitted to take additional scholars. However a Joint Supervisor shall be nominated by the Director (Research) based on the request of the Head of the Department of the Supervisor to take care of the administrative and research responsibilities of the scholar.

9 NUMBER OF SCHOLARS

- 9.1 A Supervisor shall guide only a maximum of **twelve** (Ph.D./M.S. (By Research) put together) scholars as Supervisor/Joint Supervisor at any time. Additional scholars, if any under extraordinary circumstances, shall be decided on the merit of the cases, with prior approval of the Vice-Chancellor.
- 9.2 For University Departments, a Joint Supervisor is mandatory, if the Supervisor is not a regular faculty member of the University. Further a maximum of **Six** (Ph.D./M.S. (By Research) put together) scholars only be permitted under such Supervisor.

10 DURATION OF THE PROGRAMME

- 10.1 The duration of the programme and the time for submission of Thesis are counted from the date of provisional registration vide Clause 6.3.
- 10.2 The minimum duration of the programme in Engineering, Technology, Architecture and Planning and allied programmes for **Full-time/Part-time** shall be **two/three years** respectively.
- 10.3 The minimum duration of the programme in Science & Humanities for Full-time/Part-time shall be three/four years respectively. However, for M.Phil. Degree holders, the minimum duration shall be reduced by one year, if the M.Phil. Degree relates to the field of research of the programme.
- 10.4 The minimum duration of the programme in Management Science for Full-time/Part-time shall be as in Clauses 10.2 / 10.3 for scholars with Engineering and Technology / Science and Humanities background respectively.
- 10.5 If a Full-time scholar completes his/her minimum duration of the programme as in Clauses 10.2, 10.3 and 10.4 and his/her provisional registration is confirmed, he/she shall be permitted to change the category, if necessary, with prior approval from the Director (Research).
- 10.6 The Director (Research) shall permit, if deemed fit for reasons, break of study for the scholar under extraordinary circumstances such as medical grounds and other compelling reasons which warrants his/her absence to the programme.
- 10.7 For valid reasons Break of study to scholars for valid reasons shall be granted upto a maximum period of **two years not exceeding one year at a time**. Such request with the recommendation of the Supervisor and Head of the Department should reach the Director (Research) prior to availing the break of study. Break of study period shall be accounted for the counting of duration of the programme

(Clause 10). The scholar should remit the semester fees during the break of study period. The maximum duration for the programme shall be **six** years.

- 10.8 However the minimum duration of the programme may be relaxed proportionately at the discretion of Vice-Chancellor for the candidates whose registration has been transferred (as per Clause 1.6).

11 EXTENSION OF MAXIMUM DURATION

- 11.1 In exceptional circumstances, if the Doctoral Committee recommends and the Research Board deems it fit, a maximum grace period of two years, six months at a time, beyond the normal maximum period of six years may be granted by the Vice-Chancellor to enable the scholar to submit the Thesis. In such cases, penalty fees as prescribed from time to time shall be paid.
- 11.2 Request for such extension (six months at a time) shall be applied to the Director (Research), with the recommendation of the Doctoral Committee, atleast one month prior to the end of the maximum period or expiry of the previous extension.
- 11.3 If the scholar fails to submit the Thesis within the extended period of two years, the registration shall be cancelled and the name be removed from the rolls.

12 DOCTORAL COMMITTEE

- 12.1 There shall be a Doctoral Committee for every scholar to monitor the progress of research work.
- 12.2 For every scholar, the Supervisor shall furnish a panel of six experts, of which three experts with doctoral qualification in the field of proposed research from the faculty members of the University / Colleges affiliated to the University / other Universities/ experts from R&D Departments / National Laboratories / Industry any other research laboratories and other three members from Industry with doctoral qualification. If suitable member from industry is not available then the members from academia may be considered.
- 12.3 The Supervisor of the scholar shall be the convener of the Doctoral Committee.
- 12.4 The Joint Supervisor, if applicable , shall also be a member.
- 12.5 If a Doctoral Committee member is away from his/her place of work for more than one year, the Supervisor shall request for an alternate member from the panel of experts submitted as per Clause 12.2.

13 PROGRAMME STRUCTURE

13.1 Coursework

13.1.1 The Doctoral Committee of a scholar shall meet within three weeks from the date of communication of his/her provisional registration to prescribe the courseworks.

13.1.2 A **minimum of four courses** of 12 Credits relevant to the area of research and offered under any approved PG programme of the University shall be recommended by the Doctoral Committee. But the scholars shall not have undergone such courses in their PG programme /M.S. (By Research).

13.1.3 Only courses registered after the first Doctoral Committee meeting shall be Counted towards this requirement. Any courses already passed by the scholar prior to provisional registration shall not be counted for this purpose.

13.1.4 The scholar shall register four coursework and will be evaluated in the absolute grading scale of the course which will be conducted by Anna University of Technology Madurai.

13.1.5 Change in the courseworks prescribed shall be made with the approval of the Doctoral Committee.

13.1.6 The prescribed courseworks shall normally be completed within one year from the date of provisional registration. If the scholar fails to complete the courses in time, appropriate action (including cancellation of registration) shall be taken by the Director (Research).

13.1.7 The syllabus submitted by the Research Supervisor for the coursework will be taken by the Research Scholar only after the approval of the Board of Studies.

13.1.8 If any course, specific to the area of research has to be newly designed, then such course shall be formulated as a Special Elective and the course syllabus shall be designed by the Supervisor, recommended by the Doctoral Committee and shall be approved in the Board of Study of the Faculty and Academic Council concerned. These courses shall be of PG level.

- 13.1.9 In the case of Special Elective, the evaluation pattern for internal assessment will be similar to that of PG courses and end semester examination be conducted. However, for awarding grades, the absolute grading scale shall be followed.
- 13.1.10 Scholars with M.Phil. Degree in the Faculty of Science and Humanities shall be exempted two courseworks, provided the M.Phil. Degree is related to the proposed Ph.D. research work and if duly recommended by the Doctoral Committee.
- 13.1.11 The scholars shall secure a minimum of **CGPA of 6.5 in the courseworks** in order to become eligible for comprehension examination. The Scholar who fails to secure a CGPA of 6.5, he/she shall undertake one more coursework relevant to the area of research offered under any approved PG programme of the University with the recommendation of the Doctoral Committee or rewrite the examination. A pass in the Comprehensive Examination is required for provisional confirmation of Ph.D. registration.

13.2 **COMPREHENSIVE EXAMINATION**

- 13.2.1 On the successful completion of the prescribed courseworks, as evidenced by the grade sheet issued by the Controller of Examinations and a considerable amount of Research, the Doctoral Committee shall conduct a Comprehensive (oral) Examination for every scholar to test the background knowledge of the scholar in the broad area of specialization. The Comprehensive Examination shall cover the topics in the specialization and allied areas. The result of this examination and the results of the courseworks shall be detailed in the minutes of the Doctoral Committee and forwarded to the Director (Research), for confirmation of the provisional registration and to proceed further with his/her research work, within two months from the date of the Comprehensive Examination held.
- 13.2.2 If the performance of the scholar is not approved by the Doctoral Committee based on the results of Comprehension Examination, a grace period of six months shall be given and then at the end of which the scholar shall be re-examined. If found fit, the scholar is provisionally confirmed and shall be permitted to proceed with his/her research work. Otherwise the provisional registration granted to the scholar shall be cancelled.

14 RESEARCH OUTSIDE THE UNIVERSITY

- 14.1 During the course of the programme for reasons stated by the Supervisor and forwarded by the Research Co-ordinator, a scholar shall be permitted by the Director (Research) to spend upto one year in an Institution or in a project approved for the purpose, outside the University for carrying out research related to his/her area.
- 14.2 The scholars shall be permitted to do research outside the University on related fellowship programmes for a period upto one year, with prior approval from the Director (Research).
- 14.3 Under valid reasons, a scholar shall be permitted to continue his/her research outside the University upto six months beyond one year, with prior approval from the Vice-Chancellor.
- 14.4 The scholars who carried out research outside the University shall submit the Synopsis only after a minimum period of one month on his/her return.

15 MONITORING THE PROGRESS OF THE SCHOLAR

- 15.1 At the end of every semester, commencing from the date of provisional Registration, the scholar shall submit the progress report and registration renewal form in the prescribed format duly signed by the Supervisor during the payment of semester fee.

16 CANCELLATION OF REGISTRATION

- 16.1 The registration of a scholar who has exceeded the maximum period stipulated for the programme as in Clause 11.1 shall stand cancelled automatically.
- 16.2 The registration is liable for cancellation administratively by the Director (Research), if
 - i. The scholar has not paid the semester fees within the stipulated time.
 - ii. Two consecutive six month progress reports are not submitted or not satisfactory.
 - iii. The performance is not satisfactory to the Doctoral Committee and accordingly recommended for cancellation.
 - iv. The scholar wishes to withdraw the programme and requests to cancel his/her registration.

- v. Extension of time (beyond six years) for six months at a time not obtained as in Clause 11.2.
- vi. Submission of Thesis beyond six months from the date of approval of Synopsis by the Doctoral Committee.
- vii. The act of plagiarism involved in the Thesis.
- viii. Contact of Thesis examiners by the scholar regarding Thesis evaluation.
- ix. Any violation of the rules and regulations of Ph.D. Programme.

16.3 In all the above cancellation cases, the fees paid by the scholar shall not be refunded.

17 SYNOPSIS OF THE THESIS

- 17.1 The scholar shall be permitted to submit the Synopsis only after obtaining the confirmation of provisional registration and completion of the minimum duration of the programme applicable to the scholar. However, a scholar shall be permitted to submit the Synopsis (after obtaining confirmation) three months prior to the completion of his/her minimum duration, provided the scholar has published / accepted two papers in referred impact factor journals after joining the programme and specifically recommended by the Doctoral Committee.
- 17.2 The Synopsis shall be accepted only when the scholar has published / accepted minimum Two papers in a referred impact factor journal or Two patents approved.
- 17.3 The scholar shall submit a hard and soft copy of the Synopsis of his/her research work prepared in accordance with the format and specification prescribed, to the Doctoral Committee through the Supervisor and Joint Supervisor, if applicable.
- 17.4 If the Doctoral Committee approves the research work reported in the Synopsis and fulfils Clause 15.2, it shall forward six copies of the approved Synopsis to the Director (Research) along with a panel of atleast six examiners who are experts in the field of research of the scholar, three from India (other than Tamil Nadu except, experts from National Laboratories/State and Central Universities IIT/NIT) and three from abroad, along with their publication details in the last five years. No two experts shall be from the same Institution.

18 SUBMISSION OF THESIS

- 18.1 The Thesis shall report, in an organized and scholarly fashion, an account of original research work of the scholar leading to the discovery of new facts or techniques or correlation of facts already known (analytical, experimental, hardware oriented, etc.) and demonstrating a quality contribution to the advancement of knowledge as well as the scholar's ability to undertake sustained research.
- 18.2 Three copies of Thesis shall be prepared in accordance with the format and specification prescribed. Thesis shall be submitted within three months from the date of approval of the Synopsis by the Doctoral Committee along with one copy of the abstract of the Thesis each in English and Tamil (in about 400 words). Under extraordinary circumstances, submission of Thesis shall be permitted upto a maximum period of six months, with prior approval from the Director (Research). In such cases, the late fee shall be paid as applicable.
- 18.3 The Thesis shall include a Certificate from the Supervisor and Joint Supervisor, if applicable, as prescribed, to the effect that the Thesis is a record of the bonafide research work carried out by the scholar under his/her supervision and that the work reported in the Thesis has not been submitted elsewhere for a degree or diploma.
- 18.4 The Thesis shall be scrutinized by a **Scrutiny Committee** constituted by the Vice-Chancellor to assess the overall layout, contents and the quality of presentation of the Thesis. The deviation, if any, shall be rectified by the scholar in consultation with the Supervisor and the same shall be approved by the Director (Research).
- 18.5 Fees shall be paid by the scholars for every semester during the notified period till the submission of the Thesis.

19 THESIS EVALUATION

- 19.1 The Thesis shall be referred to two examiners (one from India and another from abroad) nominated by the Vice-Chancellor from the panel of examiners recommended by the Doctoral Committee. The Vice-Chancellor, if deems it necessary, may also nominate the examiners from outside the panel.
- 19.2 The Director (Research) shall take appropriate steps to receive the reports from the examiners as quickly as possible.

- 19.3 The examiners shall send his/her willingness to evaluate the Thesis within one month from the date of receipt of the Synopsis.
- 19.4 The examiners shall send his/her evaluation report in the prescribed format within two months from the date of receipt of the Thesis.
- 19.5 The examiner shall include in his/her report an overall assessment placing the Thesis in any one of the following categories.
- 19.5.1 Recommend the acceptance of the Thesis in the present form and further based on the standard attained, classify the work as HIGHLY COMMENDED/COMMENDED.
- 19.5.2 Recommend the acceptance of the Thesis. However, the scholar shall incorporate the corrections indicated in the detailed report and place the corrected copy to the Oral Examination Board but the corrected Thesis need not be sent to the examiner.
- 19.5.3 Defer the recommendation at this stage and the scholar shall incorporate the suggested modifications in the Thesis and the corrected Thesis along with the scholar's clarifications shall be sent to the respective examiner.
- 19.5.4 Reject the Thesis for the reasons set out in the detailed report.
- 19.5.5 The examiner shall also enclose a detailed report in about 200 to 300 words, indicating the standard attained in the case of 19.5.1, the nature of revision in the case of 19.5.2 & 19.5.3 and specific reasons in the case of 19.5.4.
- 19.6 If both the examiners recommended for the award of the degree, Thesis shall be provisionally accepted. Any minor revision, modification, etc. suggested by the examiners shall be carried out before the Oral Examination Board.
- 19.6.1 If any examiner recommends revision in the Thesis, the scholar shall be permitted only once to revise and resubmit the Thesis within six months, and the revised Thesis shall be referred to the same examiner only in the situation such as
- i. When the examiner recommends new experiments and major modification involving new methodology.
 - ii. The examiner insists the University to send the Thesis back to the same examiner after revision for offering his/her final recommendation on the Thesis which shall be only either for recommendation for the award or for rejection.

- 19.6.2 If one examiner recommends the award of the degree while the other recommends rejection, then the Thesis shall be referred to the third examiner to be nominated by the Vice-Chancellor as in Clause 19.1. If two of the three examiners recommend the award, the Thesis shall be provisionally accepted. If two of the examiners recommend rejection, the Thesis shall be rejected and the registration of the scholar shall stand cancelled.
- 19.6.3 If both the examiners recommend rejection, the Thesis shall be rejected and the registration of the scholar shall stand cancelled.
- 19.7 In case, the examiner does not insist to send the Thesis back to him/her, the Thesis shall be referred to the Doctoral Committee to ascertain the corrections carried out in the Thesis as suggested by the examiners.
- 19.8 Individual cases not covered by the above Clauses shall be referred to the Vice-Chancellor. If deemed fit, the Vice-Chancellor shall refer to the Research Board which in turn shall refer to the Syndicate, for necessary action.

20 ORAL EXAMINATION

- 20.1 On receipt of the evaluation reports, the Doctoral Committee shall meet **within three months** and recommend a panel of three experts (Other than the Parent Institution) from different recognized institutions within India, along with their publication details in the last five years for constitution of an Oral Examination Board. No two experts shall be from the same Institution. The Vice-Chancellor nominates one member from the panel of experts recommended by the Doctoral Committee. The Vice-Chancellor, if deems it necessary, may nominate a member from outside the panel.
- 20.2 The **Oral Examination Board** shall be constituted by the Vice-Chancellor as follows:
- a. Indian Examiner of the Thesis or an expert from the panel (in the absence of the former) -- Member
 - b. An expert from a recognized institution from the panel -- Member
 - c. Supervisor of the scholar -- Convener
 - d. Joint Supervisor of the scholar, if applicable -- Member

- 20.3 The Oral examination shall be conducted during the working days **within three months** as “Open Defense Type” Examination. The circular for the same shall be communicated to the Director (Research) /faculty members/research scholars/other departments/ other Institutions, atleast one week prior to the Viva – Voce Examination. A minimum of twenty five members excluding Oral Examination Board members shall be present for the Viva-Voce Examination.
- 20.4 Viva-Voce Examination shall be held at the place of work of the Supervisor. If the Supervisor migrates to other University or non-recognized Organization/Department of the University or College not affiliated to the University, then the Viva-Voce Examination shall be held in the Department of the Supervisor when the scholar had provisionally registered for the programme.
- 20.5 If the Oral Examination Board reports the performance of the scholar as “not satisfactory” then he/she may opt to reappear for the Oral Examination at a later date (not later than six months from the date of the first Oral Examination). On the second occasion, the Oral Examination Board shall include one more expert nominated by the Vice-Chancellor.
- 20.6 If the performance of the scholar in the Oral Examination in the second occasion also reported to be “not satisfactory”, the Vice-Chancellor, if deems it necessary, shall refer the remarks of the Oral Examination Board, along with the Thesis and comments of the Examiners, to a Committee constituted for this purpose and the decision of the Vice-Chancellor shall be final.
- 20.7 On satisfactory completion of the Viva-Voce Examination, the scholar shall submit the corrected Thesis in A5 size in accordance with the format and specification prescribed, duly certified by the Supervisor and Joint Supervisor, if applicable, that all the corrections have been incorporated in the Thesis as suggested by the examiners, along with two soft copies of the Thesis in CD, for University archives.

21 AWARD OF Ph.D. DEGREE

If the report of the Oral Examination Board is SATISFACTORY, the scholar shall be awarded Ph.D. Degree with the approval of the Syndicate. The Faculty for the award of Ph.D. Degree shall normally be based on the PG qualification of the scholar.

22 PUBLICATION OF THESIS

Papers arising out of the Thesis may be published by the scholar and the Supervisor. However the Thesis as a whole shall be published by the scholar/Supervisor with prior approval of the Vice-Chancellor.

23 THE ACT OF PLAGIARISM

23.1 In the case of scholars who have committed the act of plagiarism, his/her Thesis/degree shall be forfeited and his/her research registration shall be cancelled and also he/she shall be debarred to register for any other programme in the University.

23.2 For the abetment of above such action, the recognition of his/her Supervisorship shall be withdrawn for a period of five years and he/she shall be debarred from guiding the scholars for any research programme in the University till such period.

24 POWER TO MODIFY

Notwithstanding all that has been stated above, the Vice-Chancellor / Syndicate has the right to modify any of the above regulation from time to time.

Note: The scholar shall be governed by the regulations as in force from time to time. The Supervisors and scholars are requested to visit the website of Anna University of Technology Madurai, "<http://www.autmdu.ac.in>" for updates and announcements periodically.

GUIDELINES FOR THE PREPARATION OF SYNOPSIS

Synopsis should outline the research problem, the methodology used for tackling it and the summary of the findings. **The size of Synopsis should not exceed 15 pages of typed matter reckoned from the first page to the last page including the List of Publications.**

The sequence in which the Synopsis should be arranged as follows:

1. Cover Page and Title page (as shown in the Annexure I)
2. Text divided into suitable Headings (numbered consecutively)
3. References (not more than 15)
4. List of Publications (those published/accepted for publication in Journals and papers presented in Conferences/Symposia)

Standard A4 size (297mm x 210mm) paper may be used for preparing the copies.

The synopsis should have the following page margins:

Top edge : 30 to 35 mm

Bottom edge : 25 to 30 mm Left

Side : 35 to 40 mm

Right side : 20 to 25 mm

The Synopsis should be prepared on good quality white paper preferably not lower than 80gsm. One and a half spacing should be used for typing the general text. The general text shall be typed in Font Style Times New Roman and Font Size 13. One or two Tables/Figures may be included at appropriate places in text and they should conform to the margin specifications. All page numbers (Arabic numbers) should be typed without punctuation on the upper right hand corner 20 mm from top with the last digit in line with the right hand margin. Synopsis should be bound with black calico cloth using flexible cover of thick white art paper. The cover should be printed in black letters and the text for printing should be identical to what has been prescribed for the title page.

REFERENCES

1. Alishahi, K., Marvasti, F., Aref, V. and Pad, P. (2009) "Bounds on the sum capacity of synchronous binary CDMA channels", J.Am. Chem. Soc., Vol. 55, No. 8, pp. 3577-3593,.
2. Djoinin, D. and Bhagrava, V. (2010)"New results on low complexity detectors for over-saturated CDMA systems, " in Proc. Globecom,.
3. Karystinos, G. N. and Pados, D.A. "The maximum squared correlation, total asymptotic efficiency, and sum capacity of minimum total-squared correlation binary signature sets", Designs, Codes and Cryptography, Vol. 51, pp. 348-355,

ANNEXURE I

A typical Specimen of Cover Page and Title Page

**SYNTHESIS AND CHARACTERIZATION OF NANO
LIQUID CRYSTAL**

 <1.5 line spacing>

A SYNOPSIS

Submitted by

 <Italic>

RAMASAMY.R

In fulfillment for the award of the degree

of

 <Italic> <1.5 line spacint>

DOCTOR OF PHILOSOPHY

UNIVERSITY LOGO

FACULTY OF SCIENCE AND HUMANITIES

ANNA UNIVERSITY OF TECHNOLOGY MADURAI

MADURAI 625 002

<1.5 line spacing>

JANUARY 2010

**SYNTHESIS AND CHARACTERIZATION OF NANO
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JANUARY 2010

GUIDELINES FOR THE PREPARATION OF THESIS

1. GENERAL

The manual is intended to provide broad guidelines to the research scholars in the preparation of the Thesis. In general, the Thesis shall report, in an organized and scholarly fashion, an account of original research work of the scholar leading to the discovery of new facts or techniques or correlation of facts already known (analytics, experimental, hardware oriented, etc.). Thesis shall demonstrate a quality as to make a definite contribution to the advancement of knowledge and the research scholar's ability to undertake sustained research and present the findings in an appropriate manner with actual accomplishments of the work.

Instruction

The scholars are expected to read carefully the instructions given in the sequel and meticulously follow them in the preparation of the Thesis. Non-compliance with any of these instructions may lead to the rejection of the Thesis submitted.

2. SIZE OF THE THESIS

The size of the Thesis should not exceed 300 pages of typed matter reckoned from the first page of Chapter 1 to the last page of the Appendix.

3. ARRANGEMENT OF THE CONTENTS OF THE THESIS

The sequence in which the Thesis material should be arranged and bound as follows:

1. Cover Page and Title page (as shown in Annexure II)
2. Bonafide Certificate (as shown in Annexure III)
3. Abstract
4. Acknowledgement
5. Table of Contents (as shown in Annexure IV)
6. List of Tables
7. List of Figures
8. List of Symbols and Abbreviations (as shown in Annexure V)
9. Chapters
10. Appendices
11. References
12. List of Publications

The Tables and Figures should be included at appropriate places in the text of the Thesis.

4. **PAGE DIMENSIONS AND MARGIN**

Standard A4 size (297 mm x 210 mm) paper may be used for preparing the copies. The dimensions of the final bound Thesis (3 copies) report should be 290 mm x 205 mm. Thesis should be bound with black calico cloth using flexible cover of thick white art paper.

The final Thesis (at the time of submission) should have the following page margins :

Top edge : 30 to 35 mm

Bottom edge : 25 to 30 mm

Left side : 35 to 40 mm

Right side : 20 to 25 mm

The Thesis should be prepared on good quality white paper preferably not lower than 80gsm. Tables and Figures should conform to the margin specifications.

Large size Figures should be photographically or otherwise reduced to the appropriate size before insertion.

5. **MANUSCRIPT PREPARATION**

In the preparation of the manuscript, care should be taken to ensure that all textual matter is typewritten to the extent possible in the same format as may be required for the final Thesis. Hence some of the information required for the final typing of the Thesis is also included in this section.

The headings of all items from 2 to 12 listed in section 3 should be typed in capital letters without punctuation and centered 50 mm below the top of the page. The text should commence 4 spaces below this heading. The page numbering for all items from 1 to 8 should be done using lower case Roman numerals and the pages thereafter should be numbered using Arabic numerals.

5.1 Cover Page & Title Page – A specimen copy of the Cover page and Title page for the Thesis is given in Annexure II.

5.2 Bonafide Certificate – The Bonafide Certificate shall be typed in double line spacing using Font Style Times New Roman and Font Size 13 as per the format shown in Annexure III.

The certificate shall carry the Supervisor's signature and shall be followed by the **Supervisor's name, academic designation (not any other responsibilities of administrative nature)**, department and full address of the institution where the Supervisor has guided the research scholar. The term 'SUPERVISOR' must be typed in capital letters between the Supervisor's name and academic designation. Signature of the Joint Supervisor with the details specified as above should be included wherever it is applicable.

- 5.3 Abstract** - Abstract should be an essay type of narration not exceeding four pages outlining the research problem, methodology used for tackling it and a summary of the findings. This shall be typed in double line spacing using Font Style Times New Roman and Font Size 13.
- 5.4 Acknowledgement** – It should be brief and should not exceed one page when typed in double spacing. The scholar's signature shall be made at the bottom right end above his/her name typed in capitals.
- 5.5 Table of Contents** - The Table of contents should list all captions following it as well as any caption which precedes it. The title page, Bonafide Certificate and Acknowledgment will not find a place among the items listed in the Table of Contents but the page numbers of which are in lower case Roman letters. One and a half spacing should be adopted for typing the matter under this head. A specimen copy of the Table of Contents for the Thesis is given in Annexure IV.
- 5.6 List of Table** - The list should use exactly the same captions as they appear above the Tables in the text. One and a half spacing should be adopted for typing the matter under this head.
- 5.7 List of Figures** - The list should use exactly the same captions as they appear below the Figures in the text. One and a half spacing should be adopted for typing the matter under this head.
- 5.8 List of Symbols and Abbreviations** - One and a half spacing should be adopted for typing the matter under this head. Standard symbols, abbreviations, etc. should be used. The list should be arranged alphabetically with respect to the contents on the right side as shown in Annexure V.

5.9 Chapters - The chapters may be broadly divided into 3 parts (i) Introductory chapter,(ii) Chapters developing the main theme of the Thesis and (iii) Results, Discussion and Conclusion. The main text shall be divided into several chapters and each chapter may be further divided into several divisions and sub-divisions.

- Each chapter should be given an appropriate title.
- Tables and Figures in a chapter should be placed in the immediate vicinity of the reference where they are cited.
- Footnotes should be used sparingly. They should be typed single space and placed directly underneath in the very same page which refers to the material they annotate.

5.10 Appendices - Appendices are provided to give supplementary information, which if included in the main text may serve as a distraction and cloud the central theme under discussion.

- ❖ Appendices should be numbered using Arabic numerals, e.g. Appendix 1, Appendix 2, etc.
- ❖ Appendices, Tables and references appearing in appendices should be numbered and referred to at appropriate places just as in the case of chapters.
- ❖ Appendices shall carry the title of the work reported and the same title shall be included in the Table of Contents page.
- ❖ The list of publications (those already published/accepted for publication in Journals and papers presented in Conferences/Symposia) made by research scholar during the period of research, shall be brought in the Appendix titled as List of Publications and the same shall be reported in the Table of Contents.

5.11 List of References - Any works of other researchers, if used either directly or indirectly, the origin of the material thus referred to at appropriate places in the Thesis should be indicated. The author's publications during the period of research should not be included in the references and can be separately mentioned as in 5.10. A paper, a monograph or a book may be designated by the name of the first author followed by the year of publication, placed inside brackets at the appropriate places in the Thesis. The citation may assume any one of the following forms.

Examples of citation

- (i) An improved algorithm has been adopted in the literature (Rup 2009)
- (ii) Massey and Mittelholzer (2008) have dealt at length this principle
- (iii) The problem of mechanical manipulators has been studied by Anigstein et al (2010) and certain limitations of the method used, has been pointed out by Anigstein et al (2010 a).

The listing should be typed 4 spaces below the heading "REFERENCES" in single spacing. The reference material should be listed in the alphabetical order of the first author. The name of the author/authors should be immediately followed by other details and year. A typical illustrative list given below relates to the citation example quoted above.

REFERENCES

1. Alishahi, K., Marvasti, F., Aref, V. and Pad, P. "Bounds on the sum capacity of synchronous binary CDMA channels", J. Am. Chem. Soc., Vol. 55, No. 8, pp. 3577–3593, 2009.
2. Djoinin, D. and Bhagrava, V. "New results on low complexity detectors for oversaturated CDMA systems," in Proc. Globecom, 2010.
3. Karystinos, G. N. and Pados, D. A. "The maximum squared correlation, total asymptotic efficiency, and sum capacity of minimum total-squared correlation binary signature sets", Designs, Codes and Cryptography, Vol. 51, pp. 348–355, 2007.
4. Massey, J. L. and Mittelholzer, T. "Welch's bound and sequence sets for code-division multiple-access systems," in Sequences II, Methods in Communication, Security and Computer Sciences, Capocelli, R. De Santis, A. and Vaccaro, U. Eds. Springer-Verlag, New York, 2007.
5. Verdu, S. Multiuser Detection, Cambridge University Press, New York, 2008.
6. Waldron, S. "Generalized Welch bound equality sequences are tight frames", IEEE Trans. Inf. Theory, Vol. 49, No. 9, pp. 2307–2309, 2008

5.12 Tables and Figures – "Table" means tabulated numerical data in the body of the Thesis as well as in the appendices. All other non-verbal material used in the body of the Thesis and appendices such as charts, graphs, maps, photographs and diagrams may be designated as Figures.

- ✓ A Table or Figure including caption should be accommodated within the prescribed margin limits and appear on the page following the page where their first reference is made.
- ✓ Tables and Figures on half page or less in length may appear on the same page along with the text. However, they should be separated from the text both above and below by triple spacing.
- ✓ All Tables and Figures should be prepared on the same paper or material used for the preparation of the rest of the Thesis.
- ✓ Two or more small Tables or Figures may be grouped if necessary in a single page.
- ✓ Wherever possible, the photograph(s) may be reproduced on a full sheet of photographic paper or colour Xerox.
- ✓ More than one photograph can be included in a page.
- ✓ Samples of Fabric, Leather, etc., if absolutely necessary may be attached evenly in a page and fixed/pasted suitably and should be treated as Figures.

6. TYPING INSTRUCTIONS

6.1 General

This section includes additional information for final typing of the Thesis. The impressions on the typed/xeroxed/printed copies should be black in colour. A sub-heading at the bottom of a page must have atleast two full lines below it or else it should be carried over to the next page.

The last word of any page should not be split using a hyphen. One and a half spacing should be used for typing the general text. The general text shall be typed in Font V Style Times New Roman and Font Size 13. Single spacing should be used for typing:

- (i) Long Tables
- (ii) Long quotations
- (iii) Foot notes
- (iv) Multiline captions
- (v) References

All quotations exceeding one line should be typed in an indented space - the indentation being 15 mm from either side of the margin.

6.2 Chapters

The format for typing Chapter headings, Division headings and Sub-division headings are explained by the following illustrative examples.

Chapter heading : CHAPTER 1

INTRODUCTION

Division heading : 1.1 OUTLINE OF THESIS

Sub-division heading : 1.1.1 Literature Review

1.1.1.1 Synthetic aperture radars on satellites

The word CHAPTER without punctuation should be centered 50 mm down from the top of the page. Two spaces below, the title of the chapter should be typed centrally in capital letters. The text should commence 4 spaces below this title, the first letter of the text starting 20 mm inside from the left hand margin.

The division and sub-division captions along with their numberings should be left justified. The typed material directly below division or sub-division heading should commence 2 spaces below it and should be offset 20 mm from the left hand margin. Within a division or sub-division paragraphs are permitted. Even paragraph should commence 3 spaces below the last line of the preceding paragraph, the first letter in the paragraph being offset from the left hand margin by 20 mm.

7. NUMBERING INSTRUCTIONS

7.1 Page Numbering

All page numbers (whether it be in Roman or Arabic numbers) should be typed without punctuation on the upper right hand corner 20 mm from the top with the last digit in line with the right hand margin. The preliminary pages of the Thesis (such as Title page, Acknowledgement, Table of Contents, etc.) should be numbered in lower case Roman numerals. The title page will be numbered as (i) but this should not be typed. The page immediately following the title page shall be numbered as (ii) and it should appear at the top right hand corner as already specified. Pages of main text, starting with Chapter 1 should be consecutively numbered using Arabic numerals.

7.2 Numbering of Chapters, Divisions and Sub-Divisions

The numbering of chapters, divisions and sub-divisions should be done using Arabic numerals only and further decimal notation should be used for numbering the divisions and sub-divisions within a chapter. For example sub-division 4 under division 3 belonging to chapter 2 should be numbered as 2.3.4. The caption for the sub-division should immediately follow the number assigned to it.

Every chapter beginning with the first chapter should be serially numbered using Arabic numerals. Appendices, included if any, should also be numbered in an identical manner starting with Appendix 1.

7.3 Numbering of Tables and Figures

Tables and Figures appearing anywhere in the Thesis should bear appropriate numbers. The rule for assigning such numbers is illustrated by an example. Thus, if a Figure in Chapter 3, happens to be the fourth then assign 3.4 to that Figure.

Identical rules apply for Tables except that the word Figure is replaced by the word Table. If Figures (or Tables) appear in appendices then Figure 3 in Appendix 2 will be designated as Figure A 2.3. If a table to be continued into the next page this may be done, but no line should be drawn underneath an unfinished Table. The top line of the Table continued into the next page should, for example read Table 2.1 (continued) placed centrally and underlined.

7.4 Numbering of Equations

Equations appearing in each Chapter or Appendix should be numbered serially, the numbering should commence afresh for each Chapter or Appendix.

8. BINDING SPECIFICATIONS

- Thesis (3 copies) should be bound with black calico cloth using flexible cover of thick white art paper. The cover should be printed in black letters and the text for printing should be identical to what has been prescribed for the title page.
- The Fourth copy of the Thesis should be reduced to A5 size with printing in black letters on both sides with hard bound binding in white colour and submitted after the Viva-Voce examination duly certified by the Supervisor and Joint Supervisor,

if applicable, with his/her signature that all the corrections / modifications suggested by the examiners have been incorporated in the Thesis.

- The fourth copy of the Thesis in A5 size should contain the Certificate (as applicable) given in Annexure VI and a xerox copy of the minutes of the Oral Examination Board. These two items should be placed in between the Title page and Bonafide Certificate.
- Soft copy of the Thesis in CD form (2 Nos.) should be submitted for University archives.

ANNEXURE II

A typical Specimen of Cover Page and Title Page

**SYNTHESIS AND CHARACTERIZATION OF NANO
LIQUID CRYSTAL**

 <1.5 line spacing>

A SYNOPSIS

Submitted by

 <Italic>

RAMASAMY.R

in fulfilment for the award of the degree

of

 <Italic> <1.5 line spacing>

DOCTOR OF PHILOSOPHY

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FACULTY OF SCIENCE AND HUMANITIES

ANNA UNIVERSITY OF TECHNOLOGY MADURAI

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ANNA UNIVERSITY OF TECHNOLOGY MADURAI**

MADURAI 625 002

JANUARY 2010

ANNEXURE III

A typical Specimen of Bonafide Certificate

ANNA UNIVERSITY OF TECHNOLOGY MADURAI

MADURAI 625 002

BONAFIDE CERTIFICATE

Certified that this Thesis titled “**SYNTHESIS AND CHARACTERIZATION OF NANO LIQUID CRYSTAL** ” is the bonafide work of Mr.RAMASAMY.R who carried out the research under my supervision.

Certified further, that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other scholar.

<<Signature of the Joint Supervisor>>

<<Name>>

JOINT SUPERVISOR

<<Designation & Address >>

(If applicable)

<<Signature of the Supervisor>>

<<Name>>

SUPERVISOR

<<Designation & Address >>

ANNEXURE IV

A typical Specimen of Table of Contents

TABLE OF CONTENTS

CHAPTER NO.	TITLE	PAGE NO.
	ABSTRACT	iii
	LIST OF TABLES	xvi
	LIST OF FIGURES	xviii
	LIST OF SYMBOLS AND ABBREVIATIONS	xxvii
1	INTRODUCTION	
	1.1 GENERAL	1
	1.2 OBJECTIVES OF THE RESEARCH	3
	1.3 LITERATURE REVIEW	4
	1.3.1 Aircraft Landing Operations	6
	1.3.2 Flight Control System	19
	1.3.3 Intelligent Control Design Techniques	29
2	DEVELOPMENT OF NON-LINEAR SIX DEGREES-OF-FREEDOM AIRCRAFT MODEL	45
	2.1 GENERAL	45
	2.2 BUILDING AN AIRCRAFT	54
	2.2.1 Configuration Script	54
	2.2.1.1 Aerodynamic section	58
	2.2.1.2 Propeller section design	60
	2.2.1.3 Engine section comparison	63
	2.2.1.4 Inertia section	66

ANNEXURE V
CERTIFICATE

1. This is to certify that no corrections/suggestions were pointed out by the Indian / Foreign Examiner(s) in the Thesis titled
“.....”
submitted by Mr./Ms.....

(OR)

2. This is to certify that all corrections and suggestions pointed out by the Indian / Foreign Examiner(s) are incorporated in the Thesis titled
“.....”
submitted by Mr./Ms.....

JOINT SUPERVISOR

(If applicable)

SUPERVISOR

Place:

Date:

CONTACT DETAILS

The Director

Centre for Research

Anna University of Technology Madurai

Madurai 625 002.

Phone : 0452-2555522

Fax : 0452-2555577

Email : researchl@autmdu.ac.in