No. KTU/RESEARCH 4/6429/2019   Thiruvananthapuram
                                            Thiruvananthapuram

Dated: 02.12.2019

CIRCULAR

Sub:- Regulations for the award of the Degree of Doctor of Philosophy by APJ Abdul Kalam Technological University (Amendments made upto 30.10.2019) - Reg

Ref :- 1. Regulations for the award of the Degree of Doctor of Philosophy by APJ Abdul Kalam Technological University
2. U.O.No.612/2019/KTU dated 24.11.2019
3. U.O.No.603/2019/KTU dated 21.11.2019
4. U.O.No. 270/2019/KTU dated Thiruvananthapuram 01.10.2019
5. Proceedings No. KTU/RESEARCH 2/ 1611/2015 dated 07.11.2017
6. Proceedings No. KTU/RESEARCH 2/1611/2015 dated 05.05.2018
7. Proceedings No. KTU/RESEARCH 2/1611/2015 dated 28.2.2019
8. U.O.No.KTU/A/1038/2016 dated 26.07.2016
9. U.O.No.434/2019/KTU dated 28.10.2019
10. U.O.No.625/2019/KTU dated 26.11.2019
11. Proceedings No. KTU/RESEARCH 2/ 1611/2015 (1) dated 07.11.2017
12. U.O.No.KTU/RESEARCH 2/1611/2015 dated 26.07.2016
13. U.O.No.602/2019/KTU dated 21.11.2019
14. U.O.No.652/2019/KTU dated 30.11.2019

The Regulations for the award of the Degree of Doctor of Philosophy by APJ Abdul Kalam Technological University, Kerala incorporating amendments made upto 30.10.2019, ordered vide papers read as (2) to (14) above, is attached herewith.

Dr. VRINDA V NAIR *
DEAN (Research)

To
1. All Research Centers
2. PS to VC/PS to PVC/PA to Registrar/PA's to Dean (Academic/Research)/PA to CE
3. E-Governance Wing (for publishing the same in the University Website)
4. Day File / Stock File

signature.

Regulations for the award of the Degree of Doctor of Philosophy by the

A P J Abdul Kalam Technological University

(Amendments made upto 30/10/2019)

Introduction

A P J Abdul Kalam Technological University offers research programmes in various disciplines of Engineering, Technology, Architecture, Basic Sciences and Mathematics, Management, and allied Inter-Disciplinary areas leading to the award of the Degree of Doctor of Philosophy (Ph. D.). The eligibility, selection, registration, supervision, submission and evaluation of thesis and conduct of viva voce shall be regulated as follows:

1. **Categories of Admission**
   There shall be THREE categories of Ph. D. admission as given below:
   (i)   Full-time scholars of the University with or without fellowship
   (ii)   Part-time scholars who are faculty members of the University Departments or of an affiliated college admitted to pursue research towards Ph. D. degree while working
   (iii) External part-time scholars who work in Research Organisations or Research & Development centres recognised by A P J Abdul Kalam Technological University for the purpose of external registration

2. **Eligibility for admission[1,2]**
   Candidates with the following qualifications are eligible for admission to Ph. D.
   (i)   Master's Degree in Engineering/Technology, Architecture or a Master's Degree by research in Engineering/Technology with a minimum CGPA of 6.5 are eligible for admission to the Ph. D. program.
   (ii)   Master's Degree in Basic Sciences or Mathematics with a minimum CGPA of 6.5.
   (iii) Master's Degree in Computer Applications with a minimum CGPA of 6.5
   (iv)   For Ph.D. in Management, Master's degree in Management with a minimum CGPA of 6.5 or equivalent PG Diploma in Management from National Institutes with a minimum CGPA of 6.5/ Master's degree in Engineering/Technology in Management related streams with a minimum CGPA of 6.5

   Scheduled Caste / Scheduled Tribe / Other Backward Community (Non-Creamy Layers) / Differently-abled category candidates (with more than 40% disability) are eligible for admission with a minimum CGPA of 5.5 in all cases (i) to (iv) above. Certificate of disability issued by District Medical Board is to be produced in the case of differently-abled candidates.

   Basic Sciences candidates are allowed to pursue full-time as well as part-time research on the condition that for all streams other than Mathematics, a Co-guide is mandatory from a sister institution/ Research Organization which is willing to extend its research facilities/laboratories for the scholar.

3   **Supervision of research[1]**
   3.1 Eligibility
   - **Supervisor:** A regular faculty in an affiliated College/University Department under this University, having 2 year's post Ph. D. teaching experience and one research publication in Science Citation Index (SCI) / Science Citation Index Expanded (SCIE) [or Social Sciences Citation Index (SSCI) for Management] journal or in a SCOPUS indexed journal or having granted patents, is eligible for Supervisorship. Publication in journals with page/processing or publication charges will be accepted only if they are indexed in SCI/SCIE (or SSCI for Management). The period of Post Doctoral Fellowship if any will be considered at par with teaching experience.[3] A Supervisor is also eligible to Co-Supervise scholars within the prescribed permissible number.

   - **Co-supervisor:** A regular faculty in an affiliated College/University Department under this University, with Ph. D. having total 2 years teaching experience[7] and one Research

Publication in SCI/SCIE (or SSCI for Management) journal or in a SCOPUS indexed journal or having granted patents is eligible for Co-Supervisorship. Publication in journals with page/processing or publication charges will be accepted only if they are indexed in SCI/SCIE (or SSCI for Management). The period of Post Doctoral Fellowship if any will be considered at par with teaching experience.[3]

- **External Co-supervisor**: A reputed scientist/academic with the prescribed academic qualification and publication profile but without an affiliation with the University will not be permitted to be a Research Supervisor. However he/she shall be permitted by the Research Council to be a Co-supervisor if the situation warrants. The publication requirement and the number of scholars that can be guided by an external Co-Supervisor will be the same as that stipulated for an Assistant Professor under the University.

- **Eligibility for a Professor w.e.f 30/10/2022/ Associate/Assistant Professor w.e.f. 30/10/2024:** Any regular Professor should have 5 publications in refereed journals and any regular Associate/Assistant Professor with Ph. D. degree should have 2 Research Publications in refereed journals to be recognised as a Research Supervisor. Refereed journals should be SCOPUS indexed or SCI/SCIE (or SSCI for Management) and if journals are paid journals (those with page/processing or publication charges), they should be SCI/SCIE (or SSCI for Management). SCOPUS indexed journals will be excluded from the list of refereed journals in a period of 5 years (w.e.f. 30/10/2024) Thereafter only papers published in SCI/SCIE (or SSCI for Management) will be considered. After a further period of 5 more years, only papers in SCI journals will be considered. Grant (not filing) of a patent will be treated equivalent to the requirement of SCIE journal papers and its commercialization, equivalent to the requirement of SCI journal papers. The requirement of Post PhD teaching experience for supervisors or a total teaching experience of two years for Co-Supervisors will not be mandated when the revised eligibility comes to effect.

- Existing Guides have to satisfy the above guidelines to retain their Guideship after the specified period, for registering new scholars. However Research Scholars already registered under their Guideship will be allowed to continue.

- Publications mentioned in the above paragraphs cannot be Review or Survey Publications unless the faculty has atleast one publication other than a Review or a Survey Publication. Further, all publications mentioned in the aforesaid paragraphs shall be those published during or after Ph. D.

- Within a period of 5 years, a Supervisor is expected to undertake at least one Research Project funded by a state agency and within a period of 10 years that by a national agency.

- Faculty members of the Departments of Basic Sciences and Mathematics fulfilling the requirements to be a Supervisor/Co-Supervisor are eligible to supervise/co-supervise doctoral research in their own areas or interdisciplinary areas.

- Those with Ph. D. from Universities other than the State Universities in Kerala, are required to produce an equivalency/recognition certificate obtained from any State University in Kerala. If the University which awarded the degree falls within the first 200 position in the latest NIRF ranking, the candidate is exempted from producing equivalency/recognition certificate. Ph. D. holders from Institutes of National importance and from foreign universities under 500 QS/THE/ARWU global ranking (latest) are also exempted from producing equivalency/recognition certificate. Those Supervisors who are already approved supervisors of this University shall produce the equivalency certificate before accepting a new scholar for research.

3.2 Age Limit

The age limit prescribed for a supervisor/co-supervisor at the time of enrolment of the scholar shall be as per UGC norms.

3.3 Number of scholars

The number of research scholars that a Professor, Associate Professor and Assistant Professor shall supervise at any given time is 8, 6 and 4 respectively. Out of the 8 scholars that a Professor supervises, at least 3 shall be full-time scholars with fellowship. Out of the 6 scholars that an Associate Professor supervises, at least 1 shall be a full-time scholar with fellowship. Full-time scholars mentioned above are those scholars coming under University/ Government/ KSCSTE fellowship scheme/ AICTE–QIP/NDF scheme/ UGC-JRF scheme or Full-time scholars who are research fellows of a funded project (minimum 3 years duration) of the Research Supervisor with fellowship amount equivalent to the amount awarded as University/Government fellowship or higher. Assistant Professor shall enrol only 4 scholars. Those who are presently guiding a number more than what is mentioned are allowed to retain them till their completion of research. The cadre to which a faculty belongs, will be decided by the qualifications as per AICTE norms and their salary. The maximum number mandated do not include those scholars of other Universities who were already accepted by the Supervisor. The maximum number mandated above also includes the number of scholars co-supervised. Those Co-Supervisors, external to the University can co-supervise upto a maximum of 4 scholars under this University.

3.4 **Others**
- Interdisciplinary Research shall be undertaken with Supervisors/Co-Supervisors from the interdisciplinary streams.
- The Research Supervisor who superannuates after supervising a scholar for two years shall continue to supervise the research scholar. He/she shall with the concurrence of the University, identify a Co-Supervisor from the Department/College before 6 months of retirement.
- In case of supervisors getting transferred, a faculty member from the Place of Research, with Ph. D. (not necessarily a Guide of this University) shall be assigned by the Principal of the Place of Research for monitoring and approving the progress of the scholar as well as assisting the Convener in convening the Doctoral Committee meetings of the scholar.[13]

4. Place of Research

Academic departments of the constituent colleges of the University and affiliated colleges, where at least two post graduate programs in Engineering are successfully carried out for at least two batches are eligible to offer doctoral programs. Such departments/colleges shall do a self-assessment of their capabilities for undertaking research at doctoral level and the Academic Head of the Department/College should give a certificate to that effect. The University reserves the right to inspect the research facilities available at any of the affiliated colleges desirous of starting Ph. D. level research before accepting it as a place of research. Academic departments of the constituent colleges of the University and affiliated colleges having PG programmes, but with no student admitted in the academic year, shall not be considered as a place of research for registering fresh scholars. Scholars already allocated to the College will be allowed to continue their research[4].

In the case of external registration for Ph. D., the research work shall be carried out in the parent organisation of the scholar. In order to complete the course work and to have close interaction with the Research Supervisor, it is mandatory that the Research Scholar under external registration is full-time at the college or at the department where he/she is enrolled as a scholar for a minimum period of 180 days. This is called residential requirement. Depending on the nature of the research topic and the specific requirements of the scholar, the Doctoral Committee (DC) may prescribe a longer residential requirement to such research scholars. From 2018-19 odd semester admission onwards, all part-time research scholars too, irrespective of their place of working are required to undergo a residential period of 180 days at their place of research in a single spell or two, by availing eligible leave[5].

Only organisations/industries assessed and approved by the A P J Abdul Kalam Technological University of having good research facilities and research ambience are eligible to register their candidates for external registration of the University. Candidates in the same category who are working in institutions outside India, are permitted to apply only if this University has a Memorandum of Understanding (MOU) with the said organization[8].

5. SelectionProcedure[1]

The application for admission to research programs shall be invited by the University, once a year. The selection of candidates shall also be conducted only once a year – in the even semester. Though selection is conducted in the even semester facilitating admission in the odd semester, admission for the candidates shall be permitted in the subsequent even semester also. The University shall decide the selection procedure for admission. The selection shall be through discipline wise common written tests and/or personal interview as decided by the University from time to time. Selection of the candidate will be provisional until the final approval by the University. AICTE QIP/NDF scholars and candidates with CSIR/UGC JRF fellowship are exempted from appearing for the test and interview. Such candidates can avail admission in the odd or even semester

6. Admission

Once the selection process is completed and on ratification by the University, the selected candidates will be admitted to the Ph. D. programme of the University and allotted to respective College/Department after payment of prescribed fee and verification of all records.

7. Allotment of scholar to the Research Supervisor[1]

Requests made by the selected candidates, accepted by the Research Supervisor will be approved by the academic Head of the College/University Department subject to the ratification by the Dean (Research) of the University, taking into account the research goals of the Department and preferences of the Research Supervisor and the candidate.

8. Co-Supervisor

Depending on the nature of the research to be carried out and the preferences of the Research Supervisor and the Research Scholar, a Co-Supervisor may be co-opted. If the Supervisor is about to retire (within three years), appointment of a Co-supervisor shall be mandatory. Recommendation for a Co-supervisor shall be made with valid reasons and justification. Co-supervisor may be also from a sister institution (educational/R&D) if the situation warrants. But they should satisfy the eligibility criteria as given in section 3 of this document. Co-supervisor shall be appointed by the academic head of the College/Department subject to ratification by the Dean(Research) of the University. In any case, there shall not be more than two supervisors for a research scholar.

A faculty from a foreign university /research department can be a Co-supervisor with the concurrence of the Research Council, if he/she fulfils the criteria fixed by the University to be a Co-supervisor and in addition, the institution he/she belongs to shall be within the first 1000 positions in the latest QS/THE/ARWU global ranking[9].

9. Doctoral Committee (DC)

9.1 Composition of the Doctoral Committee

The University department/college shall recommend to the Dean (Research) of the University, a panel of experts for inclusion in the Doctoral Committee for each research scholar depending on the area of research. It is mandatory that the experts have sound knowledge in the area of research, which is to be ascertained by means of his/her research publications[1].

The DC is constituted by the Dean (Research) of the University.

Depending on the availability of experts and the area and nature of research, Dean(Research) of the University constitutes the Doctoral Committee normally from the panel of names provided by the academic head of the college/the university department. The constitution of the DC will be as follows:

Dean (Research) of the University or his/her nominee – Chairman

Academic Head of the College/University Department – Member & Convenor

Research Supervisor and Co-Supervisor (if any) – Member/s

Two faculty members of the Department/College with Doctoral Degree – Members

(Internal members)

Two faculty members/scientists with Doctoral Degree, from other organizations having specialisation in the scholar's research topic.– Members[1]

(External members)

In case any member goes on leave exceeding one year duration, or resigns or retires from the institute, and ceases to be a member of the Doctoral Committee, the Chairman of the Doctoral Committee, on recommendation of the academic head of the college and the research Supervisor shall nominate an alternate member.

9.2 Functions of the Doctoral Committee

(i)   Evaluation of research facilities at the place of research
(ii)   Recommending registration of the selected candidate for Ph. D. program
(iii)   Prescribing the course work for the research scholar
(iv)   Nomination and approval of Co-supervisor
(v)   Conduct of comprehensive viva of the scholar
(vi)   Progress review of the scholar's research work
(vii)   Nomination of thesis examiners
(viii) Review of the examiner's reports on the thesis
(ix)   Conduct of the oral examination

The meetings of the DC shall be convened atleast once a year in the first three years of registration of the candidate and a minimum of twice a year thereafter. It is mandatory that the chairman, research supervisor/s and atleast one internal member and one external member are participants in the DC meetings.[1]

10. Registration

The Doctoral Committee shall meet first normally within a month of being constituted, and not later than two months of admission of the candidate. The Doctoral Committee shall fix/approve the proposed research topic, the date of registration for the Ph. D. program, considering the recommendation of the research supervisor and prescribe/approve the courses of study in its first meeting.

11. Course Work

Doctoral Committee in its first meeting shall prescribe two compulsory courses and a basket of four electives to be undergone by the scholar. The scholar has to undergo any two of the courses from the basket of electives prescribed by the DC. Research Methodology is a compulsory course, if this has not been undergone in the Post Graduate programme by the research scholar. The number of courses

to be undergone by the research scholar over and above the minimum prescribed is at the discretion of the Doctoral Committee. The credit assigned to the course work shall be a minimum of 08 credits and a maximum of 16 credits.[1]

All courses shall be at the Post Graduate level of the college. In case no suitable courses are available, the Chairman of the DC may allow courses of allied departments/institutions. Offering of new courses by the Department suitable for the research may also be resorted to under exigencies of circumstances.

Scholars with MCA degree need to undergo 4 additional core courses from UG/PG Engineering Stream with a total of 12 credits to pursue research under a supervisor from Engineering/Technology area.[1]

The DC shall give credit to courses already undergone by the research scholar in the institution or in sister institutions in the past four years, provided that the course contents and the evaluation pattern are similar. Credit to courses, other than Research Methodology, already undergone by a research scholar will not be considered if they were credited for the award of any previous degree. UG courses, may be prescribed as additional courses. In all prescribed courses, the research scholar should attain overall 50% of marks with a minimum of 45% for internal as well as end-semester examinations[6].

12. Monitoring of Progress

A registered research scholar shall submit a written progress report in the prescribed format annually for the first three years, and every six months thereafter. It is the responsibility of the convener of the DC to arrange for the DC meetings regularly and on time. Scholars should submit progress report through the research Supervisor to the academic head of the college/university department and to the chairman and members of DC every semester. This should be done well in advance of the DC meeting for reviewing the progress of the scholar. On review/evaluation of the progress, the DC makes appropriate recommendations with regard to the research program. Continuance of registration and award/continuance of scholarship/research assistanceship (if any) will be based on the recommendation of the doctoral committee. Inadequacy of effort/progress shall be a reason for cancellation of registration.

13. Comprehensive examination

Every Ph. D. scholar shall appear for and perform satisfactorily in a Comprehensive Examination as evaluated by a duly appointed committee. The objective of the Comprehensive Examination is to test the general competence of the research scholar and the breadth of his/her knowledge in his/her discipline and areas related to his/her field of research.

The Comprehensive Examination shall be conducted by the Comprehensive Examination Committee, consisting of the Doctoral Committee members of the scholar and at least two other external members nominated by the Chairman of the doctoral committee. The comprehensive examination shall usually consist of a written test and an oral examination.

If the performance of a research scholar in the Comprehensive Examination in the first attempt is not satisfactory, he/she will be given one more opportunity to appear for the comprehensive examination within six months of the first attempt. If a candidate fails to clear the comprehensive exam in two attempts, his/her registration shall be cancelled. A candidate will be given two chances for written part and two chances for viva part for passing the comprehensive written and viva examinations[2].

The Comprehensive Examination committee shall intimate to the research scholar sufficiently in advance, the scope of the Comprehensive Examination, so as to enable the scholar to adequately prepare for it.

Research scholars are normally expected to complete the Comprehensive Examination successfully within a year of his/her registration for the programme and in any case not later than three semesters after the registration.

For both written and oral components of the comprehensive examination, the DC shall decide the modalities subject to approval by the Dean(Research) of the University. However the written examination shall be conducted for 100 marks and viva evaluated out of 100 marks. Candidates should score 50% for a pass. Only those candidates who successfully complete their course works are eligible to appear for the comprehensive written examination. And only those candidates who secure a pass in the written examination are eligible to appear for the comprehensive viva.[1]

14. Research Proposal

After successful completion of comprehensive examination, there should be a detailed presentation of the Research Proposal and progress report by the research scholar in the subsequent meeting of the DC. The research proposal shall contain the title (need not be exact) of the intended study, justification/motivation of the study, international and national status of the research topic, conceptual model/hypothesis, specific objectives, detailed methodology, proposed year wise time frame for the completion of the proposed research work (in a chart form), expected outcome/deliverables, and a brief bibliography. The research proposal meeting is open to all where non-DC members also may be present. This is considered as the 1st seminar by the research scholar. The research proposal meeting of the DC shall be conducted within TWO years of registration of the research scholar. Any delay in conducting the research proposal meeting shall be got approved by the DC Chairman and informed to the Dean (Research) of the University. The research scholar shall make suitable modifications and course corrections in the research work incorporating the suggestions of the DC in the research proposal meeting.

15. Enrolment

Enrolment in any semester defines the continuance of the research program by the scholar and should be done at the department/college where other mandatory requirements such as payment of prescribed fee are also required to be fulfilled. A semester wise progress report by the research scholar should be submitted to the supervisor/s and the convenor of the DC and their recommendation is a precondition for enrolment. All research scholars are required to enrol each semester on the stipulated date till the submission of the thesis.

16. Conversion from Full-time to Part-time[5]

Scholars will be permitted to convert from Full-time to Part-time PhD under the following conditions: i) They shall complete the residential requirement of 180 days at their place of research and shall have successfully completed comprehensive examination, ii) Scholarships and other financial supports will be stopped from the date of conversion, iii) NOC from the employer shall be produced within a period of 90 days from the date of conversion. If the scholar fails to satisfy the stipulated conditions, the scholar shall re-register with a fresh doctoral committee and supervisor during the immediate next admission else which the registration will stand cancelled. The doctoral committee shall decide on further course works to be credited if required, based on the new area chosen.

17. Duration of completion of research towards Ph. D.

The minimum period of study and research for regular full time research scholars under A P J Abdul Kalam Technological University from the date of registration for the Ph. D. (date of commencement of research) to the date of submission of the thesis shall be 30 months. The date of commencement of research is taken as the date of joining in the institution (date of remission of first fee).[1]

The maximum duration of Ph. D. program is 5 years for full time scholars and 6 years for part time scholars. Extension requests of full time scholars will be examined by the DC and extension of 1 year will be granted only for genuine cases. A relaxation of 2 years is allowed to women and physically disabled persons (with disability more than 40%).[4]

18. Withdrawal and Leave [5,10,11]

A scholar may be permitted by the Dean (Research) to withdraw from the program for a semester or longer for reasons of ill health or on other valid grounds duly recommended by the doctoral committee. Normally, a scholar will be permitted to discontinue from the programme only for a maximum continuous period of two semesters.

(i)   A scholar during withdrawal period should keep his registration live by remitting the semester fee.
(ii)   Scholarships and other financial supports to the scholar will not be paid during withdrawal period.
(iii)   Maximum duration of Ph. D. study remains unchanged.
(iv)   Withdrawal is allowed only once during the programme of study.
(v)   Maternity period as per university rules will not be considered as withdrawal.
(vi)   Research Scholars are entitled for a maximum period of 30 days of leave in a year in addition to public holidays.

(vii)   Women candidates are eligible for maternity leave for a duration of 240 days once in the tenure of research. The maximum period of PhD study is 8 years including maternity leave period. KTU fellowship period of these scholars, if applicable, remains as 3 years.
(viii) Separate Child care leave is not considered for research scholars.
(ix)   If the research scholar receives any funding from external agency, the rule of the funding agency shall be treated as leave rules.
(x)   Research scholars are not entitled to any other vacation.

19. Cancellation [2]

- The registration of a research scholar will be suspended if he/she fails to remit the semester fee twice in succession. The registration will be resumed only with the recommendation of the DC and a remission of the fee due+18% of fee due+ a fine of Rs.2000.
- Suspension due to failure in fee remission in subsequent semesters will be resumed only by remission of fee due+18% of fee due+ a fine of Rs.10000/-
- The registration is liable to get cancelled if a scholar fails to remit semester fee thrice in succession and DC recommends cancellation of registration.
- The registration of a scholar gets cancelled if progress is not found to be satisfactory by the DC and the DC recommends cancellation of registration.
- The registration of a scholar gets cancelled if he/she fails in all permissible attempts of Comprehensive examination.
- The registration of a scholar gets cancelled if he/she requests for cancellation.
- The registration of a scholar gets cancelled if the thesis gets rejected after all valuations.
- The registration of a scholar who fails to submit his/her thesis within the stipulated time, gets cancelled and it will be revoked in a subsequent date, if the candidate submits the thesis with the permission from the DC and remission of fee for the period after cancellation with 18% interest plus a fine of Rs. 15000.

20. Publication of Research Output

For a research scholar to submit the synopsis on completion of the research there must be visible research output by way of publications in reputed journals and conferences. Grant of patents shall also be taken as valid research output in lieu of publications. Any patent application made shall be with the consent of the University and shall be registered with the Registrar of the University as the assignee. The research scholars shall file patents provisionally and then proceed with publication. The DC shall take decisions on such matters subject to ratification by the Dean (Research) of the University.

A research scholar is required to publish (or obtain letter of acceptance) [2]

(i)   One paper (other than a review or a survey paper) in SCI/SCIE/SSCI (for management)/SCOPUS indexed journals. Paid journals indexed in SCOPUS should also be those indexed in SCI/SCIE/SSCI(for management)

(ii)   One paper in an international/national conference conducted by registered societies of impeccable reputation.

(iii)   The authors shall include the name of the University as one of the affiliation other than the research institution and their working institute.

(iv)   Research scholar shall be either first author or corresponding author of the said publication.

(v)   A publication which entitles a scholar for the award of Ph. D. cannot be used by another scholar even if the scholar is a co-author. If the work is the continuation of a project, the scholar may be permitted to include this paper as his/her contribution, but for meeting basic requirements, he/she should publish another paper/s as either first author or corresponding author.

21. Submission of Synopsis

On satisfactory completion of the prescribed courses, the comprehensive examination and the research work, the scholar shall submit the requisite copies of the synopsis of his/her research work in the prescribed format through the research supervisor/s and the academic head of the college/department to the Dean(Research) of the University for consideration by the doctoral committee.

Prior to submission of the Synopsis, the scholar is required to give a second seminar talk of minimum of 45 minutes duration on his/her research work. The second seminar is an Institute seminar in which research scholars, PG scholars and faculty members of the institution participate.[12] Further, the scholar should have at least one paper either published or accepted for publication in a journal as specified in Section 20.

The research scholar shall present the synopsis before the Doctoral Committee. The Doctoral Committee on consideration of the work content and its quality decides on the acceptance or otherwise of the synopsis. On acceptance of the synopsis, the DC permits the research scholar to submit the thesis. DC recommends a panel of at least eight examiners to the Dean(Research) of the University, out of which not more than 3 shall be from within the State. They shall be from institutions not affiliated to KTU. It is mandatory that the examiners recommended in the panel should be of good research reputation and must be from national Institutes or Laboratories and may include those of good professional standing from foreign Universities. Examiners in the Panel should be at the level of Associate Professor in the University or higher.[1]

22. Submission of Thesis

The scholars should submit the synopsis along with first draft of thesis in hard and soft copies at the synopsis meeting. However, a maximum of two months' time will be given to improve the thesis and to incorporate changes/suggestions made by the DC before the final submission. The research scholar shall within two months of acceptance of the Synopsis, submit requisite copies of the thesis. The Doctoral Committee may in exceptional cases grant additional time beyond two months on request from the scholar for valid reasons.

The guidelines for use of anti-plagiarism software for the Ph. D. thesis are as follows:

1. The scholars have to certify that a standard software/platform[12] was used for checking against plagiarism.
    The research supervisor has to ensure checking against plagiarism through any standard software before submission of the Ph. D. thesis and endorse the undertaking of the scholar. As a general guideline, the maximum percentage of similarity may be limited to 20, excluding the bibliography and self plagiarism[1].
2. The research supervisor may obtain special relief from this checking from the Dean(Research) on grounds of IP implications or National Security, if applicable.

23. Thesis examiners

The thesis shall be referred to two examiners chosen by the Vice Chancellor (VC) normally from among the panel of examiners recommended by the doctoral committee at the synopsis meeting. The VC, if deemed necessary may select examiners from even outside the Panel proposed by the DC.

24. Reports from examiners

The examiners are expected to send the report on the thesis within two months from the date of receiving the thesis. In case of undue delay in receiving the thesis report, the VC or his/her nominee shall appoint another examiner from the approved panel of examiners for evaluating the thesis.

If one of the two thesis examiners declares the thesis as not recommended, the thesis shall be referred to a third examiner from the approved panel. If two examiners after referral to a third examiner, when necessary, report the thesis as not recommended, the registration of the scholar shall stand cancelled.

If two examiners recommend the thesis for the award of Ph. D., the Doctoral committee will consider the reports and recommend for the conduct of the viva voce.

The viva voce shall be conducted normally after two weeks from the date of the constitution of the viva voce board.

If the examiner/s suggest/s resubmission of the thesis after revision the research scholar will be allowed to resubmit within the time stipulated by the doctoral committee.

In all other cases, not covered by the above regulations, the matter will be referred to the doctoral committee for consideration and it shall be up to the VC to approve the recommendation of the doctoral committee.

25. Viva voce/Open defense

The composition of the viva voce board, shall be as follows:

1. Dean (Research) of the University or nominee : **Chairman**
2. Academic Head of the College/Department : **Convenor/Member**
3. One of the examiners of the thesis from within the country : **Member**
4. One subject expert from the same panel of 8 examiners forwarded by the DC, chosen by the VC or his/her nominee[1] : **Member**
5. Research Supervisor(s) : **Member**

The Doctoral Committee members of the research scholar concerned shall be invitees to the viva voce.

E-copy of the thesis shall be circulated among the members and invitees prior to the Reports Meeting and viva voce examination of the thesis. The written response of the candidate to the examiner's queries as well as the modified e-thesis shall be circulated prior to the viva voce/DC meeting.

The viva voce board will examine the scholar on his/her thesis work and evaluate his/her performance as satisfactory or otherwise. The viva voce board will also assess whether the scholar answers satisfactorily the questions raised by the thesis examiners(s).[1]

The viva voce board shall also recommend revision to be made in the final version of the thesis after taking into consideration suggestions of the examiners who evaluated the thesis and the discussion at the viva voce.

If the performance of the research scholar in the viva voce is satisfactory, he/she will be recommended for the award of Ph. D degree with the approval of the competent authority of A P J Abdul Kalam Technological University.

The chairman of the viva voce board shall forward the thesis to the Dean(Research) of the University certifying that the revisions recommended by the viva voce board, if any, have been incorporated in the copy of the thesis along with the report of the viva voce board (both hardcopy and softcopy).

If the report of the viva voce board declares the performance of the research scholar not satisfactory, he/she may be asked to reappear for viva voce at a later date (not earlier than a month and not later than six months from the date of the first viva voce). On the second occasion, the viva voce board will also include the members of the doctoral committee. If the viva voce board on the second occasion also evaluates the performance of the research scholar as not satisfactory, the matter will be referred to the VC for a decision.

26. Award of degree[1]

Provisional Certificate will be issued to those scholars who successfully defend their thesis. Ph. D. degree will be awarded to the scholars who fulfil all the requirements for the award of Ph. D. degree as and when approved by the Board of Governors.

27. Residual powers

Anything that is not explicitly covered in Sections 1 to 26 above with regard to Ph. D. of KTU will be referred to the Vice Chancellor for his/her decision and the decision shall be final.

University Orders implementing the amendments

1. U.O.No.612/2019/KTU dated 24.11.2019
2. U.O.No.603/2019/KTU dated 21.11.2019
3. U.O.No. 270/2019/KTU dated Thiruvananthapuram 01.10.2019
4. Proceedings No. KTU/RESEARCH 2/ 1611/2015 dated 07.11.2017
5. Proceedings No. KTU/RESEARCH 2/1611/2015 dated 05.05.2018
6. Proceedings No. KTU/RESEARCH 2/1611/2015 dated 28.2.2019
7. U.O.No.KTU/A/1038/2016 dated 26.07.2016
8. U.O.No.434/2019/KTU dated 28.10.2019
9. U.O.No.625/2019/KTU dated 26.11.2019
10. Proceedings No. KTU/RESEARCH 2/ 1611/2015 (1) dated 07.11.2017
11. U.O.No.KTU/RESEARCH 2/1611/2015 dated 26.07.2016
12. U.O.No.602/2019/KTU dated 21.11.2019
13. U.O.No.652/2019/KTU dated 30.11.2019