

**Combined Entrance Examination
conducted by
Jawaharlal Nehru University
for admission to
M.Sc.(Agri.) Biotechnology & M.V.Sc.
Animal Biotechnology
Programmes of Study**

www.jnu.ac.in

PROSPECTUS

**ACADEMIC SESSION
2019-20**

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I. GENERAL

Biotechnology is a multi-disciplinary area in the educational scene and programmes have been developed to meet the growing demand for trained manpower for any meaningful Biotechnology activity. The Government of India has allotted high priority to development in the area of Biotechnology and its exploitation in agriculture and other related disciplines.

Jawaharlal Nehru University will hold Combined Entrance Examination for admission to:-

[i] M.Sc. (Agri.) Biotechnology Programme being offered at the following participating Universities:

1. Assam Agricultural University, Jorhat
2. Ch. Sarwan Kumar H.P. Krishi Vishwavidyalaya, Palampur;
3. G.B. Pant University of Agriculture and Technology, Pant Nagar
4. Indira Gandhi Krishi Viswavidyalaya, Raipur
5. Kerala Agricultural University, Thrissur
6. Vasant Rao Naik Marathwada Krishi Vidyapeeth, Latur (Maharashtra)
7. Orissa University of Agriculture & Technology, Bhubaneswar
8. Tamil Nadu Agricultural University, Coimbatore
9. University of Agricultural Sciences, G.K.V.K., Bangalore
10. University of Agricultural Sciences, Dharwad
11. Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur

[ii] M.V.Sc. Programme is being offered at

1. Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar;
2. G.B. Pant University of Agriculture & Technology, Pantnagar;
3. Assam Agricultural University, Guwahati

The Entrance Examination will be held on May 30, 2019 at Centers all over the country (detail of these examination centers is shown under Section XI of this Prospectus).

* Subject to revision of seats in programs

1. ASSAM AGRICULTURAL UNIVERSITY, JORHAT (06 seats) *

The Department of Agricultural Biotechnology was established in 1989 at Assam Agricultural University, the oldest Agricultural University in the North East of India. This Department, supported by the Department of Biotechnology, Govt of India, has been conferring M.Sc. degree in Biotechnology ever since its inception and from 2010-11 and now offers Ph.D. degree for students with both Agricultural and non-Agricultural sciences background. The Department has of 15 faculty members, majority of whom have been well trained abroad on different areas of Biotechnology. It also has well-equipped laboratory facilities for Gene Technology, Plant Genomics, Molecular Markers, RNAi, Microbial Biotechnology, Bioinformatics etc. with state of the art equipments.

Several competitive research grants from national agencies like DBT, ICAR, DST, UGC etc. and international agencies, such as, Kirkhouse Trust, UK, have been awarded to the Department. In addition, several international collaborating research projects under Indo-Swiss, Indo-Australia, Indo-USA collaborative funds have been completed and are presently running in the Department. Recently the European Union has awarded a project on "Strengthening education, research and innovation for climate smart crops in SouthEast Asia - AdaptNET" to the department. A major research achievement of the department has been generation of insect resistant transgenic chickpea lines which have been transferred to public (IIPR, Kanpur; ICRISAT; Patancheru; UAS, Darwad and PAU, Ludhiana) and private (Sungro Seeds) organizations for varietal development. As recognition of the department's achievement in teaching and research, in 2011 it was awarded a Centre of Excellence in Agricultural Biotechnology in the form of DBT-AAU Centre in Agricultural Biotechnology, which has now been renewed as DBT-North-East Centre for Agricultural Biotechnology (DBT-NECAB).

The thrust areas of research include, Crop improvement through genetic engineering and/or molecular breeding, genome editing; Genomics; Microbial Biotechnology and Plant Molecular Biology.

*Can accommodate extra 30% seats if offered

Fees to be paid at the time of Admission: Approx Rs.14,000/- + Rs.6000.00 (Hostel fee including mess advance).

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2. CHAUDHARY SARWAN KUMAR H.P. KRISHI VISHVAVIDYALAYA, PALAMPUR (10 seats) *

Chaudhary Sarwan Kumar H.P. Krishi Vishvavidyalaya, Palampur offers programme in Agricultural Biotechnology leading to the award of M.Sc. Agricultural Biotechnology degree. This programme is instituted in collaboration with the CSIR-Institute of Himalayan Bioresource Technology, Palampur. Under this programme, the students admitted are imparted intensive training in the basic principles and applied aspects, both in theory and practicals of Plant Biotechnology. The students are eligible for award of studentship of Rs. 7500/- per month. Candidates having B.Sc. (Agriculture)/B.Sc. (Horticulture)/B.Sc. (Forestry)/ B. Sc. (Ag. Biotechnology) are eligible for M.Sc. (Agri Biotech) programme.

The thrust area of thesis research include, DNA fingerprinting; gene tagging, gene pyramiding and markers-assisted selection; transgenics; biotic and abiotic stress-induced gene expression and cloning; metabolomics and proteomics; and in vitro techniques in crop improvement.

Fees to be paid at the time of Admission: Rs. 30,540/- (Non-Hosteller) & Rs. 45,000/- (Hosteller) approx.

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**3. G.B. PANT UNIVERSITY OF AGRICULTURE & TECHNOLOGY, PANTNAGAR
(15 seats for M.Sc. (Agri.) and 05 seats for M.V.Sc.)**

Department of Molecular Biology & Genetic Engineering at G.B. Pant University of Agriculture & Technology serves as the nodal department for Pantnagar Biotechnology Program, which celebrated its silver jubilee (1988-2013) after completion of 25 years of excellence in teaching and research. The department offers both M.Sc. Agriculture and M.V.Sc. courses in Biotechnology and Animal Biotechnology respectively. The Department has accomplished several milestones including the department being recognized as one of the best department of the College of Basic Science & Humanities by UGC appointed NAAC accreditation team & our Master's Program in Agricultural Biotechnology has been twice adjudged as 'A' rank by Department of Biotechnology (Govt. of India, 2011, 2015) and also the department being one of the Top Ten Biotech schools in the country. Students with B.Sc. (Ag.), B.Sc. in ZBC/PCM and B.Sc. (Biotechnology) are eligible for M.Sc. Agriculture (Biotechnology). However, students except with B.Sc.(Ag.) degree, will have to study remedial courses of 24 credit hours in relevant fields of Agriculture and the degree awarded will be M.Sc. Agriculture (Biotechnology) and for them the course duration will be of three years with the same DBT norms of studentship (provision for only two years). For candidates desirous of taking admission in M.V.Sc. (Animal Biotechnology), the minimum eligibility is B.V.Sc. with not less than 6.000/10.000 or 3.000/5.000 or 55% marks in aggregate. Candidates admitted to the Programme are awarded scholarship of Rs. 7,500/- and Rs. 12,000/- per month for M.Sc. Agriculture and M.V.Sc. respectively. The major thrust areas of research at this department include Recombinant DNA Technology, Tissue culture, Signal transduction in relation to host-parasite interactions, Abiotic and Biotic stress management, Transgenic development for nutritive value addition and disease resistance, Molecular Cytogenetics, Nutraceuticals, Nutrigenomics, Proteomics, Bioprospection and Metabolomics, Edible and Recombinant Vaccine production, Immunodiagnosics for plant and animal disease surveillance and Embryo Transfer Technology, Nanotechnology.

Fees to be paid at time of Admission: **Rs. 42,145/- (Approx)**
(Including of food advance of Rs. 15,000)

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4. INDIRA GANDHI KRISHI VISHWAVIDYALAYA (IGKV), RAIPUR (10 seats) *

Indira Gandhi Krishi Vishwavidyalaya, Raipur, offers post-graduate programme in Plant Molecular Biology & Biotechnology and successful candidates are eligible for the award of M.Sc. (Agri) in Plant Molecular Biology & Biotechnology.

Major thrust areas of teaching and research are Molecular Biology, Plant Tissue Culture & Genetics Engineering, Genomics & Proteomics, Nano-Biotechnology, Bio-informatics etc. The Centre is actively involved in research on various aspects of Genomics particularly related to Biotic and Abiotic Stress and in the area of transgenics. The department has number of projects funded by DBT, CGCOST, ICAR, State Government with good international linkage. The courses are innovative and cover basic, fundamental and specialized topics. Our program has a strong laboratory component with majority of courses that gives you hands on experience on diverse biotechnological research skills with special emphasis on genomics. Submission of thesis dissertation based on research projects carried out by students is part of the degree programme. We are also going to have a Biotech based incubation centre at our university, which will also gives an excellent opportunity for starts-up. The students are eligible for award of studentship of Rs.7,500/- per month given by DBT. Fees to be paid at the time of Admission: Rs.8500/- (Approx). DBT has awarded “A” grade to our PG program.

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II. ELIGIBILITY FOR ADMISSION

FOR INDIRA GANDHI KRISHI VISHWAVIDYALAYA, RAIPUR: Agriculture, Agricultural Biotechnology, Horticulture or Forestry with Bachelor's Degree under 10+2+4 pattern with at least 60% marks or equivalent OGPA.

5. KERALA AGRICULTURAL UNIVERSITY, THRISSUR (10 seats) *

Candidates with B.Sc. (Agriculture) / B.Sc. (Horticulture) / B.Sc. (Ag. Biotechnology) degree, as four year programme and qualified in the Entrance Examination are eligible for admission. Students admitted to the programme are eligible for the award of M.Sc. (Ag.) Plant Biotechnology degree on successful completion of the course.

The MSc (Ag) Plant Biotechnology degree programme (4 semesters) is offered by the Centre for Plant Biotechnology and Molecular Biology, College of Horticulture, located in the main campus of Kerala Agricultural University, Thrissur. The courses are designed as Major (Molecular biology and Plant biotechnology), Minor (Horticulture, Biochemistry, Microbiology, Entomology, Genetics and Plant breeding), supporting and compulsory. The students have to register 37 course credits and 20 research credits. Students have to submit a thesis based on their research project, in partial fulfillment of the requirement of the degree. Students' seminar is also an integral part of the curriculum. The evaluation for the programme is done in 10-point grade system. Minimum OGPA to obtain the degree is 6.5/10.0 . The students are eligible for the DBT fellowship of Rs. 7,500/- per month.

The courses on Molecular biology and Plant biotechnology include Fundamentals of Molecular Biology, Techniques in Molecular Biology, Plant Tissue Culture and Genetic Engineering, Immunology and Molecular Diagnostics, Cell Biology, Molecular breeding, Bioinformatics etc. The areas of thesis research include DNA finger printing, Marker assisted selection, Gene cloning and characterization, Enzyme kinetics, differential gene expression, Real time PCR assays, molecular docking and metabolomics research, Plant tissue culture, Nanobiotechnology, Metagenomics etc.

The centre is well equipped with facilities for doing advanced teaching and research activities. The facilities include Molecular Biology lab with High Speed Refrigerated Centrifuge, Nanodrop spectrophotometers, Bioanalyser, Real Time and Gradient PCRs, Phosphorimager, Electrophoresis units, Sequencing page units and Gel documentation systems. Translation Lab facilities include, Growth Chamber, 2- Dimensional gel electrophoresis units, Cold Room and facilities for electro blotting and detection techniques, Genetic Transformation lab is equipped with Biolistic gene gun. Metabolomics lab with Accelerated solvent Extractor and HPLC. The Cell biology lab with fluorescent, phase contrast and stereo microscopes. Plant Tissue Culture Research lab is equipped with mass production facility as per NCS-TCP guidelines. Molecular diagnostics lab is equipped with facilities for virus indexing and clonal fidelity analysis. Bioinformatics Centre (DIC) with DBT support is also functioning in the centre. Considering the accomplishments, Kerala state has recognized Centre for Plant Biotechnology and Molecular Biology as Centre of Excellence in Agricultural Biotechnology.

The centre has very good interaction and collaboration with a number of national institutes in teaching and research activities. Faculty members are actively engaged in Biotechnology research projects funded by DBT, DBT-BIRAC, DST, ICAR, KSCSTE, MIDH etc.

More details can be had from the web site: www.kau.in,

Fees to be paid at the time of Admission: First semester fee Rs. 16,750 (Approx), Hostel fee including mess advance – Rs. 17,450 (Approx)

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6. VILASRAO DESHMUKH COLLEGE OF AGRICULTURAL BIOTECHNOLOGY, LATUR VASANTRAO NAIK MARATHWADA KRISHI VIDYAPEETH, PARBHANI, MAHARASHTRA (10 seats) *

The students will be awarded the M.Sc. (Agri) Biotechnology degree on successful completion of the course.

The students are taught basic principles and applied aspects of biotechnology in plant system. The syllabus covers basic courses in principles of Biotechnology, Fundamentals of Molecular Biology, Molecular Cell Biology, Biostatistics and Computers, Microbial Biotechnology, Plant Tissue Culture & Genetic Transformation, Techniques in Molecular Biology I, Genomics and Proteomics, Biosafety, IRP and Bioethics, Immunology and Molecular Diagnostics, Dynamic Web design, introduction to Bioinformatics, Molecular Breeding, Master's Seminar, Master's Research. The College is actively involved in research on various aspects of Plant Genetic Transformation, Molecular Breeding, Food Biotechnology, Plant Tissue Culture, Genomics and Bioinformatics. The department has number of projects funded by DBT, DST and State Government. The students are eligible for award of studentship of Rs.7,500/- per month given by DBT.

Fees to be paid at the time of Admission: Rs.22,556/- (approx.)

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7. ORISSA UNIVERSITY OF AGRICULTURE & TECHNOLOGY, BHUBANESWAR (10 seats)

Orissa University of Agriculture and Technology, Bhubaneswar is the 2nd oldest Agricultural University of India.

The University offers 2 years Post Graduate programme in Agriculture Biotechnology and successful candidates are awarded **M.Sc. (Agril.) Biotechnology** degree.

During the 2 years programme the students are exposed to both basic and applied aspects of biotechnology and are taught the multidisciplinary areas of Agricultural and allied field of Biotechnology. The syllabus covers core courses in principles of Biotechnology, Fundamentals of Molecular Biology, Molecular Cell Biology, Techniques in Molecular Biology, Plant Tissue Culture and Genetic Transformation, Biostatistics and Computers. The supporting courses like principles of Genetics, Enzyme Technology, Genomics and Proteomics, Gene Regulation, Microbiology, Immunology and Molecular Diagnostics, Nano Biotechnology, Microbial and Industrial Biotechnology, Molecular Breeding, Environmental Biotechnology, Biosafety, IPR and Bioethics, Bioinformatics are provided. Minor Courses in the syllabus are Plant Physiology, Plant Biochemistry, Cell Biology and Cytology and Genetics and Plant Breeding. Submission of thesis based on research findings of the student is essential for the degree programme. The areas of thesis research include DNA fingerprinting, Gene cloning, DNA library, Molecular cytogenetics, Marker-assisted selection, Transgenics, Gene-cloning and expression, Enzyme technology, Molecular Physiology, Phytochemistry and In vitro techniques in crop improvement. Besides, the students have an opportunity to undertake training in National / International Institutes and reputed Biotechnology industries inside the country. Students from other Institutes/Universities are doing their project work for short periods (1-6 months) as well as Ph.D. studies in related fields.

Candidate admitted to the programme are eligible to get studentship of Rs. 7,500/- per month.

Fees to be paid at the time of Admission: Rs.23,600/- (Approx)

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8. TAMIL NADU AGRICULTURAL UNIVERSITY, COIMBATORE (15 seats)*

Tamil Nadu Agricultural University (TNAU), Coimbatore, is a leading agrotechnology provider at national level and is involved in teaching, research and extension activities to cater the needs of the farming community through modern scientific practices. It offers M. Sc. (Ag.) Biotechnology degree programme with a duration of two years. The students are introduced to basic principles and applied aspects of biotechnology in plant systems. They are given intensive training in the multidisciplinary areas of plant biotechnology which covers recent advances in various fields of cell biology, molecular biology, plant tissue culture, genetic engineering, genomics, proteomics and bioinformatics. The minor courses viz., plant physiology, plant biochemistry and applied concepts of crop breeding are also offered to strengthen the knowledge. Supporting courses viz., statistical methods, design of experiments and computer applications are also offered to the students to get needed knowledge in related fields. Six compulsory non-credit courses viz., (i) Library and information services (ii) Technical writing and communications skills (iii) Intellectual property and its management in agriculture (iv) Basic concepts in laboratory techniques (v) Agricultural research, research ethics and rural development programs and (vi) Disaster management will also be taught. Submission of thesis based on research carried out by the student is a part of the degree programme.

All the students selected through JNU entrance examination are eligible to get a studentship as per DBT-HRD norms (Rs. 7500/- per month).

Fees to be paid at the time of Admission: Rs. 12,588/- (General); Rs. 9258/- (SC/ST)*

Fees / Semester: Rs. 21027/- per semester (General); Rs. 16909/- per semester (SC/ST)*

Hostel fees at the time of admission: Rs. 12,000/- *

*Subject to the approval of ensuing academic council

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ELIGIBILITY FOR ADMISSION:

FOR TAMIL NADU AGRICULTURAL UNIVERSITY, COIMBATORE: Bachelor of Science degree in Agriculture/Ag. Biotechnology/ Horticulture/ Forestry/ Sericulture or B. Sc. (Hons.) in Agriculture/ Horticulture/ Forestry/ Sericulture or B. Tech in Agril. Biotechnology/ Biotechnology/ Horticulture/ Bioinformatics under 10+2+4 pattern of education with at least 70% marks or equivalent OGPA of 3.00/4.00 or 7.00/10.00 from a Agricultural/ Horticultural University. For SC/ST candidates, a pass in the qualifying degree is sufficient.

9. UNIVERSITY OF AGRICULTURAL SCIENCES, G.K.V.K., BANGALORE, KARNATAKA (10 Seats)*

Candidates should possess a bachelor's degree with a minimum OGPA of 6.50/10.00 or its equivalent from a recognized Agricultural / Horticultural University or deemed university accredited by ICAR. In case of Candidates belonging to SC/ST/Cat-I. a minimum OGPA of 6.00/10.00 i.e. pass in bachelor's degree is adequate.

Candidate should possess good moral character and conduct. Candidates who have studied under trimester system should compulsorily submit a copy of the certificate declaring equivalent percentage of marks issued by the competent authority.

The students will be awarded M.Sc. (Agri.) Plant Biotechnology degree. The Department of Plant Biotechnology, University of Agricultural Sciences, Bangalore is one of the best Departments in the University with modern equipment's like Gene sequencer, HPLC, Fermenters, RT-PCR, Floor model Ultra Centrifuge and all types of molecular biology equipment's. University of Agricultural Sciences, Bangalore is winner of the Sardar patel Best Agricultural University award in the year 2002 & 2012, initiated several research programmes in Agri. Biotech. Bangalore being a hub of IT-BT, the University has established collaborations with the Biotechnology Industries and Institutes. The staff of the Biotechnology Department is working in there research areas of Gene isolation, Transgenic, Bio pharming, Molecular Breeding, Microbial Biotechnology, Fuel Biotechnology

and Bioinformatics. The University is successful in attracting competitive grants for time bound projects from central and state governments. The students need to do a thesis research project as part of the master's programme.

All the students are eligible to get studentship as per DBT-HRD norms.

Fees to be paid at the time of Admission: Rs. 36,430/- (For General Category)

Rs. 21,950/- for SC/ST Category (with annual Income limit Rs.0 to 2.5 Lakhs)

Rs.30,930/- for SC/ST Category (with annual Income limit Rs. 2.5 Lakhs to 10.00 lakhs)

Rs. 21,000/- (Hostel

deposit) for all students (10% enhancement during 2019-20).

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10. UNIVERSITY OF AGRICULTURAL SCIENCES, DHARWAD (8 seats)

University of Agricultural Sciences, Dharwad offers M. Sc. (Agri.) in Molecular Biology and Biotechnology. The Department of Biotechnology, which is a part of the Institute of Agri-Biotechnology (IABT), has state-of-the-art equipment and facilities for research. The research at IABT/Department focuses primarily on agricultural biotechnology and focused on cloning and characterization of agriculturally important genes from plants and microbial sources for biotic and abiotic stresses, plant transformation, gene silencing, genome editing, molecular mapping, QTL detection and transfer, marker assisted selection, food biotechnology, metagenomics etc. The students need to do a thesis research project as part of the master's programme.

***Fees to be paid at the time of admission:**

Year	I year		II year	
	I st Sem.	II nd Sem.	I st Sem.	II nd Sem.
GM/ others/Cat-I	28,154	-	-	-
SC/ST with annual income limit				
Rs. 0 to 2.5 lakh	8,209	-	-	-
Rs. 2.5 to 10 lakh	21,432	-	-	-

*** Likely to go up by 10% during 2019-20**

PG Hostel deposit (refundable): Rs. 10,000

Monthly rent and mess: ~Rs: 3,600

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11. DR. RAJENDRA PRASAD CENTRAL AGRICULTURAL UNIVERSITY, PUSA, SAMASTIPUR (10 seats) *

Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur (Bihar) offers M.Sc.(Ag.) Degree Programme in Agricultural Biotechnology. This is a four semester programme supported by the DBT offered by Faculty of Basic Sciences & Humanities, Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur, leading to award of M.Sc.(Ag.) degree in Agricultural Biotechnology. The evaluation is done in 10 point credit system. The students will have to offer a minimum 35 credit hours courses in Major subject Agricultural Biotechnology, minor and supporting courses and 20 credit hours for research work.

The major thrust areas in teaching and research are Tissue Culture/Cell Biology/Molecular Biology/Genetic Engineering/Molecular Biology of Biotic and Abiotic Stresses/Plant Rhizobium interaction/Protoplast fusion/Plant transgenics etc. Submission of thesis dissertation based on research programme carried out by students is part of the degree programme.

Infrastructural facilities for various well equipped laboratories like Tissue Culture/Molecular Biology/Bio-imaging/Cell Biology/Genetic Transformation/Biochemistry/Computer Laboratory/Recombinant DNA Laboratory/Microbiology/Bioinformatics etc. are available.

Fees to be Paid at the time of Admission: Rs.12665/- for General Category
Rs.9915/- for SC/ST Category

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12. LALA LAJPAT RAI UNIVERSITY OF VETERINARY & ANIMAL SCIENCES, HISAR (10 seats)*

Lala Lajpat Rai University of Veterinary & Animal Sciences, Hisar offers post-graduate programme (M.V.Sc) in Animal Biotechnology. Candidates admitted in M.V.Sc. programme are eligible for "studentship at the prescribed rate of Rs. 12,000/- per month" from "Department of Biotechnology" (Human Resources Development Project), Govt. of India.

Master's in Animal Biotechnology comprises of course work (basics and specialized courses of Animal Biotechnology) and research work in any relevant areas of Animal Biotechnology.

Thrust Areas of Postgraduate course work (M.V.Sc.): Core courses of Master's degree programme (M.V.Sc.) in Animal Biotechnology are fundamental of cell and Molecular Biology, Animal cell culture, Reproductive Biotechnology, Principles of Biotechnology, Techniques in Molecular and Genetic Engineering, Basic and applied Biotechnology, Bioinformatics, Biodiversity, Biosafety and Bioethics, Molecular Forensics, Industrial Biotechnology and Probiotics, Animal Genomics and Feed Biotechnology.

Thrust Area of Postgraduate Research Work (M.V.Sc.): Post graduate research work covers investigation on livestock genomics, DNA based diagnostics, recombinant DNA technology, gene expression, molecular characterization and phylogenetic analysis of bacterial and viral pathogens, genetic aspect of assessment of quality of oocyte and sperm for "in-vitro fertilization and embryo transfer", micro-manipulation of embryos, sexing and transfer of embryos.

Department of Animal Biotechnology is well equipped with modern research infrastructure as well as trained and experienced postgraduate faculty of international repute to supervise post-graduate teaching and research.

Fees to be paid at the time of Admission: Rs.45000/- approx. (including hostel charges)

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13. ASSAM AGRICULTURAL UNIVERSITY, GUWAHATI (5 Seats) *

The College of Veterinary Science, Assam Agricultural University is one of the premier institutions in the North Eastern Region of India established in the year 1948. The DBT-supported M.V.Sc. programme in Animal Biotechnology was started in the college from the year 2010 and subsequently Ph.D. programme was also started since 2013. Both these courses are being offered by the Department of Animal Biotechnology, which also hosts the DBT-supported State Level Biotech Hub for the State of Assam. A number of research projects funded by national funding agencies are being implemented in the department.

The thrust areas of research in Animal Biotechnology include molecular characterization of animal pathogens, development of molecular diagnostics and recombinant vaccines for infectious diseases including zoonoses, livestock genomics and molecular fingerprinting of indigenous livestock, in-vitro fertilization and embryo transfer, cloning and micromanipulation of embryo, etc.

The department has state-of-the-art infrastructure equipped with latest modern instruments including a DBT-supported

Bioinformatics Centre as well as highly qualified, motivated faculty to teach and guide the students.

Fees to be Paid at the time of Admission: Day scholar -Rs.8,480.00
Hosteller - Rs.13,680.00 (excluding Mess dues)

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II. ELIGIBILITY FOR ADMISSION

Bachelor's degree under 10+2+3/4/5 pattern of education with at least 55% marks or its equivalent grade point average from any recognized university in the concerned subjects shown hereunder against each university:

- FOR ASSAM AGRICULTURAL UNIVERSITY, JORHAT:** B.Sc. (Agri.), B.Sc. (Hort), B. Sc. Agril. Biotechnology) from any recognized university. Graduates from general stream may also be admitted in case seat remains vacant, however, they will have to undergo extra 20 credit hours bridge course.
- FOR CH. SARWAN KUMAR H.P. KRISHI VISHWAVIDYALAYA, PALAMPUR:** Agriculture, Horticulture, Forestry and Agricultural Biotechnology.
- FOR G.B. PANT UNIVERSITY OF AGRICULTURE & TECHNOLOGY, PANT NAGAR:** Agriculture, Veterinary Sciences, Horticulture or Forestry. Students from Bachelor of Science (B.Sc. in ZBC/PCM and B.Sc.(Biotechnology) are also eligible.
- FOR INDIRA GANDHI KRISHI VISHWAVIDYALAYA, RAIPUR:** Agriculture, Biotechnology (Agriculture), Horticulture or Forestry with Bachelor's Degree under 10+2+4 pattern with at least 60% marks or equivalent OGPA.
- FOR KERALA AGRICULTURAL UNIVERSITY, THRISSUR:** Agriculture, Horticulture, or Forestry.
- FORVASANTRAO NAIK MARATHWADAKRISHI VIDYAPEETH, LATUR (MAHARASHTRA):**B. Sc./B. Tech. in Agriculture, Horticulture, Forestry, Agri. Biotechnology, Bioinformatics (03/04 Yrs.) from recognized University with minimum CGPA 6.5 on 10 scale or 65% marks.
- FOR ORISSA UNIVERSITY OF AGRICULTURE & TECHNOLOGY, BHUBANESWAR:** Applicants must have passed 4 year Bachelor Degree in Agriculture/Horticulture/Forestry from a duly recognized University securing at least 65 % marks in aggregate.
- FOR TAMIL NADU AGRICULTURAL UNIVERSITY, COIMBATORE:** Bachelor of Science degree in Agriculture / Ag. Biotechnology / Horticulture/ Forestry / Sericulture or B. Tech in Biotechnology / Horticulture / Bioinformatics under 10+2+4 pattern of education with at least 70% marks or equivalent OGPA of 3.00/4.00 or 7.00/10.00 from a Farm University. For SC/ST candidates, a pass in the qualifying degree is sufficient.
- FOR UNIVERSITY OF AGRICULTURAL SCIENCES, G.K.V.K., BANGALORE:** Agriculture, Horticulture, Forestry or Seri-culture or B. Sc. Agril. Biotechnology/B. Tech. [Biotechnology]/ B. Sc (Ag. Biotech)/ B. Sc (Agri) in Biotechnology from recognized Agriculture/Horticulture/Forestry University..
- FOR UNIVERSITY OF AGRICULTURAL SCIENCES, DHARWAD:** Bachelors degree in Agriculture, Horticulture, Forestry, B. Sc. (Agril. Biotechnology)/B. Tech (Biotechnology)/B.Sc. (Ag. Biotech.)/B. Sc. (Agri) in Biotechnology from recognized Agricultural/Horticultural/Forestry universities.
- FOR DR. RAJENDRA PRASAD CENTRAL AGRICULTURAL UNIVERSITY, PUSA, SAMASTIPUR:** Four years Bachelor's degree in Biotechnology/Agriculture/Horticulture/Microbiology/Biology(BZC). Candidates with Bachelor Degree in Biology (3 Years duration) will have to spend 3 years in M.Sc. programme.
- FOR LALA LAJPAT RAI UNIVERSITY OF VETERINARY AND ANIMAL SCIENCES, HISAR:** B.V.Sc.&A.H. degree recognized by Veterinary Council of India with minimum OGPA 6.0/10.0 or equivalent.
- FOR ASSAM AGRICULTURAL UNIVERSITY, GUWAHATI :** B.V.Sc. & A.H. or equivalent degree from a recognized university with minimum CGPA 2.60 in 4.00 scale or 6.00 in 10.00 scale.

IMPORTANT NOTES: Before applying please ensure that you fulfil the eligibility requirements as prescribed by various Universities. Also please note that permission to appear in the entrance examination is subject to your fulfilling the minimum eligibility requirements prescribed for admission to the concerned programme. You may, therefore, appear in the entrance examination only if you fulfil the eligibility requirements for the programme for which you are seeking admission. Despite this caution, in case you do not meet the minimum eligibility criteria and still appear in the entrance examination, you will do so at your own risk and cost, and if at any stage, it is found that you do not fulfil the minimum eligibility requirements, the admission, if granted to you, shall be cancelled ipso facto.

III. RESERVATION/CONCESSION

- (a) Upto 22.5 per cent (15% for SC and 7.5% for ST) of seats are reserved for SC/ST candidates respectively. As per the provisions of Rights of Persons with Disabilities Act, 2016, not less than five percent (5%) seats are reserved for Persons with Benchmark Disabilities, where “person with benchmark disability” means a person with not less than forty percent (40%) of a specified disability where specified disability has not been defined in measurable terms and includes a person with disability, as certified by the certifying authority. 27% seats are reserved for OBC candidates (non-creamy layer). The persons belonging to EWS who are not covered under the scheme of reservation for SCs, STS and OBCs shall get 10% reservation in admission, wherever applicable, will be implemented as per the policy of each participating university.
- (b) **Concession for Kashmiri Migrants: 10% marks will be added to the overall marks scored by a Kashmiri migrant candidate in the Entrance Examination. After adding 10% marks, in case he/she is covered in the cut-off point in the merit list, he/she will be offered admission strictly in accordance with his/her inter-se merit alongwith other candidates subject to his/her meeting the minimum prescribed eligibility requirements and also subject to his/her producing valid registration documents issued by the notified authorities certifying the candidate’s Kashmiri Migrant status.**

IV. SYLLABUS

Syllabus for M.Sc. (Agri.) Biotechnology

1. Agricultural Biochemistry - Isomerism, hydrogen bond and hydrophobic interaction in biomolecules; chemistry of biomolecules-carbohydrates, amino acids, proteins, lipids and nucleic. Metabolism of carbohydrates, fatty acids and protein. Genetic code, replication, transcription and translation. Enzymes and their kinetics, factors affecting enzyme activity. Competitive- and non-competitive inhibitions. Coenzymes and cofactors. Plant pigments.
2. Animal Husbandry and Veterinary Science- Importance of livestock in agriculture; relationship between plant and animal husbandry; mixed farming; animal breeding; breeds of indigenous and exotic cattle, buffaloes, goats, sheep, pigs and poultries and their potential for milk, egg, meat and wool production; classification of feed and fodder; major contagious diseases affecting cattle and drought animals, poultries and pigs; reproduction biology of cattle; artificial insemination, fertility and sterility; principles of immunization and vaccination; description, symptoms, diagnosis and treatment of major contagious diseases; drugs used for killing, tranquillizing and doping farm and wild animals; study of milk composition; physical properties and food value of milk; quality control of milk, tests and legal standards; dairy equipments and their cleaning; organization of dairy, milk processing and distribution; microorganism found in dairy and milk products; pregnancy and distochea.
3. Cell Biology - Modern tools and techniques in the study of cytology; prokaryotic and eukaryotic cells-structural and ultrastructural details; functions of organelles including membrane; cell cycle, mitosis and meiosis; numerical structural variation in chromosomes and their significance.
4. Protection - Diseases of field, vegetable, orchard and plantation crops of India and their control; causes and classification of plant diseases; principles of plant disease control biological control of diseases; Seed health testing, Integrated pest management-concepts and components; host plant resistance-biological control of insect pests; genetic manipulation of insects for their control; pesticides, their formulation, classification and safe use; behavioural methods; use of computer modeling in pest and disease outbreak; use of semiochemicals in IPM; insect growth regulators; biotechnological approaches in IPM; IPM in major crops, Principles of nematode management-integrated nematode management in major crops-silkworm types; mulberry silkworm, culturing methods; pests and diseases of mulberry and mulberry silkworm and their management.
6. Cropping Systems and Crop Management - Impact of the high yielding and short duration varieties on shifts in cropping patterns; concepts of multiple cropping, relay cropping and inter-cropping and their importance in relation to food production crop production practices for important cereals, pulses, oilseeds, fibre, sugar and cash crops; crop weed, their characteristics, cultural biological and chemical weed control; remote sensing and agriculture.
7. Ecology and Environment - Ecology and its relevance to man; natural resources their management and conservation- Climatic elements as factors of crop growth- impact of changing environment on cropping pattern- change in environment due to agriculture-environmental pollution and associated hazards to crops, animals and humans-liquid and solid waste disposal- Pollution prevention and remediation.
8. Principles of Food Science and Processing - Food production and consumption trends in India; food Science objective food composition; nutritive value of foods; importance and scope of food processing; Indian scenario; Effect of processing on different food groups; Food spoilage; Principles and methods of preservation; Quality Standards, Ventra Centicals.
9. Genetics and Plant Breeding -Earlier concepts of heredity; Mendel’s work and laws of heredity; Chromosomal theory of inheritance; Gene interactions; Multiple alleles; Multiple factor hypothesis; Linkage and crossing over; Linkage analysis; Construction of genetic map; Sex determination; Sex linked; sex influenced and sex limited traits; Spontaneous and induced mutations; Centre of origin; Domestication of crop plants; Conservations and utilization of genetic resources; Reproductive and pollination mechanisms in plants; Methods and principles in plant breeding; Methods of breeding self-

- pollinated crops; Methods of breeding cross- pollinated crops; Methods of breeding asexually propagated crops; self incompatibility and male sterility in crop breeding; mutation breeding in crop improvement; Ploidy breeding in crop improvement; Innovative breeding methods in crop improvement.
10. Horticulture and Forestry - Climatic requirements and cultivation of major fruits, flowers and vegetable crops spice in plantation crops, the package of practices and the scientific basis for the same; handling and marketing of fruit and vegetables; preservation of fruits and vegetables; fruit and vegetable in human nutrition; landscaping and floriculture; ornamental plants and design and lay out of lawns and gardens; tissue culture and micropropagation of important fruit, vegetable and ornamental plants including major spices and plantation crops, important features, scope and propagation of various types of forestry plantations, such as, extension/social forestry, agroforestry and the management of natural forests.
 10. Agricultural Microbiology - Spontaneous generation theory-Germ theory-Discovery of antibiotics-Types of Microscopes-Principles and equipment of different kinds of sterilisation-staining Techniques-Nutritional types of bacteria-Growth curve-Factors influencing bacterial growth-Fermentation: Principle and Application-Classification of Bacteria-Gene transfer methods in microorganisms Antigen and antibody reaction. Contributions of Beijerinck and Winogradsky-Role of microbes in carbon and nitrogen cycles-Influence of Rhizosphere on soil microorganism-Variou types of nitrogen fixing microorganism-Production of bacterial biofertilizers: Rhizobium, Azospirillum, Phosphobacteria etc.- Fungal biofertilizers; Ecto- and Endomychorizae- Azolla and BGA- Method of application for different biofertilizers.
 11. Plant Physiology - Plant physiology and its significance in agriculture; physical properties and chemical constitution of protoplasm; plant cell water relation - imbibition, surface tension, diffusion, osmosis; absorption and translocation of water and nutrients; transpiration, guttation, mineral deficiencies and their symptoms; physiological disorders, correction hydroponics, foliar nutritions aerobic and anaerobic respiration; Photo respiration Factors affecting respiration and Photo- respiration. Photosynthesis- modern concept and the factors affecting photosynthesis, nitrogen fixation growth development and differentiation; growth hormones, growth retardants, growth inhibitors and their use in agriculture; tropism in plants photoperiodism and vernalization; seed dormancy and germination; fruit ripening process and its control.
 12. Seed Technology - Seed technology and its importance; production processing and testing of seeds of crop plants; seed storage, seed certification; role of NSC in production; New seed policy and seed control order, Terminator Technology.
 13. Soil Science and Agricultural Chemistry - Soil as a medium of plant growth and its composition; mineral and organic constituents of soil and their role in crop production; chemical physical and microbiological properties of soil; essential plant nutrients, their functions occurrence and recycling; micro-secondary and micro nutrient sources and their management; integrated nutrient management, soil water relationship, principles of soil fertility and its evaluation for judicious use of fertilizers; organic manure and biofertilizers; soil conservation planning on water shed basis; erosion and run -off management in hilly, foot hills and valley lands; processes and factors affecting soil erosion; dryland agriculture and its problems; rainfed agriculture.
 14. Biostatistics - Compilation, classification, tabulation and diagrammatic representation of data; measures of central tendency, correlation and regression involving two variables; concept of random sampling; tests of significance testing of hypothesis; statistical tests two kinds of error; chi-square test; principles of sampling; sampling and sampling errors; analysis of variance transformations to stabilize variance; principles of experimental design, randomized block design; latin square design; factorial experiments; missing plot techniques. Introduction to computer-Electronic data processing, operating system-common software available-Internet applications-Databases and bioinformatics.
 15. Agricultural Biotechnology - Concepts and scope of biotechnology. Tissue culture and its application, Micropropagation. Meristem culture and production of virus-free plants. Anther and microspore culture. Embryo and ovary culture. Protoplast isolation. Protoplast fusion-somatic hybrids, cybrids. Somaclones. Synthetic seeds. In vitro germplasm conservation. Cryopreservation. Organelle DNA, Satellite-and repetitive DNAs. DNA repair. Regulation of gene expression. Recombinant DNA technology-cloning vectors, restriction enzymes, gene cloning. Methods of gene transfer in plants. Achievements and recent developments of genetic engineering in agriculture. Development of transgenies for biotic & abiotic stress tolerance, Ribozfore Technology microarray, bioethics, terminator technology, nanotechnology, DNA finger printing, gene silencing.

SYLLABUS FOR M.V.Sc.

ANIMAL BIOTECHNOLOGY

Structure of prokaryotic and eukaryotic cells, cell wall, membranes, cell organelles, organization and functions, chromosome structure and functions, cell growth division and differentiation. Sub unit structure of macromolecules and supermolecular systems. Self assembly of sub units, viruses, bacteriophage, ribosomes and membrane systems.

Scope and importance of biochemistry in animal sciences, cell structure and functions. Chemistry and biological significance of carbohydrates, lipids, proteins, nucleic acids, vitamins and hormones. Enzymes— chemistry, kinetics and mechanism of action and regulation. Metabolic inhibitors with special reference to antibiotics and insecticides. Biological oxidation, energy metabolism of carbohydrates, lipids, amino acids and nucleic acids. Colorimetry, spectrophotometry, chromatography and electrophoresis methods.

Chemistry of antigens and antibodies and molecular basis of immune reaction, radio -immune assay and other assays.

Chemistry of respiration and gas transport, water and electrolyte metabolism. Deficiency diseases, metabolic disorders and clinical biochemistry. Endocrine glands, biosynthesis of hormones and their mechanism of action.

History of molecular biology, biosynthesis of proteins and nucleic acids, genome organization, regulation of gene expression, polymerase chain reaction, basic principles of biotechnology applicable to veterinary science gene sequence, immunodiagnosics, animal cell culture, in vitro fertilization. Sub-unit vaccines: Principles of fermentation technology.

VETERINARY SCIENCE

Anatomy Physiology. Structure of cells, cell organelles, chromosome structure and functions, cell growth, division and differentiation and functions. Histology and physiology of mammalian organs and systems, major sense organs and receptors; Exocrine and endocrine glands, hormones and their functions, blood composition and function. Homeostasis, osmoregulation and blood clotting.

Veterinary Microbiology (Bacteriology, Virology, Immunology), Veterinary Pathology Veterinary Parasitology. Classification and growth characteristics of bacteria, important bacterial diseases of livestock and poultry, general characters, classification of important fungi. Nature of viruses, morphology, and characteristics, viral immunity, important viral diseases of livestock and poultry. Viral vaccines. Antigen and antibody, antibody formation, immunity, allergy, anaphylaxis hypersensitivity, immunoglobulins, complement system. Etiology of diseases and concept, extrinsic and intrinsic factors, inflammation degeneration, necrosis, calcification, gangrene, death, atrophy, hypertrophy, benign and malignant tumours in domestic animals. General classification, morphology, life cycle of important parasites, important parasitic diseases (Helminths, Protozoa and Arthropods) of veterinary importance with respect to epidemiology, symptoms pathogenesis diagnosis, immunity and control.

Veterinary Medicine, Epidemiology veterinary surgery and Veterinary Obstetrics and Gynaecology including reproduction. Clinical examination and diagnosis, Etiology, epidemiology, symptoms, diagnosis, prognosis, treatment and control of diseases affecting different body systems of various species of domestic animals, epidemiology— aims, objectives, ecological concepts and applications. General surgical principles and management of surgical cases. Types, administration and effects of anaesthesia. Principles and use of radiological techniques in the diagnosis of animal diseases. Estrus and estrus cycle in domestic animals, Synchronization of estrus, fertilization, pregnancy diagnosis, parturition, management of postpartum complications dystokias and its management, fertility, infertility and its management, artificial insemination.30 Information Bulletin 2010–2011

Veterinary Public Health, Veterinary Pharmacology & Toxicology. Zoonotic diseases through milk and meat, Zoo animal health. Source and nature of drugs, pharmacokinetics, Chemotherapy-sulpha drugs, antibiotics, mechanism and problem of drug resistance. Drug allergy, important poisonous plants, toxicity of important agro-chemicals and their detoxification, drugs action on different body systems.

ANIMAL SCIENCES

Animal Genetics and Breeding. Inheritance of acquired characters, cell structure and functional organization, mitosis, meiosis, Mendel's laws, gene interaction, sex determination, sex linkages, cytoplasmic, heredity, quantitative inheritance, linkages and combination, different types of chromosomes, gene structure and functions, mutation, speciation and evolution, inbreeding and crossbreeding, general and specific combining ability, heterosis, sire evolution, breeds of various important livestock species, breeding programmes, population statistics of livestock species.

Animal Nutrition, Feed Technology, Animal Physiology. General nutrition, carbohydrates, proteins and fats their digestion and metabolism protein value of the feed measure of protein quality and its application, requirement of energy, protein, minerals (macro and micro), vitamins and additives for pigs and poultry, protein-energy interrelationship, comparative design of nutrients in various species. Feed and animal body composition, function of water in body, rumen digestion and metabolism, nonprotein nitrogen metabolism in rumen, feeds and fodders, role of antibiotics, hormones and biostimulators. Digestion - control and motility and secretion of alimentary tract, gastric hormones, digestion and absorption in ruminants and monogastric animals, avian digestion. Mechanism, neutral and chemical control of respiration, gaseous transport and exchange, high altitude living, physiology of work and exercise. Control of male sexual behaviour, ovarian function, estrus, ovulation, mechanism of sperm capacitating, sperm and ovum transport, female genital tract, fertilization, implantation, maintenance of pregnancy and physiology of placenta. Artificial insemination collection, preservation, transport of semen, semen diluters, artificial insemination, embryo transfer-collection, preservation, transport and transplantation of zygotes, oocytes culture and in vitro fertilization.

Animal Husbandry, Dairy Science, Livestock Production and Management, Animal Product Technology & Meat Science and Poultry Science. General concepts of livestock production and management in Indian agro-climatic and socioeconomic conditions, impact of livestock farming in Indian agriculture; concept of livestock housing, production and reproduction management of livestock species, lactation management, concept of machine milking. Poultry industry in India, random sample test, breeding programmes for broilers and layers. Composition of milk, meat, fish, poultry and eggs, technology or processing and preservation of livestock products, methods of processing and storage of meat. Meat products, eggs, poultry meat, food preservation, refrigeration, freezing, freeze drying, dehydration canning, radio pasteurization, chemical additives, curing, smoking.

Veterinary Extension. Definition and concept of sociology, differences between rural, tribal and urban communities, social change, factors of change. Principles and steps of extension education, community development—aims, objectives, organizational set up and concept evolution of extension in India, extension teaching method. Role of livestock in economy, health and socio-psychology of rural, semi-urban and urban society. Identifying social taboos, social differences, obstacles in the way of organizing programmes. Concept of marketing, principles of co-operative

societies, animal husbandry development planning and programme, key village scheme, ICDD, Gosadan, Goshala, Role of Gram Panchayat in Livestock production of rural economy. Data analysis, basics of statistics and computational techniques.

V. GUIDELINES FOR ENTRANCE EXAMINATION

The question paper for entrance examination will be of three hours duration and will consist of two parts, PART-A and PART - B.

Part - A: will have multiple choice type questions at the level of 10+2 in the subjects: **Physics, Chemistry, Mathematics and Biology. The Candidates will be required to attempt 60 questions** Total marks for Part A will be (60 questions x1 mark each) of 60 marks.

PART - B will also have multiple choice questions from the syllabus detailed above in Section IV of this Brochure. There will be 100 questions out of which the candidates will have to attempt 60 questions. Each correct answer will have a weightage of 3 marks.

VI. PREVIOUS YEARS' QUESTION PAPERS

For the reference of intending candidates, a set of question papers pertaining to the last three years are available on JNU website www.jnu.ac.in

VII . SELECTION PROCEDURE

The selection will depend strictly on the inter- se merit of the candidate in the Entrance Examination vis-à-vis preferences for joining the Universities indicated by the candidate. **In case a candidate has not indicated his/her choice for joining a particular University, his/her name will not be considered for that University.**

The Selection procedure will be as follows:

- 1) After the merit list is drawn more than double the number of candidates than the total intake only will be informed of their merit rank in the entrance examination. The candidates will also be informed about the total number of seats in each participating University. The candidates will be asked to exercise their options through online mode for joining the Universities. The candidates will be asked to pay through online mode an amount of Rs.5,000/- (Rs.2,500/- in the case of SC, ST, PWD candidates) **as initial security deposit** giving their willingness to be considered for admission to the participating Universities in accordance with their options for joining the universities vis-à-vis their inter-se merit in the Entrance Examination. **ALL CANDIDATES ARE ADVISED TO CHECK THE RESULT ON THE WEB SITE OF THE UNIVERSITY (www. jnu.ac.in) IN THE SECOND WEEK OF JUNE.**
- 2) Before exercise the options candidates are advised to check their eligibility as prescribed by different University and ensure that they fulfil the prescribed eligibility.
- 3.a) The candidates who do not exercise their options for joining any of the participating universities will not be considered for admission to that university/universities3.b) Candidates who do not fulfil the eligibility for any University would not be considered for admission to that University/ Universities.
- 4) After allotment of seats, the JNU will send intimation to the candidates about their allotment of the university and also to the concerned participating university to which the candidate has been selected. Please note that once allotment of University is made on the basis of inter se merit vis-à-vis options, other options of the universities given by the candidate shall stand frozen. **CANDIDATES ARE ADVISED TO CHECK THE ALLOTMENT OF UNIVERSITY ON THE WEB SITE OF THE UNIVERSITY (www. jnu.ac.in) IN THE FIRST WEEK OF JULY.**
- 5) The participating university will then inform the candidate about the complete admission procedure and schedule of their university as well as the amount of fee etc. to be deposited by the candidate. The initial security deposit already sent by the candidate through demand draft to JNU will be sent to concerned University for refund to the students after first semester.
- 6) In case the candidate is offered admission in accordance with his/her options for joining the University vis-à-vis his/her inter-se merit, but subsequently either does not join the concerned University or withdraw after joining during the first semester then in that event, the initial deposit of Rs. 5,000/- and Rs.2,500/- for General/ OBC/EWS and SC/ST/PWD categories respectively, **shall stand forfeited.**
- 7) The initial security deposit of Rs.5,000/-, (Rs.2,500/- in the case of SC/ST, PWD category candidates) will be refunded in full to those of the candidates who are not offered admission to any of the participating university.
- 8) **Candidates may note that request for transfer from one university to another will not be entertained under any circumstances. Therefore, candidates are advised not to make any request in this regard.**
- 9) Only those candidates who will be asked to exercise their option, the letter of these candidates will be available on JNU website (www.jnu.ac.in)) although intimation to this effect is also sent to the candidates on their e-mail account. However, the candidates are advised to find out through their own sources whether their names appear in the list and thereby make arrangement for sending their final option together with initial security deposit by the stipulated date. **The University will not issue any paper intimation to the candidates. Candidates are advised to regularly check JNU website for updates.**

- 10) PLEASE NOTE THAT AFTER THE FIRST MERIT LIST, THE SECOND LIST MAY BE RELEASED ONLY BASED ON VACANCIES. THE DECISION TO RELEASE THE SECOND LIST RESTS SOLELY WITH JNU.**

VIII. TIME-TABLE FOR ENTRANCE EXAMINATION

1.	Start of Online Application Process	-	15.03.2019
2.	Closing of Online Application Process	-	15.04.2019
3.	Last date of successful transaction of fee Through Credit/Debit Card/Net-Banking up to 11.50 pm up to bank hours of 16 April, 2019	-	16.04.2019
4.	Correction in particulars of Application Form on website only	-	17.04.2019 to 19.04.2019
5.	Downloading of Admit Card from NTA website	-	22.04.2019
6.	Date of Entrance Examination	-	30 th May, 2019 (2:30 pm – 5:30 pm)
7.	Display of recorded responses and Answer Keys for inviting challenges on NTAs Website	-	To be announce later by NTA
8.	Results of Entrance Examination		
	(i) Merit list of candidates to exercise their option for Universities		2 nd week of June, 2019
	(ii) Final result of allotted Universities		1st week of July, 2019
9.	For admission/result queries candidate may visit our website www.jnu.ac.in		

Although the University will inform the candidates falling under consideration zone about their merit in CEEB on their e-mail account, it is the responsibility of the candidate to see the result on University website. The letter of these candidates will also be available on JNU website (www.jnu.ac.in). The University will not issue any paper intimation to the candidates. Candidates are advised to regularly check JNU website for updates.

IX. HOSTEL FACILITIES

The outstation candidates admitted to the programme of study of the participating Universities will be considered for hostel accommodation as per rules of the concerned University subject to availability of hostel accommodation. Students may please note that grant of admission in a University would not ensure automatic allotment of hostel accommodation and that the same will be offered subject to its availability.

X. CERTIFICATES AND OTHER DOCUMENTS REQUIRED AT THE TIME OF ADMISSION

- Two self attested copies of the Matriculation, Higher Secondary, Pre-University of Indian School Certificate or Senior School Certificate (10+2) or an equivalent examination certificate, showing the age/date of birth of the candidate;
- A Character Certificate from the Head of the Institution last attended;
- Two self attested copies of the statement of marks obtained by the candidate in Senior School, Bachelor's Degree/ Master's Degree examination etc; or their equivalent examination;
- Two self attested copies of the Bachelor's Degree and/Master's Degree;
- SC/ST/OBC/EWS Certificate, if belonging to SC/ST/OBC/EWS category.
- A Medical Certificate for PWD Candidates; certifying that the disability is not less than 40%.
- Migration Certificate (in original) from the Head of the Institution/University last attended.

Important: The candidates are also required to produce all originals of the above certificates/documents for verification at the time of registration/admission. In the absence of any of the original certificates/documents, registration/admission shall not be allowed.

XI. INSTRUCTIONS FOR COMPLETING THE APPLICATION FORM

- 1. Name of the Candidate:** Please note that your name, your parent's/guardian's name, and your date of birth should exactly be the same as given in your 10th class or first Board/Pre-University examination certificate. Any deviation, whenever discovered, may lead to cancellation of your candidature.
- 2. Entrance Examination Centre:** A list of cities* where entrance examination is to be held is given below. **No change will be permitted and no correspondence in this context will be entertained.** In case it is not possible to allot the Centre of your choice, the University reserves the right to allot you alternative centre.

Sl. No.	State	Name of Examination Centre
1	ANDHRA PRADESH	Chittoor
2		Kakinada
3		Nellore
4		Rajahmundry
5		Tirupati
6		Vijayawada
7		Visakhapatnam
8	ARUNACHAL PRADESH	Naharlagun
9	ASSAM	Guwahati
10		Silchar
11	BIHAR	Darbhanga
12		Aurangabad
13		Patna
14		Purnia (Purnea)
15		Gaya
16		Bhagalpur
17		Chandigarh (UT)
18	CHHATISGARH	Bilaspur
19		Raipur
20	DELHI	Delhi
21	GUJARAT	Ahmedabad
22		Gandhinagar

23		Anand
Sl. No.	State	Name of Examination Centre
24		Rajkot
25		Surat
26		Vadodara
27		Mehsana
28	HARYANA	Ambala
29		Hissar
30		Kurukshetra
31		Panipat
32		Gurugram
33		Karnal
34		Faridabad
35	HIMACHAL PRADESH	Shimla
36		Hamirpur
37	JAMMU & KASHMIR	Jammu
38	JHARKHAND	Dhanbad
39		Jamshedpur
40		Ranchi
41	KARNATAKA	Bangalore
42		Belgaum
43		Dharwad
44		Gulbarga
45		Hubli
46		Mangaluru
47		Manipal
48		Mysuru
49	KERALA	Alappuzha

50		Thiruvananthapuram
51		Ernakulam/Kochi
52		Kannur
53		Kottayam
54		Kollam
55		Kozhikode
56	MADHYA PRADESH	Gwalior
57		Sagar
58		Jabalpur
59		Bhopal
60		Indore
61		Satna
62		Ujjain
63	MAHARASHTRA	Mumbai
64		Nagpur
65		Pune
66		Aurangabad (Maharashtra)
67		Kolhapur
68		Nanded
69		Nasik
70		Navi Mumbai
71		Amravati
72		Jalgaon
73		Thane
74	MANIPUR	Imphal
75	MEGHALAYA	Shillong
76	MIZORAM	Aizwal
77	NAGALAND	Dimapur

78	ORISSA	Bhubaneshwar
79		Sambalpur
80		Balasore
81		Cuttack
82		Rourkela
83	Puducherry	Puducherry
84	PUNJAB	Amritsar
85		Bhatinda
86		Ludhiana
87		Jalandhar
88		Mohali
89		Patiala
90		Sangrur
91	RAJASTHAN	Jaipur
92		Jodhpur
93		Udaipur
94		Ajmer
95		Alwar
96		Bikaner
97		Kota
98		Sikar
99	SIKKIM	Gangtok
100	TAMIL NADU	Chennai
101		Coimbatore
102		Madurai
103		Nagarcoil
104		Tiruchirappalli
105	TELANGANA	Hyderabad

106		Warangal
107	TRIPURA	Agartala
108	UTTAR PRADESH	Lucknow
109		Varanasi
110		Allahabad
111		Bareilly
112		Ghaziabad
113		Gorakhpur
114		Noida
115		Agra
116		Aligarh
117		Kanpur
118		Meerut
119	UTTARAKHAND	Dehradun
120		Roorkee
121		Haldwani
122	WEST BENGAL	Kolkata
123		Siliguri
124		Kalyani
125		Hooghly
126		Asansol
127	UNION TERRITORIES	Goa (Panaji/Madgaon)

** Subject to sufficient number of candidates available.*

Note:

1. **The University reserves the right to change/cancel any Centre of Examination within India/abroad without assigning any reason.**

5. **Entrance Examination Fee:** The entrance examination fee is Rs. 1000/- for general category candidates including OBC & EWS candidates; and Rs. 500/- for the candidates belonging to SC/ST and Person with Disability categories. The entrance examination fee for Foreign Nationals is US\$ 40.00 or Rs. 2880/-.

Important Notes:

1. **If any information furnished by the candidate in the application form is found to be false, his/her admission, if granted on the basis of such information will be cancelled, ipso facto.**
2. **The candidate must fulfil the eligibility requirements as detailed in the Prospectus. The candidate should, appear in the entrance examination only if the eligibility requirements for M.Sc. (Agri) Biotechnology/M.V.Sc. Programme is fulfilled. Despite this caution, in case a candidate does not meet the minimum eligibility criteria and still appears in the entrance examination, then the candidate will be doing so at their own risk and cost, and if at any stage, it is found that the candidate does not fulfil the minimum eligibility requirements, the admission, if granted, shall be cancelled ipso facto.**
3. **Any dispute with regard to any matter relating to admission shall be subject to the jurisdiction of Delhi Courts only.**
4. **Studentship Support:** All selected students for **M.Sc. (Agri.) Biotechnology** will paid Rs. 7500/- studentship and **M.V.Sc. Programme** will paid Rs. 12,000/- studentship under DBT Support.