

PH.D. (DOCTOR OF PHILOSOPHY) ORDINANCE

(As per the UGC Regulations, 2009)

Introduction

- 1.1 Jagan Nath University has a strong commitment to high quality education and research to enhance the professional competence of the students. The University offers Ph.D. (Doctor of Philosophy) programme to the eligible students who are interested to pursue research.
- 1.2 The Ordinance defines the conditions for Ph.D. programme, admission procedure, appointment of supervisors, Pre-Phd coursework, implementation methodology, conduct of the examinations and evaluation of thesis leading to award of Ph.D. Degree.

2.0 Research Board

2.1 There shall be a Research Board consisting of:

- (a) Vice-Chancellor (Chairman)
- (b) Deans of the Faculties
- (c) Senior most Professor or in case there is no professor, the Senior Most Associate Professor in the teaching departments of the University.
- (d) Three distinguished members who are not employees of the University, to be nominated by the Chancellor.
- (e) Registrar shall be the Secretary of the Board.

2.2 The members other than the ex-officio members shall have a term of three years and shall be eligible for re-nomination.

- (a) One third of the members shall constitute the quorum.
- (b) In the absence of the Vice-Chancellor, the senior most Dean present at the meeting will preside.
- (c) The recommendations of the research Board shall be placed before the Academic Council.
- (d) The Research Board shall meet at least once in an academic session.

2.3 Research Board shall be responsible for:

- (a) Promotion and maintenance of the standards of research.
- (b) To Monitor and guide all research programmes including Doctoral research.
- (c) Identify Research and Development thrust areas within the frame work of the objectives of the University.
- (d) Formulation of regulations and procedures for research development and consultancy work.
- (e) Plan, initiate, review and oversee the research activities.
- (f) Evolve and implement multi-disciplinary programmes utilizing the infrastructure and resources of the University gainfully.

2.4 Functions of the Research Board

- (a) To recommend the minimum qualifications for recognition as supervisor for research work.
- (b) To consider and recommend applications from teachers for recognition as research supervisors.
- (c) To recommend names of distinguished persons from outside the University for guiding research work.
- (d) To consider the cases for registration for doctoral degrees where there is change of faculty.

- (e) To consider cases of difference of opinion between examiners of doctoral thesis and other exceptional situations not expressly covered by the Regulations.
- (f) To consider any other matter referred to it by the authorities of University or Vice- Chancellor.

3.0 **Ph.D. Programmes offered**

Doctoral Programme leading to Ph.D. will be offered in the following Faculties of the University:

- (a) Faculty of Management & Commerce
- (b) Faculty of Engineering and Technology
- (c) Faculty of Architecture
- (d) Faculty of Law
- (e) Faculty of Information Technology
- (f) Faculty of Journalism and Mass Communication
- (g) Any other faculty as may be approved by the University from time to time

4.1 **Departmental Research Committee**

There shall be a Departmental Research committee consisting of:

- (a) Dean of the Faculty concerned
- (b) Head of the Department concerned
- (c) Senior most Professor, other than the Head of the Department/Senior Most Associate Professor other than the head, if there is no Professor.
- (d) At least one expert in the concerned subject nominated by the HOD in consultation with the Dean. The expert may be an outside expert or internal expert.

Note: In case a Dean is not available the Vice-Chancellor may nominate a senior faculty to preside over the meeting.

4.2 **Functions of Departmental Research Committee**

- (a) To consider and recommend the topic and synopsis submitted by the student with or without modification.
- (b) To consider and recommend the applications from supervisor for appointment of joint supervisor.
- (c) To consider and recommend the application for the change of supervisor in between the course due to some valid reasons.
- (d) To consider and recommend the application for the change in subject/ faculty different from the subject/faculty at master's degree.
- (e) To consider and recommend the application from a student registered in some other recognized university but wants to shift to Jagan Nath University for pursuing his Ph.D.
- (f) To consider and recommend the modification of topic of research within one year after the date of registration.
- (g) To consider and recommend minor changes in the wordings of the topic of the thesis at least six months prior to submission of thesis.
- (h) To prescribe syllabi for Pre-Ph.D. course work.

The meeting of DRC will be organized within a period of one month after admission to finalise the broad research area/topic. The candidate will carry out review of the published work on that subject as part of Pre Ph.D. course work. The date of DRC meeting will be considered as date of registration.

5.0 Procedure for Admission

5.1 Eligibility

- (a) A candidate for admission to the degree of Ph.D. in any of the Faculties must have obtained the Master's Degree with at least 55% marks (CGPA 5.5 - 6 in a scale of 10) of any recognized University (50% in for SC / ST /Physically and visually handicapped candidates).
- (b) A candidate who takes his Master's Degree from a University /Foreign University where the University does not award any division or grade and only mentions pass/fail shall be required to appear and pass a written test of at least three hours duration to be conducted by the Departmental Research committee on payment of prescribed test fee, judging his proficiency in the subject concerned.
- (c) At least 50% marks at the Master's Degree level and at least five years 'full time' teaching experience in the subject at any recognized University Teaching Departments/college or professionals from State/Central Services/Public Sector Undertakings and senior executives from Corporate & Autonomous bodies with ten years experience in managerial/supervisory capacity.
- (d) It will be the responsibility of the candidate to ensure his/her eligibility and fulfillment of such other conditions as may be prescribed for admission in the rules and regulations of the University. Before submission of Application Form, the candidate is required to ascertain these facts from the concerned Faculty. Merely qualifying the entrance test will not *ipso-facto* entitle a candidate to get himself admitted for Ph.D. course in the Faculty concerned.

5.2 The candidates shall apply for the admission in Ph.D. course in prescribed Form available at the University office or can be down loaded from University website www.jagannathuniversityncr.ac.in. The application Form dully filled by candidate should be submitted along with required fee (as fixed by the University).

5.3 The number of seats for Ph.D. shall be decided well in advance and notified in the University website or advertisement.

5.4 The admission to the Ph.D. Programme would be either directly or through M.Phil. Programme.

5.5 The candidates will be given admission through entrance test to ensure quality, to be organized by the University. The test should examine research aptitude, grasp of the subject, intellectual ability and general knowledge of the prospective candidates.

5.6 The candidates who qualify the entrance test will be called for interview. The interview will be conducted by a committee to be constituted by Vice-Chancellor.

5.7 At the time of interview, the candidates are expected to discuss their research area.

5.8 Exemption from Entrance Test

The following categories of candidates will be exempted from Entrance Test for admission to Ph.D. Course:

- (a) Qualified UGC-JRF/ NET, CSIR-JRF/NET, SLET examination in the concerned subject.
- (b) Qualified with a valid GATE score in the concerned subject
- (c) Candidates who have obtained M.Phil. degree from any recognized University and whose admission at the M.Phil. has been through an entrance test and course work has been prescribed according to

UGC regulations 2009 on M.Phil /Ph.D. at the M.Phil level, shall not be required to undertake entrance examination or the course work for admission to Ph.D. programme.

However, Candidates who have obtained M.Phil degree, not in accordance to UGC regulations 2009 on M.Phil./Ph.D. or through Distance Education are not exempted and will be required to qualify the Ph.D. Entrance Test and pass the course work for Ph.D. programme.

(d) The candidates who are exempted from the entrance test under the clauses (a), (b) and (c) shall have to take the interview.

5.9- 50% seats will be filled up out of the categories exempted from the entrance test. The remaining seats will be filled up out of the candidates qualifying the entrance test and interview. However, seats remaining vacant in each category may be filled up *vice versa*.

5.10 No candidate will ordinarily be permitted to do research work for the degree of Ph.D. in a Subject/Faculty different from the one in which he has obtained his/her Master's Degree. Permission to pursue Ph.D. degree in a different Subject/Faculty may be granted in special cases on the recommendation of Departmental Research committee after conducting a written test of 3 hours duration judging the proficiency of the candidate in the subject concerned on payment of prescribed fee.

5.11 After the interviews, the applications of the selected candidates will be scrutinized by University office. These candidates shall be admitted provisionally as Ph.D. student of the University on payment of the prescribe fee. The fee deposited will not be refunded for any reason, whatsoever.

5.12 The application for admission shall be sent to the University office and shall be accompanied by the prescribed fee, the original Master's degree and the Migration Certificate of the University from which he took the Master's degree.

5.13 While granting admission to students to in Ph.D. Programme, the University will pay due attention to the reservation policy as per the provisions laid down in the Jagan Nath University ACT, 2008 and the U.G.C. guidelines.

5.14 All the eligible candidates will submit brief synopsis on research proposal in consultation with the proposed supervisor within one month of admission. The Departmental Research Committee will consider and approve research topic within a month to enable the candidate conduct review of published research in the relevant field as one of the papers in course work.

6.0 Allocation of Supervisor

6.1 Departmental Research Committee shall allot the eligible supervisor approved by the University on merit and based on the area of research. The allotment/allocation of supervisor shall not be left to the individual student or teacher.

6.2 A Supervisor cannot have more than eight Ph.D. scholars at any given point of time.

6.3 The allocation of seats to the supervisor will be as per number of seats available with him and also keep in view the available laboratory/ infrastructure, specialization and the research interest of the student.

6.4 Departmental Research committee may initiate the process of registration of the candidates (exempted from course work) immediately after their admission as Ph.D. student. For candidates not

exempted from course work the DRC will approve topic of research for conducting review of studies in course work.

7.0 Eligibility of supervisors-

The following persons will be ipso-facto eligible to act as research supervisors:

- (a) All Professors and Associate Professors (Readers) in the University teaching departments possessing a doctoral degree. *Professors, Associate Professors and Scientists (not below to rank of Associate Professors) etc. recognized as Research guide in any Central or State University or National level Institute e.g. IITs, NITs, IIMs, ISRO, CSIR, ICSSR, BARC, TIFR, etc.*
- (b) All Assistant Professors (Lecturers) in the University teaching departments possessing a doctoral degree with at least two years teaching experience in recognized University/college. However, he may be allocated not more than two candidates per year subject to upper limit of 8 candidates.
- (c) Vice-Chancellor, Deans of the Faculties and persons holding any other academic position in the University, if they were recognized research guide in any other University prior to joining the Jagan Nath University.
- (d) A teacher of the recognized University/college willing to supervise Ph.D. scholars shall submit his request on prescribed application form available at University website along with Bio-data of teaching experience/research work/publications to the Registrar, Jagan Nath University.
- (e) The Research Board will consider the application of the teachers and shall submit its recommendations to the Academic Council for its recommendation.
- (f) In case a supervisor is an external expert, it will be mandatory to appoint a joint supervisor from the University, *if available*.

7.1 The supervisor is directly responsible for the supervision and mentoring the student. The supervisor is to provide counsel on all aspects of the programme and be involved in the student's research activities and progress.

7.2 Joint supervisor-

The joint supervision in the same department or different department/faculty is permissible in special cases:

- (a) The reasons for joint supervision are well defined by the supervisor.
- (b) Departmental Research committee will decide who will be the joint supervisor. In the case of External Supervisor, the joint supervisor must be from the University, *if available*.
- (c) In case of joint supervisors, the candidate will be counted as one seat in the quota of supervisor.
- (d) The joint supervisor will not act as an examiner.
- (e) The Research Board may, on the recommendation of the Dean concerned, permit as a special case a candidate to work under the guidance of a research supervisor not belonging to the University, provided that the proposed research supervisor has qualifications to be a supervisor of the University.

7.3 If the Supervisor of a candidate leaves the University before the completion of the research work or is otherwise unable to see the work through, due to some valid reason(s), Research Board may allow the change of the Supervisor, on the recommendation of the Departmental Research committee.

8.0 Course-Work-

- 8.1 The course work is compulsory for all students (except M. Phil. Candidates as exempted by the UGC regulation-2009) admitted to the Ph.D. course. They shall be required to undertake course work for a minimum period of one semester.
- 8.2 The course work will be treated as Pre-Ph. D. course preparation.
- 8.3 If found necessary, course work may be carried out by doctoral candidates in a sister departments/ Institutes either within or outside the university for which due credit will be given to them.
- 8.4 The course work must include a research methodology which may include quantitative method and computer application, review of published research work in the relevant field and one course on contemporary issues in the respective discipline.
- 8.5 Candidates will be required to appear and pass Ph.D. course work examination.
- 8.6 In case, a student fails in the Ph.D. course work, he shall be given one more chance to appear in the examination scheduled to be held by the University.
- 8.7 On qualifying course work examination, each eligible candidate shall submit his application for registration to Ph.D. course on the prescribed form to the Head of the Department, submitting a scheme or outline of the subject he proposes to investigate with a statement of work and any prior work and literature survey that he may have done on the subject within one month of completion of course work examination.
- 8.8 The Head of the Department will examine the following conditions and forward the application through the Dean of the Faculty to University office for registration after the topic is approved by the Departmental Research committee:— (i) Whether the candidate is eligible for registration, (ii) Whether the candidate is within the permissible quota of the supervisor, (iii) Whether the candidate fulfills all conditions for registration.
- 8.9 Departmental Research committee shall examine these applications and shall test the applicant through seminar to probe his knowledge in the subject, determine his suitability, satisfy itself that the subject can be profitably pursued for research by the applicant under the superintendence of the Department and forward the application along with the name of Supervisor allotted to the candidate and the topic of research to the academic branch for consideration of Research Board.
- 8.10. The Research Board shall decide the case of registration as it deems fit and shall approve the topic of research and the name of the supervisor/ Joint Supervisor (Intra-Departmental/ Inter-Departmental/ External), if it considers it desirable in a particular case recommended by the Departmental Research committee. The reason for recommendation of Joint Supervisor will be recorded in the proceedings.
- 9.0 The date of commencement of research work will be not earlier than the date of application for registration and not later than the date of registration letter issued by the University.

Provided that if there is no vacancy with the supervisor concerned on the date of application, the date of commencement may be treated from the date on which vacancy with the concerned supervisor occurs.

Further provided that the date of commencement of research work by foreign students may be accepted from the date of their application only if they continuously remain in India after obtaining a research visa.

10.0 Once registered, the student and his work shall be under the general disciplinary control of the Department. Any legal dispute relating to Ph.D. admission of students will be subject to Courts having jurisdiction in Haryana..

11.0 Academic Council shall have the power to cancel the admission of a student at any time, after the issue of a due show-cause notice, on disciplinary or any other grounds which are considered to be not in consonance with the dignity and behavior of a research scholar or non-payment of hostel or any other dues.

12.0 Fellowship-

12.1 The Candidates enrolled for Ph.D. may be awarded scholarship/ fellowship by any funding agency and their payment of scholarship shall be released after their cases are recommended by the Research Board.

12.2 JRF students registered for Ph.D. research work will be paid their fellowship as and when received from funding agency by the university.

13.0 Duration:-

13.1 Every candidate shall submit his thesis within a period of three years, but not before two years from the date of commencement of his registration.

13.2 If a candidate fails to submit his Thesis within a period of three years and does not apply for the extension before the expiry of his period, his admission will stand automatically cancelled.

13.3 A candidate will be registered for Ph.D. for a period of three years. After three years the maximum extension of registration could be granted to him up to another three years on yearly basis on prescribed fee. In case a Candidate does not submit his thesis within the above mentioned period he will not be permitted to submit the thesis on the same topic and will be required to apply for a fresh registration on a changed topic.

13.4 A candidate has been registered as a student for the degree of Ph.D. in another University and has worked on the approved subject, he may be permitted by the Research Board on the recommendation of Departmental Research committee, to register himself as a research student of the University and to submit his thesis after the expiry of the remaining period *subject to minimum of one year in this University*. He shall be liable to pay the minimum fee of Ph.D. course for two years.

14.0 Prerequisite of submission of Thesis:-

14.1 Every Ph.D. student shall submit his progress report half yearly from the date of Ph.D. registration duly recommended by the Supervisor to the Head of the Department.

14.2 The student shall pursue his research at the Head quarter of the supervisor, the period of residence being not less than 100 days in each year from the date of commencement of research. A portion of the period of residence, may for the sake of special guidance or facilities or collection of research

material or field study be spent elsewhere, as directed by the supervisor with the permission of the Dean/HOD of the concerned faculty.

- 14.3 Prior to submission of thesis, the student shall make a pre Ph. D presentation in the department may open to all the faculty members and research students, for getting feedback and comments, which may be suitably incorporated into draft thesis under the advice of the supervisor *and the same be submitted within six months along with the deceleration (Annexure 1). Only in extraordinary cases the Vice Chancellor may extend the time.*
- 14.4 The student shall publish one research paper in a refereed Journal before the submission of the thesis for adjudication, and produce evidence for the same in the form of acceptance letter or the reprints.
- 14.5 The student may incorporate in his thesis, contents of any of his published papers and he should state this in unambiguous terms in the thesis
- 14.6 No student shall join any other course of study or appear at any examination while conducting research. The Vice-Chancellor may, however, allow a candidate to appear in an examination or to attend a course in the University which is conducive to his research and is of minor nature, including improvement of any previous result.
- 14.7 The Research Board may allow a topic of research be modified on recommendation of Departmental Research Committee, *as per Clause (f) of the Regulation 4.2.*
- 14.8 Minor changes in the wording of the topic of a thesis may be allowed by the Research Board on recommendation of Departmental Research Committee, *as per Clause (g) of the Regulation 4.2.*
- 14.9 The supervisor shall notify to the University (*not earlier than six months of the date of submission of thesis*) that the thesis is presentable in all its aspects and shall forward two copies of the brief summary of the thesis to the University *for pre Ph.D. presentation.*

15 Thesis:-

- 15.1 The literary presentation of the thesis should be of a high standard i.e. concise, laid out logically and in proper sequence, far from grammatical and typographical errors and referenced properly.
- 15.2 The thesis shall comply with the following conditions to merit the award for the Ph.D. degree:
- (a) It should be a piece of research work characterized either by the finding of new facts or by a fresh approach towards interpretation of facts and theories.
 - (b) It should reflect the candidate capacity for critical examination and judgment.
 - (c) It should be satisfactory in its literary presentation.
- 15.3 A student, in addition to the conditions laid down above, may also submit a thesis based on the work in one or more of the following categories.
- (a) The candidate has constructed equipment capable of research grade measurements.
 - (b) The candidate has designed and constructed equipment, which provides an innovative approach to the teaching and understanding of the fundamental principles relating to a class of phenomena.
 - (c) The candidate has designed, developed and fabricated equipment and/or developed a process, which contributes to the Industrial/Technological self reliance of the country.

- (d) The candidate shall present a survey of literature in the field concerned and make a critical study of the topic showing a comprehensive knowledge of the current status and direction in the field. The candidate shall also present a detailed and critical report of experiments that he has carried out with the equipment developed.

16.0 Submission of Thesis:-

- 16.1 After the thesis is complete, the candidate shall supply *five* printed or typewritten copies of the thesis along with *two softcopies* (CD) of his thesis in the prescribed colour as mentioned below:

Faculty of Architecture	Orange
Faculty of Management	Yellow
Faculty of Law	Black
Faculty of Engineering and Technology	Light Blue
Faculty of Mass Communication	Light Green
Faculty of Information Technology	Pink

- 16.2 The thesis should be in English.
- 16.3 The supervisor shall furnish a certificate indicating that the thesis contains substantial original work of the candidate. (Annexure –II).
- 16.4 All the fee, dues, fines, etc. of the University must have been paid at the time of submission of the thesis. The student should also produce No Dues certificate from all the concerned departments of the University.

17.0 Evaluation:-

- 17.1 The supervisor of the candidate will suggest a panel of eight names of external experts not below the rank of Associate Professors giving their official and residential address, mobile number and email address. The supervisor shall give a certificate to the effect that the names suggested in the panel are not relatives of the supervisor or candidate. *If the supervisor fails to supply the panel of Examiners within one month after the submission of thesis in the University, the Vice Chancellor may draw the panel in consultation with respective Dean/HoD.*
- 17.2. The panel prepared by the supervisor will be sent through the Dean concerned to Registrar in a sealed cover. The Vice-Chancellor will appoint from the panel, two examiners out of which at least one shall be from outside the state. *The Vice Chancellor may add more names of the subject experts in the panel.*
- 17.3 The thesis when received shall be referred for evaluation to the supervisor and two external examiners appointed by Vice-Chancellor. *If the Supervisor is not sending the report of evaluation within four months, the Vice Chancellor may, if need be, send the thesis for evaluation to another examiner from the panel.*
- 17.4 The examiners shall send their reports *normally within two months* to the Registrar by name marked 'Confidential'. *If the reports are not received within four months, the Vice Chancellor may, if need be, send the thesis for evaluation to another examiner from the panel.*

17.5 The examiners shall send their reports on the prescribed proforma normally within two months of the receipt of the thesis. The examiners will state categorically whether in his opinion:

(a) Thesis should be accepted for the award of Ph.D. Degree;

OR

(b) It should be referred back to candidate for presenting it again in revised form;

OR

(c) It should be rejected.

The examiners shall state reasons for approval or rejection of the thesis. If the examiner recommends resubmission of the thesis, he shall specifically indicate what modifications he wants that candidate to effect and incorporate in the thesis.

17.6 If in the first instance, all the examiners evaluating the thesis, as well as those conducting the viva-voce examination recommend the award of degree to the candidate, the degree shall be awarded.

17.7 If the majority of the examiners recommend rejection of the thesis, the thesis shall be rejected.

17.8 In case of divergence of opinion among the three examiners not covered under clause(s) above, the following procedure shall be followed:—

(a) If two examiners have accepted the thesis, while the third has asked for its revision, the extracts of reports of the external examiners be referred to the supervisor of the candidate and his opinion be obtained whether he would like to get the thesis revised by the candidate or would recommend the appointment of a fourth examiner. Opinion of the fourth examiner shall be final.

(b) If two examiners have accepted the thesis and the third has rejected it, the thesis shall be sent for evaluation to a fourth examiner, whose opinion shall be final.

(c) If one of the three examiners has accepted the thesis another has rejected in, while the third has asked for its revision, the thesis shall be rejected. When the thesis is rejected under such circumstance, the candidate can get himself registered afresh on the same subject.

(d) If the candidate fails to satisfy the viva-voce examiners or if there is a divergence of opinion between the viva-voce examiners, the candidate may be allowed to appear at a second viva-voce examination on payment of the required fee, to be held not later than one year from the date of first viva-voce.

(e) If at the second viva-voce examination, the candidate fails to satisfy the examiners his thesis shall be finally rejected. If the majority of the examiners recommend revision of the thesis, the thesis shall be revised.

17.9 If a candidate is permitted to improve and re-submit his thesis, he shall be required to submit it not earlier than six months and not later than one year from the date of such permission along with the prescribed fee. The thesis so re-submitted shall be sent to the same panel of examiners including the fourth examiner, if any, who evaluated the original one, for adjudication unless they or any one of them expresses inability to adjudicate. The Vice-Chancellor shall in such contingency appoint another external examiner or examiners, as the case may be, from the original panel. The thesis shall be accepted if at least three examiners recommend its acceptance.

17.10 A Candidate shall not be allowed to re-submit his thesis more than once.

18.0 a student whose thesis is rejected shall not be registered again for Ph.D. degree with same topic.

19.0 The reports of all examiners shall be placed before the Vice-Chancellor. If both of two external examiners recommend award of the degree, the student shall be examined through Viva-voce examination by one of the examiners, to be nominated by the Vice-Chancellor. If both examiners are unable or unwilling to conduct the Viva-voce examination another name will be picked up for the purpose by the Vice-Chancellor from the panel.

20.0 A Viva-Voce examination to be conducted by one of the external examiner and the supervisor, the date of which is to be fixed by Dean/HOD concerned. The teachers and the research scholars in the department concerned may attend Viva-voce examination, but they shall not be entitled to ask any question.

21.0 The reports of all the examiners (including those of the viva-voce) shall be placed before the research degree committee consisting of Vice-Chancellor, Pro Vice-Chancellor, Dean concerned. Such reports may be accepted by the Committee.

22.0 Depository with UGC

On the successful completion of the evaluation process and announcements of the award of Ph.D. degree, the University shall submit a soft copy of the Ph .D thesis to the UGC within a period of thirty days, for hosting the same in INFLIBNET, accessible to all Institutions/Universities. Along with the Degree, the University shall issue a Provisional Certificate certifying to the effect that the Degree has been awarded in accordance with the Regulations of the UGC.

23.0 Publications of thesis:-

No Thesis shall be published without the prior permission of the University. The research scholar may apply to the Registrar for permission to publish his Thesis within two years from the date of award of the Ph.D. Degree.

24.0 With-drawl of degree:-

The Academic Council, shall have the right to withdraw the degree.

25.0 Fee:-

Fee to be paid by the candidate at the time of admission or annually or for extension or for evaluation etc., will be as laid down from time to time by the University.

Note: Approved by AC vide Resolution No. 1.2 dated 04-05-2015 & BOM vide Resolution No.1.8 dated 11-05-2015.

Annexure - 1 Candidate Declaration

I,hereby declare that the work presented in this thesis titledin fulfillment of the requirements for the award of Degree of Doctor of Philosophy, submitted in the Faculty of at Jagan Nath University, Bahadurgarh, is an authentic record of my own research work under the supervision of I also declare that the work embodied in the present thesis (i) is my original work and has not been copied from any Journal/thesis/ book, and (ii) has not been submitted by me for any other Degree/Diploma in any University.

(Signature of Candidate)

Countersigned

Registration No.....

.....

(Signature of supervisor)

Name:

Designation:

Faculty:

Annexure - II Certificate of the Supervisor(s)

This is to certify that the thesis titledsubmitted by for the award of Degree of Doctor Philosophy in the Faculty of of Jagan Nath University, Bahadurgarh, Haryana, is a record of authentic work carried out by him/her under my/our supervision. The matter embodied in this thesis is the original work of the candidate and has not been submitted for the award of any other degree/diploma in any University. It is further certified that he has worked with me/us for the required period as per the Regulations.

(Signature of Joint Supervisor)

(Signature of Supervisor)

Name:.....

Name:.....

Designation:.....

Designation.....

Faculty:.....

Faculty:.....