Contents

Crucial dates Ph.D./M.V.Sc. Degree Programme

For Ph.D. Programme

*	Availability of application form (by post) …..	26.4. 2010 to 25.5.2010
*	Availability of application form .....…….. (at cash counter University Office, IVRI, Izatnagar)	26. 4.2010 to 02.6.2010
*	Application form and Information Bulletin can also be downloaded from the IVRI website www.ivri.nic.in	
*	Last date for receipt of completed form …	03.6.2010 (upto 5 PM)
*	Date of Entrance Examination...……..	04.7.2010 (Sunday)

For Ph.D./M.V.Sc. Programme

*	Date of Interview……	August 03-04, 2010 (Tuesday & Wednesday)
*	Date of Registration/Admission for selected..... candidates	September 1-3, 2010
*	Date of Registration/Admission with late fee.....	September 4-8, 2010
*	Date of Registration/Admission for Wait listed..... candidates, if any vacancy arises/remains for Ph.D. Admission	September 15, 2010
*	Commencement of first semester ……..	01.9.2010 (Wednesday)

IMPORTANT TELEPHONE/FAX/EPABX NOS. ETC.

Authority	Phone/Fax Nos.	EPABX
1. Prof. M.C. Sharma Director & Vice Chancellor	0581-2300096(O) **Fax :**0091-0581-2303284 **E.mail** : root@ivri.up.nic.in **Website** : www.ivri.nic.in	2301654*4005
2. Prof. Dharmeswar Das Joint Director (Acad)cum Dean	0581-2302179, 2300452 **Fax :**0091-0581-2302179, **E.mail :** jda@ivri.up.nic.in	2301654*4007
3. Dr. G.C. Ram Scientific Coordinator	0581-2302692 **E.mail :** gcram@redifmail.com	2301654*2507,2020
4. Shri Pankaj Kumar Registrar (Acting)	0581-2301375 **Fax :**0091-0581-2302179; **E.mail :** registrar@ivri.up.nic.in	2301654*4002
5. Shri Vampad Sharma Dy. Registrar	0581-2301375 **Fax :**0091-0581-2302179	2301654*2542
6. Shri K. Ravindranathan Asstt. Adm. Officer (Acad)	0581-2301375 **Fax :**0091-0581-2302179	2301654*2540
7. Shri P.C.Karnataka Asstt. Adm. Officer (A&F)	0581-2301375 **Fax :**0091-0581-2302179	2301654*2535

Prof. M.C. SHARMA
Director & Vice Chancellor

Prof. DHARMESWAR DAS
Joint Director (Academic) cum Dean

DR. G.C. RAM
Scientific Co-ordinator

Pankaj Kumar
Registrar (Acting)

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1. INTRODUCTION

Indian Veterinary Research Institute (IVRI) was established on 9th December, 1889 as an Imperial Bacteriological Laboratory at Pune (Maharashtra) and was later-on shifted to Mukteswar (Kumaon, Uttranchal) in 1893. Mukteswar was chosen because of its suitability for research on infectious diseases. Subsequently, for extending the activities of the Institute, Izatnagar, Bareilly (UP) campus was established in 1913 for large scale production of sera and vaccines. It gradually expanded to the present size with its headquarters at Izatnagar (UP) and campuses at Mukteswar (Nainital, Uttranchal), Bangalore(Karnataka), Bhopal (MP) and regional stations at Palampur (HP), Srinagar (J&K) and Kolkata (WB). At present, there are 21 Divisions and 6 Sections specialized in various disciplines/areas. Research conducted in the Institute in the areas of animal health, production and technology with multidisciplinary approach has paid rich dividends. The research contributions have facilitated development of new biologicals used for diagnosis, prevention, cure and control of many devastating diseases of livestock and poultry, increased production of milk, meat, eggs and other animal products. Upgradation of livestock and poultry with increased production potential, overcoming the shortage of animal feeds by better utilization of existing feed resources and substitution of conventional feeds by cheaper agro-industrial by-products are other significant contributions. Post-graduate teaching and training programmes started in 1900 at the Institute when training was imparted to field veterinarians, civil and army personnel on various aspects of animal health-care. Later, Associateship of IVRI and National Diploma courses were added as a part of post-graduate teaching programme. However, with the establishment of Post-Graduate College of Animal Sciences in 1958, the Institute has been providing quality education at masters' and doctoral levels in 22 and 19 disciplines respectively. The Institute has been conferred the status of Deemed to be University with effect from 16th November, 1983 under Section 3 of the University Grants Commission Act (1956). The first academic session as Deemed University started on 15.1.1985. The administrative control of the Institute is vested with the Indian Council of Agricultural Research (ICAR). The Institute has been attracting a large number of foreign students, specially from developing countries. Scholars have been deputed to this Institute from different Countries for various short and long-term training programmes, diplomas and degree Courses. Besides the above courses, the institute has also been conducting various short term National and International Training Programmes, Short Courses and Summer Institutes from time to time to make the professional workers familiar with latest development in veterinary and animal sciences. The Institute has also been recognised as the Centre for Advanced faculty training in Animal Nutrition, and Animal Physiology and Centre of Excellence in Animal Biotechnology by Indian Council of Agricultural

Research, New Delhi. The Institute, spread over an area of 307 hectares, has a well established National Library of Veterinary Sciences, Animal and Fodder Farms, Boys and Girls' Hostels, Bank and Post Office facilities at its Izatnagar campus. It is located at a distance of 250 Km from New Delhi, and about 8 km from Bareilly Jn. and 1 km from Izatnagar Railway Station.

2. AUTHORITIES (DEEMED UNIVERSITY)

(a) **The Director** is the Principal Executive academic officer of the Institute and exercises powers similar to the Vice-Chancellors of other Universities in University affairs.

(b) **The Joint Director (Academic)cum Dean,** is responsible for the organization and implementation of the teaching programmes and co-ordination of post-graduate studies and research in all disciplines of the Deemed University.

(c) **The Registrar** is responsible for maintenance of all records related to performance of the students, assistance in admissions and for establishment matters and general administration in the Deemed University.

3. ACADEMIC SESSION AND TERM CALENDAR

The academic year of the Institute is organised in terms of two semesters, each approximately of 20 weeks duration. The date for programme of studies of each semester in a particular academic year is decided by the Institute well in advance. The time schedule of the academic year 2010-2011 is given below:

Ist Semester : September to February

IInd Semester : March to August

TERM CALENDAR (Subject to change)

Sl. No.	Details	Ist Semester	2nd Semester
1.	Payment of fee and registration/admission	01.09.2010 to 03.09.2010	01.03.2011 to 03.03.2011
2.	Starting of Classes	04.09.2010	04.03.2011
3.	Date of registration with late fee and last date of submission of roster forms	08.09.2010	08.03.2011
4.	Last date for adding/dropping a course	15.09.2010	15.03.2011
5.	Quiz	13.10.2010 to 18.10.2010	13.04.2011 to 19.04.2011
6.	Date of submission of result of quiz	28.10.2010	28.04.2011
7.	Preliminary examination	12.10.2010	14.06.2011
8.	Mid-term examination	26.11.2010 to 08.12.2010	26.05.2011 to 08.06.2011
9.	Date of submission of result of mid-term examination	13.12.2010	14.06.2011
10.	Submission of assignment	10.01.2011	25.06.2011

11.	Last date of submission of result of Seminar	18.01.2011	05.07.2011
12.	Semester-end final examinations	19.01.2011 to 11.02.2011	06.07.2011 to 30.07.2011

Note : In case of holiday on any date, the next working day will be taken into consideration for the purpose.

4. ADMISSION

4.1 Admissions to Ph.D. Programmes :- Admission will be held on the basis of an entrance test, academic records and an interview.

4.2 Admissions to Masters' degree programmes :- All the seats at Masters' level are to be filled on the basis of combined examination for admissions and award of ICAR Junior Research Fellowships conducted by the Indian Council of Agricultural Research, New Delhi.

4.3 Important instructions to the candidates

i. Admission to the Institute implies acceptance, without any modification, by the student and his/her parents/guardians of all provisions given in the bulletin or any change in the Institute rules, regulations, fee, etc. that are notified from time to time.

ii. If any document or information submitted by the candidate is found to be false at any stage during his/her stay in the Institute, his/her admission will automatically stand cancelled.

iii. Any candidate who has got admission in this University earlier and has left the M.V.Sc./Ph.D. programme in violation of rules of the University or has been found guilty of violating any rule of the University, will not be eligible for admission in the University.

iv. The information indicated in the bulletin is only for general guidance and may be modified/changed from time to time by the Institute. The information bulletin shall not be treated as a legal document.

v. The results of the entrance examination declared by the Deemed University shall be treated as final. There is no provision for scrutiny/ re-evaluation of answer books.

vi. No change is permissible in home address given in the application form and address slips for correspondence.

vii. In case of any legal dispute, the same shall be subject to Bareilly Court's jurisdiction only.

4.4 Programmes offered

The main subjects/disciplines of study in which various degrees will be offered are as follows:-

A. DOCTORAL PROGRAMME(Ph.D)

	Code
1. Animal Biochemistry	BCT
2. Animal Biotechnology	BTY
3. Animal Genetics and Breeding	AGB
4. Animal Nutrition	ANT

5. Livestock Production and Management	LPM
6. Livestock Products Technology	LPT
7. Poultry Science	PSC
8.Veterinary Bacteriology	VBM
9. Veterinary Extension Education	EXT
10. Veterinary Gynaecology and Obstetrics	VGO
11. Veterinary Immunology	VIM
12. Veterinary Medicine	VMD
13. Veterinary Parasitology	VPA
14. Veterinary Pathology	VPL
15. Veterinary Pharmacology	VPT
16. Veterinary Physiology	VPY
17. Veterinary Public Health	VPH
18. Veterinary Surgery & Radiology	VSR
19. Veterinary Virology (at Mukteswar, Kumaon, Uttrakhand)	VVY

B. MASTER'S PROGRAMME (M.V.Sc.)

1. Animal Biochemistry	BCT
2. Animal Biotechnology	BTY
3. Animal Genetics and Breeding	AGB
4. Animal Nutrition	ANT
5. Bio-Statistics	BST
6. Epidemiology	EDM
7. Livestock Economics	LEC
8. Livestock Production and Management	LPM
9. Livestock Products Technology	LPT
10. Poultry Science	PSC
11. Veterinary Bacteriology	VBM
12. Veterinary Extension Education	EXT
13. Veterinary Gynaecology and Obstetrics	VGO
14. Veterinary Immunology	VIM
15. Veterinary Medicine	VMD
16. Veterinary Parasitology	VPA
17. Veterinary Pathology	VPL
18. Veterinary Pharmacology	VPT
19. Veterinary Physiology	VPY
20. Veterinary Public Health	VPH
21. Veterinary Surgery & Radiology	VSR
22. Veterinary Virology (at Mukteswar, Kumaon, Uttrakhand)	VVY

NOTE : The candidates may indicate their choices in the relevant column provided for the purpose in the application form.

4.5 Eligibility for Admission to PG Programme

Minimum qualification for admission to Doctoral Programme (Ph.D.) and Master's Programme (M.V.Sc.) are as follows :

A(i). Doctoral Programme (Ph.D.)

The candidates for admission to PhD programme must have M.V.Sc degree in the concerned discipline as specified below with a minimum of 60%

marks in aggregate or OGPA 7.00/10.00 or equivalent (55% marks or OGPA 6.45/10.00 or equivalent for S.C./S.T.), as specified below:-

Sl. No.	Name of Discipline	Eligibility
1	Animal Biochemistry	B.V.Sc.& AH with Master's degree in concerned discipline.
2	Animal Biotechnology	B.V.Sc.& AH with Master's degree in Biotechnology/ Animal Biotechnology/Animal Biochemistry/Microbiology/ Immunology/Virology.
3	Animal Genetics and Breeding	B.V.Sc.& AH with Master's degree in concerned discipline.
4	Animal Nutrition	-do-
5	Livestock Production and Management	B.V.Sc.& AH with Master's degree in concerned discipline.
6	Livestock Products Technology	-do-
7	Poultry Science	-do-
8	Veterinary Bacteriology	B.V.Sc.& AH with Master's degree in Vet. Bacteriology/ Vet.Virology/Vet. Microbiology/ Vet. Public Health/ Avian Diseases/Vet.Immunology/ Epidemiology/Biotechnology.
09	Veterinary Extension Education	B.V.Sc. & AH with Master's degree in concerned discipline/ Vet. Medicine/Vet.Gynaecology & Obst./Vet. Surgery/Animal Nutrition.
10	Veterinary Gynaecology and Obstetrics	B.V.Sc.& AH with Master's degree in concerned discipline.
11	Veterinary Immunology	B.V.Sc.& AH with Master's degree in Vet. Immunology or M.V.Sc. in Vet. Microbiology/Virology/ Bacteriology/Pathology/ Biotechnology/Avian Diseases/ Parasitology/Animal Biochemistry with minor in Vet. Immunology.
12	Veterinary Medicine	B.V.Sc.& AH with Master's degree in concerned discipline.
13	Veterinary Parasitology	-do-
14	Veterinary Pathology	-do-/Avian Disease
15	Veterinary Pharmacology	B.V.Sc.& AH with Master's degree in concerned discipline.
16	Veterinary Physiology	-do-
17	Veterinary Public Health	-do-
18	Veterinary Surgery & Radiology	-do-
19	Veterinary Virology	B.V.Sc.& AH with Master's degree in Vet. Virology/Vet. Miocrobiology with specialization in Virology/Avian Disease

A(ii) SUBJECTWISE NUMBER OF SEATS WITH TENTATIVE ALLOCATION OF RESERVATION FOR ADMISSION TO Ph.D. DEGREE PROGRAMMES FOR THE ACADEMIC SESSION 2010-2011

Sl. No.	NAME OF DISCIPLINE	GEN	SC	ST	OBC	TOTAL
1	Animal Biochemistry	3	1	-	1	5
2	Animal Biotechnology	3	1	1	2	7
3	Animal Genetics and Breeding	3	1	-	2	6
4	Animal Nutrition	4	-	1	2	7
5	Livestock Production and Management	1	-	-	1	2
6	Livestock Products Technology	2	-	-	1	3
7	Poultry Science	3	1	1	2	7
8	Veterinary Bacteriology	3	1	-	1	5
09	Veterinary Extension Education	2	1	-	1	4
10	Veterinary Gynaecology and Obstetrics	2	1	1	1	5
11	Veterinary Immunology	2	-	-	1	3
12	Veterinary Medicine	3	1	-	2	6
13	Veterinary Parasitology	2	1	1	1	5
14	Veterinary Pathology	3	1	-	2	6
15	Veterinary Pharmacology	3	1	-	1	5
16	Veterinary Physiology	2	1	-	1	4
17	Veterinary Public Health	2	1	1	1	5
18	Veterinary Surgery & Radiology	2	-	1	1	4
19	Veterinary Virology	3	1	-	2	6
	Total	**48**	**14**	**7**	**26**	**95**

Note : PH-3% = 3 seats* (*The seats will be provided to the PH candidates against the category i.e. General/SC/ST/OBC to which they belong).

B. Master's Programme (M.V.Sc.)

The candidates for admission to Master's programme must have Bachelor's Degree in Veterinary Science as specified by the Veterinary Council of India with a minimum of 60% marks in aggregate (55% for SC/ST or sponsored candidates) or equivalent OGPA as mentioned under eligibility critaria.

Eligibility critaria for M.V.Sc. and Ph.D. Admission

OGPA out of	Master's Programme (at B.V.Sc & AH) Gen./OBC/PH	S.C./S.T.	Doctoral Programme (at M.V.Sc) Gen./OBC/PH	S.C./S.T.
4	2.60	2.40	2.80	2.58
5	3.25	3.00	3.50	3.23
10	6.50	6.00	7.00	6.45

NOTE: Good knowledge of English is essential for admission to both (Master's & Doctoral) degree programmes.

4.6 Procedure for application :

1. Information Bulletin and Application form for admission can be obtained from the Assistant Administrative Officer (Acad.) IVRI, Izatnagar, Bareilly (U.P.) 243 122. by submitting a bank draft of Rs.1200/- for General/OBC category and Rs.1000/- for SC/ST category candidates drawn in favour of "ICAR, Unit IVRI, IZATNAGAR" payable at State Bank of India, CARI Branch (Code No. 7027), Bareilly.

   Information Bulletin and Application form also available on website (www.ivri.nic.in) and can be downloaded and have to be submitted alongwith a bank draft of Rs.1200/- for General/OBC category and Rs.1000/- for SC/ST category candidates drawn in favour of "ICAR, Unit IVRI, IZATNAGAR" payable at State Bank of India, CARI Branch (Code No. 7027), Bareilly as detailed above.
2. Bank draft addressed to any other officer will not be accepted. The application form and information bulletin shall be dispatched by **Speed Post.**
3. The application form bears a serial number at the top right corner on page No.1. This number, the degree programme and the subject in which the admission is sought must be quoted in all correspondences concerning admission at this Institute.
4. All applications, the acknowledgement cards, etc. duly completed in all resepects and stamped should be forwarded with required sets of documents, so as to reach the Assistant Administrative Officer (Academic), IVRI, Izatnagar, Bareilly - 243 122 on or before 03.6.2010, the closing date. Postal delay will not be accepted as a legitimate reason to entertain application received after the last date. The envelope containing the application form should be superscribed in capital letters, **"APPLICATION FOR ADMISSION TO P.G. PROGRAMME".**
5. In case, a candidate has appeared for the qualifying degree examination for admission and the result has not been announced in time for him/her to submit the application by the due date, he/she may still complete the application in all respects, except the academic record relating to last examination and submit it by the date specified above. **The candidate will be required to submit documentary proof of his/her successful completion of course work including final OGPA duly signed by the competent authority at the time of interview.**

   However, the candidate will be required to submit his/her qualifying degree certificate on his/her successful completion of the degree examination at the time of registration.
6. A candidate can apply for either under OPEN OR SPONSORED Category, as the case may be. Once applied for is final and the same will not be changed subsequently under any circumstances.
7. Employed candidates applying under open category, the No Objection Certificate for appearing in the entrance examination from their employer be enclosed with application form, failing which the application will be rejected. In the event of selection of such candidates for admission, he/she shall have to produce relieving order from his/her employer at the time of registration to join the course.
8. The candidate is advised in his/her own interest to fill up the application form carefully and accurately and ensure that all the certificates required

to be attached are enclosed. Failure to do so may result in not getting full credit of the marks on which admission is based. All enclosures must be page numbered.

9. **If a candidate wilfully furnishes wrong information or suppresses any relevant information, his/her candidature/ admission will automatically stand cancelled.**
10. Candidates must enclose self attested photocopies of the following certificates and documents in the order indicated below along with application form, failing which the application is liable to be rejected.
    a. Matriculation, Intermediate/Higher Secondary (10+2) or equivalent certificate and marks sheet.
    b. Bachelor's degree certificate and marks sheet.
    c. Master's degree certificate and marks sheet wherever applicable.
    d. In the absence of b or c above, course completion certificate indicating percentage of marks or final OGPA from the Registrar of the University/ Principal/Dean of the college.
    e. Scheduled Caste/Scheduled Tribe/OBC/PH certificate from the authority empowered to issue such certificate of verification, wherever necessary. Until the certificates are verified from the competent authority, the admission under these reserved quotas will be treated as provisional.
    f. Documentary evidence of employment from the employer(s).
    g. Character Certificate issued by the last Institution/University attended (in original).
    h. Migration Certificate, issued by the last Institution/University attended, in original (at the time of registration).
11. Certificate (in original) of physical fitness issued not more than six months before the last date of receipt of application, by a Registered Medical Practitioner/Civil Hospital at the time of registration.
12. All original certificates and marks sheets are to be produced at the time of admission. Candidates who don't produce all the original certificates and marks sheets will not be admitted.
13. All correspondence for admission should be addressed to the Assistant Administrative Officer (Acad), IVRI, Izatnagar-243 122. Bareilly, U.P., India.

4.7 Submission of applications and prescribed fees

The last date for receipt of application duly completed in all respect **shall be 3.6.2010 till 5.00 PM.** No application shall be accepted after the due date and time.

For those who have downloaded the application form from the website will have to enclose bank draft for Rs.1200/- for General/OBC/PH category and Rs. 1000/- for S.C./S.T. category candidate drawn in favour of **"ICAR, Unit IVRI, IZATNAGAR" payable at State Bank of India, CARI Branch (Code No. 7027), Bareilly.** In the absence of the prescribed fee, the application form shall not be considered and will be rejected. The fee is non refundable.

4.8 Admission of Sponsored Candidates

In service candidates from Agricultural/Veterinary Universities, ICAR Institutes and other Central/State government Organization/Departments will

be considered for PhD and M.V.Sc. degree programmes only if they are fully sponsored by their employers on deputation terms/study leave entitling them for salary and allowances subject to fulfillment of eligibility requirements already mentioned for open candidates as per 4.5 A(i) and B respectively.

The application duly completed in all respect should be forwarded by their competent authority viz. Vice Chancellor, Director/Head of the Institute, as the case may be, so as to reach the Assistant Administrative Officer (Acad.), IVRI, Izatnagar, Bareilly 243 122 (UP) on or before the date of interview. However, an advanced copy of the application form alongwith required testimonials should be sent to avoid any anticipated delay through proper channel copy, so as to reach to Asstt. Adm. Officer (Acad.), IVRI, Izatnagar, Bareilly - 243 122 (UP) by the closing date of receipt of application i.e. 3.6.2010 (upto 5.00 PM).

4.8.1 In-service candidates of Agricultural/Veterinary Universities, Central/State Govt. Departments, etc. for promoting faculty up-gradation

A few in service candidates of Agricultrual/Veterinary Universities, Central/State Government Departments for promoting faculty up gradation are admitted for Ph.D/M.V.Sc degree programme over and above the normal seats fixed by the Institute in respect of open candidates. The maximum number of seats reserved for the purpose does not exceed five in a particular academic session for a degree programme.

Eligibility (Sponsored Candidates)

i. The candidate should have B.V.Sc. & AH/Master's degree in the concerned discipline with 60% marks or equivalent OGPA as per para 4.5 A(i) and B.

ii. The candidates sponsored under this scheme should be regular employees of the University, Central/State Govt. Depts., etc. and likely to continue in service after obtaining the degree and they are fully sponsored by their employers on deputation terms/study leave entitling them for salary and allowances.

iii. A certificate to this effect should be given at the time of forwarding the application. The sponsoring authority under the scheme, should also certify that the candidate had not been served any warning or awarded other penalties for any kind of misconduct. The enrolment card for these candidates shall be issued only after the deputation order is submitted to the IVRI.

iv. The sponsoring Universities should indicate in the application form for admission itself, as to whether they would have or would not have any objection to their sponsored candidate holding an office in the IVRI Students' Council.

v. Candidates should be officially sponsored under the scheme and the application shall be forwarded through the concerned organisation. The words "Sponsored for Admission under Faculty Up-gradation Scheme", shall be clearly inscribed on the application form and the forwarding letter. "Not more than three candidates sponsored by any

one University shall be admitted in any one academic year under this scheme"

4.8.2 Admission of departmental candidates of IVRI

Under the Manpower Development Programme of the Institute to improve the qualification and competence, a limited number of eligible staff members (scientists and technical staff) shall be admitted as departmental candidates to the regular PG programme of the Institute. The rules governing such admission are indicated below:

(a) The candidate should either have already been granted study leave or should have a written assurance for grant of study leave from the competent authority.

(b) The employee of the above category shall be given the facility of admission as a departmental candidate only once, either for obtaining Master's or Ph.D. Degree.

(c) Maximum number of departmental candidates to be admitted under this scheme will be 05 only in one academic session.

Eligibility

(a) B.V.Sc.& AH degree for admission to Master's programme and B.V.Sc.& AH with Master's degree for admission to Ph.D. programme with 60% marks or equivalent OGPA as per para 4.5.(A & B).

(b) The departmental candidate admitted under the departmental quota will not be eligible for any accommodation in the Student's Hostel at the IVRI campus.

4.8.3 ICAR In-service nominees

A few seats have been reserved for admission to Ph.D. degree programme for in-service candidates of the Indian Council of Agricultural Research (ICAR). The number of seats reserved for the ICAR in-service candidates shall not exceed 5 in a particular academic year, but the number of students under this scheme shall not exceed 15 at any time.

The procedure prescribed for admission of candidates under the Faculty Up-gradation Scheme will apply *mutatis-mutandis* to this scheme also.

For ICAR inservice candidates, rules/guidelines as issued by ICAR vide letter No.16(2)/2003Per-IV dated 28.1.04 will also apply. The following guidelines are reproduced :

i) The applicants should have completed minimum of two years service in the Council.

ii) Taking study leave will not be insisted upon for in service candidates as long as the PhD work relates to an approved research project within institute's mandate.

iii) If the University rules require attendance for the course work the Scientists would be granted leave for the same. However, the research/ thesis work shall have to be done at the Institute. Registration with non conventional universities for during PhD can also be permitted.

iv) In cases where a Scientist desires to do PhD in an area where work cannot be done within an approved research project in the mandated area of the Institute he may be permitted to do the PhD degree by granting him study leave under ARS Study Leave Regulations, 1991. Such permission will be granted only in cases where it is possible to spare the scientist without detriment to the work of the Institute.

v) The permission to PhD degree without taking study leave within the Institute is subject to the conditions stipulated under ICAR norms as mentioned in its letter dated 28.1.04.

4.8.4 Foreign Students

i. Foreign students seeking admission shall forward their applications through their respective Embassies at New Delhi or through their respective Indian Missions abroad to the Government of India/Deputy Director General (Education), ICAR, Krishi Bhawan, New Delhi for consideration of their eligibility for admission, etc. The foreign nominees are also required to possess the required qualifications. However, no percentage of marks is fixed for them.

ii. Foreign students having DVM Degree will have to undergo for at least one year (two semesters) deficiency courses of 30-35 credit hours, if they want to take admission to the Ph.D. degree programme at this Institute.

iii. Foreign students sponsored for study at this Institute should arrive at Bareilly, preferably one week before the opening of the academic session to acquaint themselves with the activities of the Institute and to attend the orientation programme. They should contact the Assistant Administrative Officer (Acad.) at the University Office upon arrival for obtaining guidance concerning registration procedure, campus location and all other matters.

iv. Foreign students seeking admission to this Institute are required to give an undertaking for undergoing medical examination including HIV test after arrival in India and their admission will be finalised only after the medical tests have been completed and they are declared fit.

4.9 Reservation

Fifteen (15%) percent seats for scheduled caste, 7.5% seats for scheduled tribe, 27% seats for Other Backward category (OBC) and 3% for Physically Handicapped candidate will be treated as reserved subject to their being otherwise eligible. The reservation of seats stated above for SC/ST categories is interchangeable in a particular discipline amongst the SC/ST candidates depending upon the availability of such candidates. The reservation is applicable only in case of candidates who are admitted through entrance examination. The details of allocation of seats reserved for various category have been shown in the Information Bulleting at para 4.5A(ii) allocation of seats.

4.10 Age limit

Minimum age limit for M.V.Sc. and Ph.D. candidates shall be 21 and 23 years, respectively. Normally there will be no upper age limit. The age shall be reckoned as on 1st September of the academic session.

5. SELECTION CRITERIA AND WRITTEN ENTRANCE EXAMINATION

5.1 Selection criteria

Selection of candidates for admission to Doctoral Programme will be made on merit with weightage of marks (100) as follows:

i) Marks of the written entrance examination in subject - 60% (out of total marks of 200)

ii) Marks of interview - 20%. It is mandatory to appear in the interview.

iii) Marks of Academic Score - 20% (Master's degree -12%) (Bachelor's degree 8%)

5.2 Written examination

i) The candidates who fulfill the prescribed minimum qualifications are only eligible to appear in the competitive written examination.

ii) Submission of application form for admission is not itself a guarantee for appearing in the written examination for admission at this Institute.

The minimum qualifying marks in the competitive entrance examination for consideration of admission to Ph.D. programme shall be as under :

Sl.No.	Examination	Minimum qualifying marks in Competitive entrance test	
		General/OBC/PH candidates	S.C./S.T. candidates
1	Part A*(100 Marks)		
	i) English	35%	30%
	ii) General Knowledge	35%	30%
2	Part B Subject matter of 200 Marks	50%	45%

* The marks of English and General Knowledge will not be considered for preparation of merit list.

5.3 Selection criteria for sponsored candidates

Sponsored candidates are exempted from written examination but they have to appear in an Interview on 03-04 August, 2010 (Tuesday & Wednesday) at I.V.R.I., Izatnagar.

i) Marks for Academic Score (Master's degree-12%) (Bachelor's degree-8%) - 60%

ii) Marks obtained in the interview - 20%. It is mandatory to appear in the interview.

iii) Weightage of service experience shall be calculated @ of 2 marks for each year of service, subject to a maximum of 20 marks.

5.4 Subjects for written examination

The candidates may appear at the written examination in any one of the subjects / subject combination as given under para 4.4. The medium of examination will be English only.

The subjects/subject combination and its code for entrance examination should be clearly indicated in the application form. (For syllabus, please see Annexure in the Information Bulletin).

5.5 Venue, date and centre of examination

i) The written examination shall be held on the **04 July, 2010 (Sunday)** from 11.00 AM onwards at **IVRI, Izatnagar**.

ii) **The candidates called for written entrance exam./interview are advised to come prepared to stay a day, if required.**

iii) No TA/DA for appearing in the written test/interview will be paid by the Institute. However, only eligible Schedule Caste/Scheduled Tribe candidates who appeared in the written examination will be paid travelling allowance limited to IInd Sleeper Class railway fare by the shortest route both ways on production of caste certificate in original issued by the Competent Authority, and evidence of journey performed. Payment of TA will be made through Bank Draft which will be sent by post only.

iv) The candidates will have to make their own arrangements for lodging and boarding during the period of stay for entrance examination/interview (both written & interview).

5.6 Duration and type of entrance examination

The entrance examination in the subjects/subject combination mentioned above, will be of 3 hours duration in Part A and B and will contain mostly objective type questions.

Part-A of the question paper pertaining to English and General Knowledge tests will be common for all the candidates and cover the following topics :

Subject	Topics
English	Correct usage of different parts of speech and ability to have a logical comprehension of published literature, precis writing, paraphrasing, etc.
General Knowledge	This is to test general intelligence and awareness of the candidates. There is no rigid syllabus.

The Part-B of the question paper will be devoted to the subject/discipline opted by the candidate.

6. RIGHT TO REFUSE ADMISSION

The Director reserves the right to refuse admission to any candidate even though he/she may fulfil the academic requirements of admission on the basis of criteria laid down in the Regulations and/or may be otherwise eligible

for admission on the basis of competitive written examination/interview without assigning any reason thereof. The decision of the Director shall be final and legally binding.

7. CANCELLATION OF REGISTRATION

The Director may cancel the registration of any student or group/batch/ class of students who indulge(s) in acts of indiscipline, misconduct, violation of rules and regulations of the University, strikes, absence from classes without permission or without any valid reason or in whose case, the Director has reasons to believe that his/her continuance in the University would not be in the best interest of University.

The students, who have been permanently dropped from this University either on account of poor academic performance or on account of acts of indiscipline or misconduct shall not be eligible to make an application for re-admission to this Institute.

It is the responsibility of the candidates to furnish full and correct information on the application form. Any admission made on the basis of wrong information supplied by the candidates or through a clerical mistake in the Registrar's Office and detected subsequent to the admission and joining of the candidate, would be cancelled at the cost and risk of the student.

8. ORIENTATION

In order to make all fresh students fully conversant with the requirement and working of the course credit system of instruction followed at this Institute, an Orientation Programme will be held on a specified date at which attendance is compulsory. This applies to all candidates selected for admission including nominees of State Departments/Universities and other Institutions, etc., as well as departmental candidates of the Institute.

9. REGISTRATION OF STUDENTS

Every student enrolled shall be required to register at the beginning of each semester, referred to in Section 3, on a date pre-determined, till the completion of his/her degree requirements, including final viva-voce unless otherwise permitted by the Joint Director (Acad.), failing which his/her enrolment shall be considered as cancelled. Re-admission of such case shall be on application supported with valid justification and not as a matter of right. Registration shall consist of the following steps:

(a) Filling up the roster forms for course(s) to be offered in that semester.

(b) Submission of progress report for the preceding semester.

(c) Payment of the fee and other dues.

(d) Depositing the prescribed registration forms duly filled in by the student in person and signed by the Head of Division/Co-ordinator of PG programme/ Advisor.

The Registration for the first semester of the year for fresh students is a part of the admission procedure and shall be governed by the admission rules. Registration in respect of continuing students in each semester shall, however, be completed on the first day of each semester and the classes shall commence thereafter. No student can be permitted to register in subsequent semester unless he/she completes all the examinations of the course registered in the previous semester.

The Registration of continuing students shall not be permitted later than the last date of registration with late fee approved by the Joint Director (Acad.). If during the registration days, a student is required to be outside the Institute campus on the basis of prior permission, in connection with his/her duties, field work, research work or due to other unavoidable and legitimate circumstances, he/she may be permitted by the Joint Director (Acad.) to register himself/herself by submitting the necessary registration forms and fee through post.

A continuing student who does not register on the notified date shall be required to pay a late fee of Rs. 500/- or as may be prescribed by the Institute.

In case, the name of a student is dropped out/struck off for a semester, re-registration of the student may be done only after the approval of Joint Director (Acad.). The student will be required to submit the re-registration fee of Rs.50/- in addition to late fee in the next semester.

10. SYSTEM OF EDUCATION

A. Semester System of Education is followed with both Internal and External examinations.

B. The 10.00 points scale for grading is followed for completing degree required in Post Graduate Degree programme. Students must get an OGPA of 7.00 /10.00 for both Master's & Doctoral programmes.

The details regarding examination evaluation, attendance & leave, Advisory Committees, Allotment of Advisors, Preliminary Examinations, Seminars, Thesis evaluation & Viva Voce examination, and all other matters relating to the degree programmes are given in the Academic Regulations of the Deemed University.

11. HOSTEL ACCOMMODATION

Limited Hostel facilities are available for boys and girls separetely on first come first serve basis at the time of registration/admission, subject to availability of accomodation. Hostel accomodation can not be claimed as a matter of right. Limited accommodation for married students is also available.

12. FEE AND OTHER CHARGES

12.1 The following charges shall be payable by a full time student (M.V.Sc/ Ph.D) admitted to the Institute.

Fee may be paid by bank draft drawn in favour of "ICAR, Unit IVRI, Izatnagar" payable on any scheduled Bank at Bareilly with the Cashier of the University Office.

1.	Caution money (refundable at the time of leaving, payable once on admission)	Rs. 5,000.00 for M.V.Sc. Rs.10,000.00 for Ph.D.
2.	Registration fee (once on admission)	Rs. 100.00
3.	Tuition fees payable on or before the date of registration for each semester	Rs. 4,000.00 (Annual) (to be paid in two instalments)
4.	**A.** Hostel, Water and Electricity Charges payable along with the tuition fee for each semester (to be paid by student getting hostel accommodation)	Rs. 1500.00 (Annual)

	B.(i) Married accommodation/Family Hostel	Rs. 500.00 per month
	(ii) Security deposit (refundable)	Rs.1500.00
5.	Games fee payable along with the tuition fee for first semester (per academic year)	Rs. 100.00
6.	Identity Card fee (payable once on admission)	Rs. 100.00
7.	IVRI Student's Council fee payable along with the tuition fee for first semester (per academic year)	Rs. 150.00
8.	IVRI Student's Welfare Fund payable along with tuition fee for first semester per academic year	Rs. 100.00
9.	Examination fee payable with the tuition fee of each semester of the Ist academic year.	Rs. 300.00 (M.V.Sc./Ph.D.)
10.	Preliminary Comprehensive Examination fee payable once at the time of registration for the 2nd semester of first year	Rs. 300.00
11.	Thesis evaluation fee to be paid in IVth (Master's) and VIth (Doctoral) semester	Rs. 600.00 (for Ph.D.) Rs. 500.00 (for M.V.Sc.)
12.	Magazine fee	Rs. 100.00 per annum
13.	Cultural & Literary activities fee	Rs. 100.00 per annum
14.	Library fee	Rs. 100.00 per semester
15.	Medical Insurance premium will be charged as per rates applicable. It would, however, be optional till it is changed.	Optional (Till it is changed)

Fee, hostel, water, electricity charges shall be payable before the student is permitted to register at the beginning of each semester. Failure to pay the fees and other prescribed charges shall automatically result in the cancellation of registration of the student. The IVRI reserves the right to recover the dues from the student.

Where a student fails in the Preliminary Comprehensive Examination or in the final *viva-voce* examination or is required to resubmit the thesis, he/she will be required to pay the prescribed examination fee again for each of such re-examinations.

Note: i. Fee and other charges can be changed without any prior notice.

ii. Fees etc. once paid are not refundable.

iii. The students belonging to Scheduled Castes/Scheduled Tribes, admitted at this Institute in various disciplines will be exempted from payment of the following fees :-

(a) Tuition fee (b) University Journal fee (c) Students Union fee (d) University Magazine fee (e) Students Welfare Fund (f) Sports Fund (g) Examination fee.

12.2 Other charges :

The following charges shall be leviable for issuing various certificates:-

1. Provisional Degree Certificate	Rs.100.00
2. Transcript/Duplicate Transcript	Rs.100.00
3. Convocation fee	Rs.100.00
4. Award of Degree *in absentia*	Rs.600.00
5. Make-up examination fee	Rs.500.00
6. Duplicate of Degree Certificate, if lost	Rs.500.00
7. Any other Certificate like Migration/Thesis submission Certificate/Course Completion Certificate(s), etc.	Rs. 50.00

8. A late registration fee to be imposed on first day after due date. Rs.500.00

Note : Bonafide/character certificate will be issued free of charge.

Fee of foreign students will be charged according to the instructions of the Government of India and agreement reached with the foreign countries/ international agencies.

13. FELLOWSHIP/SCHOLARSHIP

Institute Scholarship will be offered to assist the students who need financial assistance. This provision will be utilised to assist as many students as possible who have good academic record and who are making diligent efforts to pursue higher education. No student/scholarship holder shall apply for or accept any other scholarship/award/employment without prior approval of the Joint Director (Acad.). The details of the various scholarships available are indicated below:-

13.1 Institute Scholarship

The Indian Veterinary Research Institute will award scholarship to M.V.Sc. and Ph.D. students on the following terms and conditions :

IVRI Scholarship is admissible to only those candidates who are admitted through compepitive entrance examination for M.V.Sc./Ph.D. degree programmes. The award to the fresh students shall be made by the Joint Director (Acad.) of the Institute on the recommendation of the 'Standing Committee' on Scholarship, Financial Assistance and Academic Progress' which shall take into consideration the merit of each applicant based initially on his/ her admission and subsequently on his/her performance at the Institute.

13.1.1 Duration

The duration of scholarship of M.V.Sc. Courses will be of two years and Scholarship for Ph.D. course will be of three years.

Initially the scholarship will be sanctioned for one year. It is essential to maintain an OGPA of 7.00 out of 10.00 at the end of each semester for Master's or Doctoral Degree students for getting the Scholarship. No Scholarship will be paid for the period, if it is discontinued on account of an OGPA lower than 7.00 out of 10.00. However, after obtaining the required OGPA, the scholarship will be resumed to the students. If a student gets "F" grade in any course other than in English or audit course, he/she will not get fellowship/scholarship until he/she clears the said course(s). However, no arrears of fellowship/scholarship will be paid for the intervening period.

The scholarship shall be paid for the period of stay of the recipient in the Institute (inclusive of the summer vacation/the semester breaks/and such other leaves, as may be sanctioned under the rules) up to the date of final viva-voce (i.e. till they are on the rolls) subject to the condition that the maximum period of scholarship prescribed in the Academic Regulation shall in no case be extended and the student marks his/her attendance in the Division/Section concerneds.

13.1.2 Value

The value of the scholarship for Master's Degree programme is Rs. 7,560/- per month for 2 years with a contingent grant of Rs. 6,000/- per annum for two years and for Doctoral programme, it is Rs.10,500/- per month for three years with contingent grant of Rs.10,000/- per annum for three years.

13.1.3 Conditions of Award

The scholarship will be admissible to persons of Indian Nationality, as defined in the Constitution of India or persons domiciled in India, irrespective of sex, race or religion.

The scholar will be under the administrative control of the Joint Director (Acad.). He/she will work under a recognised Guide of the Faculty of the concerned discipline.

Each student will have to execute a surety bond for Rs.30,000/- and Rs.50,000/- for M.V.Sc. and Ph.D. students respectively on a non-judicial stamp paper of Rs.100/- in the prescribed form attached as Annexure-I duly attested/ notarized by the **Notary Public to be submitted on the day of registration positively**. The following person can stand surety for the students:

a) Parent/Guardian of the student;
b) Guide/Teachers of the student
c) Sarpanch of the village panchayat to which the student belongs
d) MLA
e) Local guardian of the student, if any
f) Any other Central Government or State Government or Central Autonomous Bodies or Equivalent status or comparable higher status employees.

The scholarship will take effect form the date the scholar joins the course or from the date of start of academic year, whichever is later.

A scholar will devote his/her whole time to the approved study and will not be allowed to accept or hold another appointment paid or otherwise.

The Institute will not provide to the scholar benefits of Provident Fund. Scholarship will not be given to any one who is drawing his/her pay on study leave or shall not be adjusted with his/her pay for any other benefits.

A scholar shall not leave the course before its completion without prior approval of the Joint Director (Acad.). He/She will be required to give an undertaking in the prescribed format before the scholarship is awarded.

13.1.4 TERMINATION OF SCHOLARSHIP

The Scholarship will be terminated:

i) On the date the student ceases to be on the rolls of IVRI.

ii) On the date the student completes his/her study which may include submission of thesis and viva-voce examination.

iii) On the date the sanction of scholarship expires.

iv) If at any time, in the opinion of the Joint Director (Academic), a Student is found to be negligent in his/her work or is guility of unbecoming conduct, the scholarship will terminate without notice.

v) If a student completes his/her study before the expiry of sanctioned term of his/her scholarship, the Major Advisor should immediately inform the Joint Director (Academic) for necessary action.

14. MEDALS AND AWARDS

The University has instituted the following Medals/Awards for encouraging the P.G. students:-

14.1 IVRI Gold Medals

One Gold Medal (gold plated) along with a certificate each to Master's and Doctoral students will be awarded for securing highest OGPA in their respective programmes. However, if a student has repeated a course or has been given any disciplinary punishment during the course programme, he/she will not be considered for the said award/medal.

14.1.2 N.D. Kehar Award

Instituted in the memory of Late Dr. N.D. Kehar, Ex-Head, Animal Nutrition Division, IVRI, this Award is given to a Ph.D. Scholar of Animal Nutrition discipline each year for excellence in thesis research work on the pattern of Jawahar Lal Nehru Award of ICAR. The Award carries a citation along with a gold plated silver medal.

14.1.3 C.M. Singh Award

Instituted in honour of Dr. C.M. Singh, Ex-Director, IVRI by Dr. C.M. Singh Endowment Trust, Bareilly, this Award will be given to the best Ph.D. scholar in any subject of Veterinary & Animal Science during the particular calendar year. This Award carries a citation along with a gold medal (gold plated).

15. CONDUCT AND DISCIPLINE

At the time of admission, a student is expected to become a 'DISCIPLE' and the relationship between the University authorities and him/her becomes one of the teacher and the taught. In that relationship, it becomes the duty of the student to learn, submit and obey the rules, regulations and orders of the University authorities for maintenance of discipline. It shall be presumed that the guardians/ sponsoring authority of the students have agreed that their wards shall comply with these rules. Failure to comply with the rules will make the student liable for disciplinary action including the student's expulsion from the University. The decision of the University Authority in such case shall be final and binding on the students and their guardians.

All the students shall sign a declaration to the effect that he/she submits to the disciplinary jurisdiction of the University Authorities and shall observe and abide by the rules and regulations of the University/Institute.

15.1 Indiscipline

All cases of students indiscipline, misbehaviour or misconducts shall be dealt with by the Director, under the powers as defined in the 'University Law of India' and may impose the following punishments, as deemed fit when he/she is satisfied that the misconduct of the student is established.

i. Fine up to Rs.1,000/-
ii. Placing the student on conduct probation.
iii. Dismissal from the Hostel.
iv. Temporary suspension from the University.
v. Dismissal from the University.
vi. Withholding of fellowship. (if receiving)
vii. If any property/equipment in the campus is damaged and loss caused to the Institute as a result of demonstration/strike resorted to by the students, the loss would be recovered either directly from the persons specifically identified where possible; or else collectively from such groups or associations which are responsible for organising the demonstration/strike.

The following shall constitute the acts of indiscipline, misbehaviour or misconduct on the part of the students.

(a) Keeping or using any fire arms/or lethal weapons in the room or outside.
(b) Misuse of electricity in the room.
(c) Keeping or using intoxicants in any form.
(d) Ragging, bullying or harassing of students.
(e) Demonstrations in any form including processions and meetings.
(f) Abusing
(g) Use of violence.
(h) Showing or causing to show any disrespect to the staff members of the University, teachers, hostel management and other authorities of the University/Institute.
(i) Disturbing other students in their studies.
(j) Damaging any university property.
(k) Disorderly behaviour.
(l) Organising meetings other than those authorised by the University authorities.
(m) Any act specifically and lawfully forbidden by the officers of the University, teachers, hostel management and other authorities of the University.
(n) Using unfair means in examination.
(o) Act of sexual harrassment in any form.
(p) Any other act intended or designed to cause inconvenience, annoyance, injury or damage to any other student or the employee of the University or a resident of the campus or a guest or visitor of the University.

15.2 Unfair means in examination

The Invigilator/Instructor concerned shall report to the Joint Director(Acad.) on the day of occurrence of each of unfair means, with full details of the evidence and the explanation of the student concerned, if any. The Joint Director (Acad.) shall take appropriate action and the penalty may be as indicated below:

(a) Students found using unfair means during a quiz or short test may be required to withdraw from the course in the semester.

(b) Students found using unfair means during mid term examination may be debarred from the University for the unexpired portion of the semester.

(c) Students found using unfair means during the semester-end final examination may be deemed to have failed in all the courses in the semester and also debarred from the University for the subsequent semester.

15.3 Academic performance and work found unsatisfactory in respect of the student

The University authority shall remove a student from the roll of the Deemed University or shall impose any other penalty as deemed fit for any of the following reasons :-

(a) Failure to profit by the course of studies.

(b) Misbehaviour.

(c) Failure to pay the prescribed fees and dues without prior permission.

(d) Continuous absence from studies without prior permission.

(e) Any act of indiscipline/misconduct.

(f) Careless handling of the laboratory equipment or their misuse.

(g) Causing damage in the laboratory by careless handling of equipment/ chemicals or their misuse.

15.4 Ragging

If any incident of ragging comes to the notice of authorities of the Deemed University, IVRI, the concerned students shall be given liberty to explain and if his/her explanation is not found satisfactory, the authority would expel him/her from the Institute.

Ragging is totally prohibited in the campus and all the students shall observe and abide by the rules & UGC regulations on curbing the meanace of ragging in higher educational institutions 2009 under Section 26(1)(G) of the University Grant Commission Act 1956 dated 17.6.2009 published in the Gazette of India part-III, Section 4. Any student found guilty of ragging and/or abetting ragging, whether actively or passively, or bearing a part of a conspiracy to promote ragging is liable to be punished in accordance with the aforesaid regulations.

All the students have to submit an affidavit worth Rs.10/- duly certified by the Notery as per Annexure-IV and V of the Information Bulletin.

16. STUDENTS' WELFARE

16.1 Sports and Recreation

The institute encourages extra-curricular activities outside the class-room that enrich cultural, physical and social life of students. Spacious play grounds are provided in the students' hostels and necessary facilities exist for outdoor games like cricket, hockey, volley ball, badminton and various other athletic events. There are facilities also for indoor games in each hostel. There is a Student Sports Fund to which every student subscribes a sum of

Rs. 100/- at the beginning of each academic year. The amount so collected is used in improving the sports facilities for the students and promoting literary activities among them.

16.2 Medical Facilities

Qualified medical officers look after the health of the students. The Institute dispensary is located within the campus. The medical officers reside at the Institute campus and are available round the clock. Medical services are provided to students at the Institute's dispensary.

16.3 Medical Insurance Scheme

Besides the above, Mediclaim Insurance facility is available to post-graduate students of this Institute on optional basis. The policy under this scheme covers reimbursement of hospitalization expenses only for illness/ diseases contracted or injury sustained by the insured person. This scheme is not applicable for in-service students.

16.4 Students Welfare Fund

With a view to render financial aid to students in distress and to support any other student's activities a Student Welfare Fund has been instituted. All students are required to contribute Rs. 100/- for the Fund at the beginning of each academic year.

16.5 Students' Council

All students admitted to this Institute will automatically become members of IVRI Students' Council and are entitled to participate in the Council Election. However, in the case of students sponsored by various organisations, the sponsoring organisations should indicate in the application form itself whether they would have/would not have any objection to their nominees holding an office in the IVRI Students' Council.

16.6 Student Hostel Mess

Every hosteller will have to take meals in the hostel on payment of usual charges as fixed by the Competent Authority.

17. COMPUTER CENTRE

The Institute has a well developed Computer Centre with adequate facilities for students for statistical analysis of data, etc. generated out of thesis research work. A Course on Data Processing and Computer Application is offered to the P.G. students by the Centre. Internet, intranet and e-mail facilities are also available.

18. LIBRARY FACILITIES

The National Library of Veterinary Sciences at IVRI has a collection of more than 2,50,000 highly specialized reading material in the form of books, journals, monographs, theses, reference works published data, bulletins, reviews, advances, reports, reprints, micro-documents etc. The library is subscribing about 125 foreign journals and about 103 Indian journals each year. Facilities for information, access and retrieval from CD-ROM databases in the multi-user environment is provided using CD-Mirror Hybrid Server on nominal charges. Library has been using Libsys 4.0 software for automation of library activities. All the Ph.D. Theses available in the library have been

digitized in PDF form and are available for use in library premises. Library provides E-mail & Internet facilities to its users at 24 terminals during all working hours and days. Three reading sections of the library are air-conditioned. Digital Video Recording based Close Circuit TV system with 22 cameras is being used in the various sections of the library for electronic surveillance. Photocopy facility is also made available in the library at nominal charges.

Rules for Library Facilities for PG students:

1. Five books are issued for 30 days and one journal for overnight to each student. If the issued publications are not returned within prescribed period a fine charged as per existing library rules.
2. One soft copy (CD) of the books, if available, is issued to the student for overnight.
3. If the books is torn out and misused while in custody of student/user, he/she shall be required to the penalty as decided by the competent authority.
4. If one volume of multi-volume set is damaged or lost while in the custody of the borrower, he/she will be liable to replace whole volume or pay the cost of whole volume alongwith a penalty as may be imposed by competent authority.
5. In case of loss of book, the borrower will be required either to replace the book with the latest available edition or pay the cost of book alongwith a penalty equal to the cost of book.
6. Library provides the reference research facility through CD-RoM in computers and the printouts on the payment basis @ Re.1.00 per page. Photocopy facility is provided on nominal payment @ Re.050 per exposure. These rates are subject to change from time to time.

19. COMMUNICATION CENTRE

The Communication Centre provides the necessary support to the scientific community of this Institute as a central facility for photography, art, reprography, printing, publication, information and media coverage.

20. PLACEMENT CELL

The Institute is annually producing, a sizeable number of well-trained competitive professionals with attractive employment opportunities in various sectors such as State and Central Govt., NGOS, Armed Services, Agricultural/ Veterinary Universities, R&D jobs in Industry and Central Institutes, including Business and Media Management. The Placement Cell encourage linkages between leading organizations of livestock sector, other prospective employers and out going post-graduate students to provide assistance in placement of this highly trained human resource.

21. POST GRADUATE EDUCATION & TRAINING PROGRAMMES

21.1. Disciplines & Major Fields of Specialization

The main disciplines/subjects of study and the major areas of specialization within each subject in which instruction is offered leading to M.V.Sc. and Ph.D. degrees, are as under :-

(1) Animal Biochemistry

Clinical biochemistry, molecular markers for disease diagnosis, host defense system and cellular biochemistry.

(2) Animal Biotechnology

Recombinant DNA(r-DNA) techniques including development of improved diagnostics and vaccine, Molecular characterization of bacteria and viruses, protein engineering and peptide synthesis, Bio-informatics and its application.

(3) Animal Genetics & Breeding

Livestock breeding plans; structural and functional genomies; DNA polymorphism in growth, productive and reproductive traits; cytogenetics, immunogenetics and molecular marker studies; genetic analysis for immune responses and disease resistance.

(4) Animal Nutrition

Clinical and pet nutrition, detoxification of agro-forestry based unconventional feeds, improvement of lignocellulosic residues, rumen manipulation for enhanced health and production, energy metabolism, mineral metabolism, protein metabolism.

(5) Bio-Statistics

Sampling techniques, design of experiments, statistical inference, livestock health statistics, econometrics, environmental statistics.

(6) Epidemiology

Molecular epidemiology, sero-epidemiology, epidemiological survey, monitoring and surveillance of diseases.

(7) Livestock Economics & Statistics

Livestock farm management and production economics. Livestock marketing and price analysis, livestock finance and project analysis, livestock development and policy, bio-energy and environmental economics.

(8) Livestock Production & Management

Livestock behaviour and welfare in relation to production and reproduction. Housing to vis-a-vis performance, managemental norms of different livestock species. Reproductive health management and development of different animal handling devices.

(9) Livestock Products Technology

Fresh and processed meat technologies, poultry products technology, milk and milk products processing, packaging and sensory evaluation, slaughterhouse byproducts technology & food microbiology and quality control.

(10) Poultry Science

Avian genetics and breeding, avian nutrition and feed technology, avian physiology and reproduction, poultry products technology, poultry housing and management and transfer of technology.

(11) Veterinary Bacteriology

Molecular bacteriology, development of diagnostics and vaccines; disease prevalence; bacterial disease pathogenesis, bacterial & mycotic structures and functions; Bacterial antigens & toxins.

(12) Veterinary Extension Education

Extension education strategies and techniques for the transfer of livestock technology to farmers, impact assessment of technologies.

(13) Veterinary Gynaecology and Obstetrics

Reproductive diseases in male and female, diagnosis, treatment and management, artificial insemination and augmentation of fertility. Pregnancy diagnosis pre and post parturient disorders in livestock. Semen freezing, quality control, its in-vitro fertility tests and fertility markers. Ultrasonagraphy, laparoscopy, embryo transfer techniques.

(14) Veterinary Immunology

Morphological and functional characterization of cells of innate and acquired immune system. Molecular Immunology, Immune effecter cells and molecules, microbial immunity, immunodiagnostic and immunoprophylactics, tumour immunity. Role of immunomodulators in immunity.

(15) Veterinary Medicine

Production & deficiency diseases; alternative system of medicine; environmental toxicity & its amelioration; gastrointestinal disorders; management of mastitis; diseases of skin; preventive medicine; canine medicine and forensic medicine.

(16) Veterinary Parasitology

Helminthology, protozoology, entomology, molecular parasitology with particular reference to immunodiagnosis, immunoprophylaxis and control of parasitic diseases of economic importance.

(17) Veterinary Pathology

Molecular pathology, immunopathology, pathology of infectious diseases, metabolic, nutritional and toxicopathology, experimental pathology, comparative pathology, oncology and Avian Diseases.

(18) Veterinary Pharmacology & Toxicology

Chemotherapy, drug development, advanced pharmacology, indigenous drugs, molecular pharmacology, pharmacokinetics, chemical residue.

(19) Veterinary Physiology

Digestion & metabolism, bioenergetics, growth, neurophysiology and behaviour, environmental physiology, endocrinology, reproduction & embryo biotechnology.

(20) Veterinary Public Health

Diagnosis, prevention and control of zoonotic diseases, foodborne infections and intoxications; environmental pollution and biomedicines.

(21) Veterinary Surgery and Radiology

Orthopaedics surgery, anaesthesia, pain management, reconstructive surgery, cardiovascular and thoracic surgery, radiology and ultrasonography.

(22) Veterinary Virology

Virus taxonomy, viral pathogenesis, cell-virus interaction, clinical and diagnostic virology, sero and molecular epidemiology, animal cell culture,

molecular virology, animal viral prophylactics, animal viral drugs/approaches, bio-safety.

21.2 Short Term Training Courses

The short term training courses in specialised areas are conducted at the institute for the benefit and enhancement of knowledge of veterinarians and other research personnel working at field level in livestock farms, disease investigation/diagnostic laboratories and in veterinary colleges/universities.

21.3 International Training Courses

International short term advance courses especially in the field of Animal Biotechnology/Biochemistry are conducted regularly as sponsored by various agencies like CCS Colombo Plan etc. annually for the participants from various South East Asian, SAARC and other countries.

21.4 Centres of Advanced Faculty Training

Centres of Advanced faculty training (ICAR) in Animal Nutrition and Physiology & Climatology exist at IVRI. Two courses every year are organised under specific areas of each of these Centres of Advanced studies.

In addition to the staff of the Centre taking theory and practical classes, guest lecturers are also invited from other divisions of the institute and other organisations where expertise is available in newer areas so that the participants get complete knowledge of the course. Emphasis is laid on practical classes so that participants are fully exposed to the latest techniques and they develop confidence by doing the practicals. These laboratories are equipped with state-of-art facilities.

ANNEXURE-I

SYLLABUS FOR WRITTEN EXAMINATION FOR DOCTORAL (Ph.D.) PROGRAMMES

Animal Biochemistry [Code: BCT]

Scope and importance of Biochemistry in animal science. Cell structure and functions. Techniques of cell fractionation, Ultra-centrifugation and electron microscopy. Chemistry and biological significance of carbohydrates, lipids, proteins, nucleic acids, vitamins, and hormones. Enzymes, chemistry, kinetics, mechanism of action and regulation. Metabolic inhibitors with special reference to antibiotics and insecticides. Sub-unit structure of macromolecular and supra-molecular systems. Chemistry of antigens and antibodies and molecular basis of immune reaction. Separation of macromolecules of biological significance, their isolation, purification, and characterization. Radioimmuno assay and other binding essays. Calorimtery, spectro-photometry, chromatography and electrophoresis, Isotopic methods.

Bioenergetics and biological oxidation; Digestion of food, its absorption and energy metabolism in ruminants and nonruminants. Metabolism of carbohydrates, lipids, amino acids and nucleic acids. Bio Synthesis of Proteins and nucleic acids. Regulations of gene expression Chemistry of respiration and gas transport. Water and electrolyte metabolism. Nutritional needs for maintenance, growth and production. Significance of calorie proteins and essential amino acids. Deficiency diseases, metabolic disorders and clinical biochemistry. Metabolism of specialised tissues. Connective tissue, nervous tissue, muscle, blood, cartilage and bone and mammary tissue; Endocrine glands, Biosynthesis of hormones and their mechanism of action.

Fundamental principles of human nutrition. Nutritional significance of animal products. Environmental factors like heat, cold, radiation and environmental pollutants.

Animal Biotechnology (Code : BTY)

Cell biology, Molecular Biology and Genetic Engineering-The structure of animal cell, organization of the cytoplasm, cell organization of the cytoplasm, cell organelles, endoplasmic reticulum, Golgi complex, mitochondria, lysosomes, nucleolus and sub-nuclear structures, molecular organization of cell membrane and transport across cell membrane, cell-division and cell cycle, control of proliferation, cell to cell signalling, cell receptors, cell transformation, characteristics of tumour cells, oncogenes and their proteins.

Packaging of DNA and eukaryotic chromosome, organization of genes on chromosome, pseudogenes, eukaryotic genome sequestered in organelles and organelles expressing their own genes, mitochondrial genome in mammals, mammalian satellite DNA, Mobile genetic element, tandem gene clusters, Promoters, RNA processing and RNA splicing.

Gene structure, organization of prokaryotic and eukaryotic genome nucleases, DNA replication, DNA repair and recombination, RNA biosynthesis, genetic code, ribosomes, mRNA, regulation and control of transcription.

Transcription initiation and termination in prokaryotes and eukaryotes, processing of rRNA and tRNA editing.

Purine and pyrimidine bases of nucleic acids, synthesis of nucleic acids, importance of nucleic acids and nucleoproteins. *In vitro* DNA synthesis, oligonucleotides, role of DNA ligases, DNA and RNA polymerases of eukaryotes and prokaryotes and their mode of action, regulatory proteins that affect RNA polymerase, functional promoters RNA replicase and polynucleotide kinase, reverse transcriptase; protein biosynthesis, ribosomes and the site of protein synthesis, RNA, amino acid activation for protein synthesis, regulation and control of translation and post translational modification.

Virus replication, description of major groups of DNA and RNA viruses, oncogenic viruses, animal viruses commonly used in molecular biology, recombination in bacteria, fungi and viruses, transformation, conjugation and transduction, molecular mechanism of spontaneous and induced mutations, site-directed mutagenesis.

Isolation and purification of DNA from prokaryotes and eukaryotes, DNA fingerprinting, RFLP, restriction enzymes, DNA cloning, cloning vectors, production of recombinant plasmids, construction of genomic and cDNA libraries, identification of specific clones, southern/northern blotting techniques, polymerase chain reaction, nucleic acid probes and nucleic acid hybridization, radioisotopes and their handling, recombinant DNA technology applications in animal health and production, biosafety, identification and isolation of important genes, gene transfer in eukaryotes, techniques of gene transfer.

Animal tissue culture and Hybridoma technology-Cell culture techniques, culture of different tissues and organs and its applications, maintenance and preservation of cell culture, nutritional requirements of cells, replica plating, *In situ* hybridization in cells and micro-manipulation.

Somatic cell hybrids in gene analysis of animal cells, theory of monoclonal antibody production, immunization of mice; myeloma cell lines and their maintenance, cryopreservation of clones, cell fusion, screening assays-ELISA, IFAT, RIA, subcloning, expansion of clones, *In vitro* and *in vivo* production of monoclonal antibodies, isotyping and binding of Mabs, application of Mabs in diagnostics.

Embryo transfer technology-Folliculogenesis, superovulation, hormonal control of ovulation, fertilization and embryo development, collection of embryos (surgical/non-surgical), embryo transfer, oocyte maturation *in vitro*, sperm capacitation, sperm-oocyte interaction, *in vitro* fertilization, *in vitro* and *in vivo* development of embryos; factors affecting embryo development *in vitro*, and embryo culture, embryo freezing, sexing, bisection and blastomere cloning of embryos, production of transgenic animals.

Biophysics and Bioprocess technology-General structure of proteins, enzymes and co-enzymes in protein function, membrane proteins, glycoproteins and glycolipids; physico-chemical characterization of proteins, classification of proteins and organizationof peptides and proteins, conformation of polypeptides (protein) chain, protein folding; protein extraction from biological samples and their estimation, purification of proteins and electrophoretic analysis including western blotting. Structure and classification of amino acids, physico-chemical properties and analysis of amino acids; structure and functions of nucleic acids, structural and chemical features of various types of DNA and RNA, physico-chemical properties of DNA and RNA; microbial fermentation process, production of biomass, seperation and purification

methods, modification of specific products, continuous processing, immobilization methods for enzymes and cells, specific application of biopriocess technology in veterinary science.

Animal Genetics & Breeding [Code : AGB]

Epigenesis, pangenesis and inheritance of acquired characters, cell structure and functional organization of cell, mitosis and meiosis, reproductive cycles in bacteria, virus and fungi, Mendel's laws, dominance relations and multiple alleles in diploid organisms, gene interaction,sex determination, sex linkage, maternal effects, cytoplasmic heredity, quantitative inheritance, linkage and recombination, gene mapping in diploids, different types of chromosomes, changes in chromosome structure. Gene structure and its function, gene and genotype frequencies and equilibrium, role of selection, mutation and migration and random drift in evolution, speciation and evolution.

Individual vs population gene and genotype frequencies, processes affecting gene frequencies, ideal and non-ideal populations, effective population size, inbreeding theory of path coefficient, concept and estimation of F System of inbreeding components of variance and their estimation, continuous variation and its mode of inheritance, resemblance between relativies, heritability and its estimation basis and methods of selection, efficiency of selection, selection response and its prediction genetic gains ,inbreeding and cross-breeding, general and specific combining ability, heterosis, sire evaluation, breeds of various important livestock species, population statistics of livestock species, breeding programmes in various livestock species in vogue in India and abroad, general concept of ETT and MOET schemes.

Animal Nutrition [Code : ANT]

General Nutrition: Carbohydrates, proteins and fats, their digestion and metabolism, Protein value of feed, measure of protein quality, application of protein quality in feeding practices and supplementary value of proteins; Intake and utilization of energy and nutrients of feeds. Essential fatty acids and their role in lipogenesis in relation to nutrition. Requirement of energy, protein, minerals (macro and micro). Vitamins and additives for poultry and pigs; protein-energy inter-relationship, comparative digestion of nutrients in various species.

Feeds and animals body composition; function of water in animal body; metabolism and utilization of nutrients (carbohydrates; fats; proteins, non-protein nitrogen, minerals and vitamins); rumen digestion and metabolism; effect of different feeds on rumen microbial activity. Classification of bacteria and protozoa, influence of various factors effecting the microbial activity. Maintenance of continuous fermentation system and a consideration of its limitation. Factors affecting rumen development; non-protein nitrogen metabolism in the rumen. Animal feeds and fodders, quality of forage related to production, various schemes of partitioning carbohydrates; limitation of the Weende methods of forage analysis; detergent method of feed analysis; chemical and biological evaluation of feeds and forages including *in vitro* digestibility trials; study of animal energetics and basic description of animals relative to the requirements of energy and protein; role of antibiotics, hormones and other biostimulators; importance of trace minerals in ruminant nutrition and their relationship with vitamins and hormones.

Applied Nutrition-Feeding standards, their evolution and significance, feeding standards as hypothetical rations; feeding standards as indispensable guides, protein, vitamin and mineral supplements; translation of feeding standards in meal mixture specification, preparation of mixed mineral supplements; flexible formula for non-ruminant meal mixtures, creep rations for piglets, quality control of feedstuffs, ISI standard; feed cost of non-ruminant production; efficiency of non-ruminants for feed conversion into animal products.

Statistical design and evaluation of feeding trials; Nutrient requirement of cattle, buffaloes, sheep and goats at various stages of growth, production and reproduction; present feeding standards and their limitations; factors affecting the nutritional requirements of ruminants; nutrients and their metabolism with reference to production and composition of milk, meat and wool; Relation of feed value to its chemical composition; nutritional factors affecting the quality and quantity of milk, meat and wool; input-output relationship and feed conversion efficiency for different traits; methods and procedures used in formulating economically balanced rations, calf starters, efficiency of feed conversion into animal products; agro industrial by-products; their feeding value and incorporation in meal mixtures; supply and demand of animal feeds in the country.

Livestock Production & Management (Code : LPM)

General concept of livestock production and management in Indian agroclimatic and socio-economic conditions; Impact of livestock farming in Indian agriculture; Breeds, population and production statistics of various livestock species i.e. catle, buffaloes, sheep, goats and pigs in India and their comparison with world statistic; various livestock development project programmes and their performance; role of livestock farming in proverty alleviation among rural poors.

Concepts of livestock housing under tropical and temperate climate adaptation and acclimatization; thermoregulation, heat tolerance of domestic animals; heat stress and summer management of livestock; types of animal housing; detail of loose housing for dairy cattle and buffaloes; space requirements for various categories of livestock in different housing Systems.

Production and reproduction management of different species of livestock; lactation management; physilogy of lactation and milk secretion; concept of machine milking in dairy cattle and buffaloes.

Labour requirement for different farm operations of various species of livestock farms; animal transportation and its regulations; knowledge of various livestock farm equipment and their maintenance.

Livestock behaviour and performance; application of knowledge of livestock behaviour for the effective management of various species of livestock; concept of livestock behaviours and welfare measures; classification of livestock behaviours.

Specific management practices for various species of livestock; rearing young and growing stock; management of milch, dry and pregnant stock; management of breeding stock; concept of mixed farming.

Feeding management of various livestock species; health care and management of livestock; preventive measures to be taken in livestock farms.

Importance of bullock power in Indian agriculture; bio-gas production; utilisation and waste management of livestock farms; livestock insurance; livestock project planning and financing; role of cooperatives for livestock development.

Livestock Products Technology [Code: LPT]

Composition : Meat, milk, fish, poultry and eggs; Technology of processing and preservation of livestock products; methods and equipment; Methods of processing and storage of meat and meat products, milk and milk products, eggs and poultry meat; Industrial food preservation, refrigeration, freezing, freeze drying, dehydration, canning, radiopasteurization, chemical : additives, curing, smoking, cooking of meat products. Nutritional, chemical organoleptic and microbiological quality of animal foods; Evaluation and maintenance of quality and wholesomeness; Factors affecting quality of foods. Postmortem aspect of muscle as meat : Ageing of meat; histological and chemical changes; Tenderization and other uses of proteoloytic enzymes; Production of protein hydrolysate and other processed foods. New product developments.

Processing and utilization of various animal by-products. Slaughter-house offal, methods of utilization, blood hides and skins, bones, horns and hooves, wool, hair and feathers, glands casings and other minor by-products; Animal by-product plant, planning, sanitation methods of operation. Marketing, Livestock production and supply characteristics; meat consumption and related demands; types of markets and trends in marketing livestock products and by-products; wholesale retail, future trends; consumer education and awareness, Grades and grading and quality control; regulatory and inspection measures, I.S.I. standards. Corporate bodies in regulating markets, marketing boards, internal trade and development of international market for livestock products; Economics of production; processing, preservation and distribution.

Origin and source of animal foods, Lay out construction, designing, organisation, maintenance and management of abattoirs, Preslaughter care and slaughtering techniques for different kinds of meat animals and birds. Emergency slaughter; Elements of meat hygiene; Ante-mortem and postmortem inspection; condemnation and destruction of unit material; Physical and chemical characteristics of meat tissue and principal organs. Facilities relating to sanitation in plant operation. Adulteration and misrepresentation of meat; Biochemical and deteriorative changes in meat, State municipal and other regulations pertaining to meat trade, Bacterial, parasitic and other meat borne infections and infestations; Spoilage of meat and meat products, Regulation and implica-tion of chemical additives used in meat, Sanitary standards for meat packing plants and meat stalls. Labeling and inspection of processed meat, foods; Meat products order.

Poultry Science [Code : PSC]

Genetics and Breeding-Breeds and breed characteristics; Mendelian traits in poultry-Its inheritance and usefulness; Economically important poultry inheritance; Gene action influencing them. Population genetics and path coefficients affecting such traits; heritability and Genetic correlations-their computation and application; Selection-natural, artificial, directive, disruptive, stabilizing individual, size and dam family, sib selection, progeny testing,

combined selections; Construction of selection indices utilizing various economics traits', Restricted selection indices; Closed flock selection versus innerpopulation selection, recurrent and reciprocal recurrent selection in poultry; part record versus full record selection response to selection plateae; Control population-its necessity and formation; Mating systems and their comparative efficiency in realizing response to selection; Inbreeding-its concept, measurement and effects; Development; evaluation and maintenance of inbred lines in poultry; Diallel crosses; Estimation of general and specific combining abilities, material effects; sex linked effects and heterosis.

Genotype or environment interactions: poultry; industry in India-its segment-Commercial hybridization; evaluation of test crosses; Random Sample test, practical breeding programme for broilers and layers; Dwarf gene and its usefulness in broiler and laying hen breeding. Selection for disease resistance; Blood groups; Biochemical polymorphism and their usefulness in poultry; Behavioural genetics-its importance.

Avian Nutrition-Carbohydrates, fats, proteins, nucleic acids-classification and properties, vitamins and minerals, properties, functions, deficiency state, source, requirements, feed additives-properties and functions.

Energy-Partition, Systems determination, evaluation of different system, heat increment, Metabolizable energy- utilization for growth and egg production, responses to energy restriction by growing chicken and layers; Proteins-Essential and critical aminoacids, inter-relationship among aminoacids, responses to lysine, methionine (+cystine) restriction by growing chicken and layers; Proteins-evaluation of quality by chemical, enzymatic, microbial and biological methods. Nutrient requirement-Methods of expression, factors affecting varying feed intake and nutrient intake, factors varying the nutrient requirement. Various standards for nutrient requirements.

Feeds-Sources of energy and nutrients; toxic constituents of feeds and methods of detoxification, supplementary value of food proteins, agroindustrial by-products, forest wastes and animal by products; Feeds formulation-Principles and methods; feed formulation for different classes of poultry, high energy feeds, nutrition of breeders, nutrition of caged birds, practical limitations, least cost poultry diets; Feeding systems-Methods; evaluation of different methods of feeding chicken.

Avian Physiology-Digestion, metabolism of carbohydrates; fats proteins; physiology of growth; Female reproduction, egg formation and factors influencing egg formation and production. Male reproduction and factors influencing fertility, Embroynic development; Role of endocrine glands; Respiration; regulation of body temperature; Physiological changes due to stress. Climatic factors and its influence on birds.

Avian Products Technology-Commercial egg and meat production; Egg structure and chemical composition; Grading of eggs and ISI standards; Internal quality of egg components and their nutritive value; Poultry dressing plants; steps in dressing and processing of chiceken; Dressing yields; Cold storage of eggs; egg products; meat and meat products; Evaluation of meat quality-Physical, chemical and organoleptic; Utilization of poultry processing waste; feathers, offals, shanks etc., Differet products of egg and meat; Preparation of egg powder and its utility. Microbial spoilage and methods of preservation

of egg and meat; Methods of packing, transportation and marketing of eggs and meat.

Avian Health-signs of disease outbreak and procedures for early diagnosis; principles of disease control viz. vaccination schedules; treatments; Sanitary and quarantine measures, other precautionary methods during outbreaks; Carcass disposal; Important Bacterial diseases Viz. Pullorum Disease, Fowl Typhoid and Paratyphoid, Fowl Cholera, Infectious Coryza, Chronic respiratory disease, Spirochaetosis, Ulcerative enteritis; Important Viral diseases, Viz. Ranikhet disease, Infectious bronchitis, Infectious Laryngotracheitis, Fowl Pox, Marek's disease, Avian Leucosis complex, Infectious bursal disease, Avian Encephalemyelitis, Systematic fungal diseases, viz. Apsergillosis (Alfatoxicosis, brooder pneumonia), Thrush (candidiasis). Common parasitic diseases viz. Round worms, Tape worms, External parasites viz. ticks, lice, fleas and mite. Protozoan diseases viz. Coccidiosis, Enterohepatitis and blood protozoan parasites. Disease syndromes viz. egg drop syndrome, fatty liver syndrome, Stress factors.

Incubation and Hatching- Principles of incubation, collection and storage of fertile eggs; factors influencing fertility and hatchability; Hatchery, sanitation and maintenance, Utilization and disposal of hatchery wastes; Pre-requisites of good hatchery, layout and equipment required; Housing-Location and site selection-Ideal layout of poultry houses for different systems of rearing, Controlled environment and open-sided houses: Types of material used for construction taking into consideration availability and different climatic conditions; Role of cross ventilation and effect of air pollutants and obnoxious gases in poultry houses.

Brooding and Rearing : Principles and methods of brooding Space requirement for housing, feeding and watering. Free range and confinement systems of rearing, cage versus floor and salt systems, advantages and dis-advantages; Staking densities their effect on production: Types of cage for Starters; grooves and layers; Effect of artificial light on material and egg formation and production; Types of litter and their characteristics; Litter management and their subsequent utility.

Poultry Housing Equipment-Types of brooders; Feeders, waterers laying nests; chick guards, crates, catching hooks, perches etc.

Common Management Problems: Cage layer fatigue, Fatty liver syndrome, Flightness, Hysteria, Egg eating, cannibolism, Rodent and fly problems. Wet litter and ammonia, dust and air pollutants in the sheds; Replacement of stock, Forced molting. Methods and programmes of molting, culling of layers.

Farm Economics- Production cost of eggs, Chicken, pullets and broiler, Feasibility reports for setting up small and large layer and broiler units. Poultry industry in India, its growth and futurology.

Veterinary Bacteriology [Code: VBM]

Bacteriology-Classification and nomenclature of bacteria; Structure, function and chemistry of bacterial nuclear apparatus, cytoplasm, intracellular granules, cell wall, cytoplasmic membrane, mesosomes, capsule, flagella,

fimbriae, endospores, protoplasts, spheroplasts, Forms, involution forms. Bacterial stains, staining and microscopy, Growth and nutritional requirements of bacteria, bacterial enzymes, respiration in bacteria, reproduction and growth phases of bacteria. Effect of Chemical and physical agents and antibiotics. Bacterial variations includ-ing transduction, transformation and cojugation.

Systematic study of bacteria belonging to genera, Borrelia, Leptospira, Campylobacter, Pseudomonas, Brucella, Escherichia, Citrobacter, Salmonella, Shigella, Klebsiella, Enterobacter, Proteus, Vibrio, Haemophilus, Pasteurella, Actinobacillus, Fuso-bacterium, Moraxella, Staphylococcus, Streptococcus, Bacillus, Clostridium, Listeria, Erysipelothrix, Corynebacterium, Nocardia, Rickettsia, Chlamydia, Mycoplasma and Acholesplasma.

General characters, classification and study of important pathogenic fungi.

Veterinary Extension Education [Code: EXT]

Extension education, objectives and principles; Formal and informal extension education; Growth of extension education as a discipline and profession; Extension education in relation to agricultural development : (including Animal Husbandry), Genesis of agricultural development/rural development programmes in India- leading to the concepts of reorganized extension services and integrated rural development programme. Role of extension education in development programme; Comparative studies of extension education system in selected developed and developing countries.

Extension teaching methods and audio-visual aids. Teaching and learning processes in extension education; Extension teaching methods and audio-visual aids and their classification; Selection and use of extension methods and audio-visual aids; Effective combination of extension teaching methods; Audio-visual aids and their role in transfer of technology; Social psychological considerations in use of audio-visual aids; Combining and using audio-visual aids for effective teaching, Production of low cost audio-visual aids.

Programme planning in extension education. Principles and processes; planning process; Methods of identifying needs; Securing participation and bringing co-ordination in programme planning process; Importance of Five Year Plan in India; Agricultural and Animal Husbandry Development programmes in action. National demonstrations. Operational research project, and lab to land programme, Evaluation as an integral part of programming.

Extension administration. Nature and characteristics; Extension administration versus general administration; Genesis of agricultural administration with special reference to extension service in India; Principle and theories of administration; Role and function of extension administrations; Factors affecting the extension administration, Organizational set-up for extension services in India including the Training and Visit system at different levels.

Training of extension personnel and farmers. Principles and importance of extension training. Types of training programmes for extension personnel and farmers; Emerging patterns and models of extension training; Factors affecting extension training, Efficacy of training, T & V system its merits and demerits. Methods of identifying training needs. Small group techniques in training. Assessing training effectiveness; Training facilities available in India for different extension personnel and farmers.

Concepts features and designs of various programmes in India, integrated Rural Development (IRD), T & V system of Extension, Drought Prene Aren Programme (DPAP), Small Farmers Development Agencies (SFDA), National Rural Employment Programme (NREP); Extension Programme for Rural Women; Training of Rural Youth for Self employment (TRYSEM); Lab to land Programme (LLP), National Demonstration (ND: Krishi Vigyan Kendras (KVKs); Operational Research Project (ORP) and Farmers Training Centre (FTC)".

Basic rural Institutions engaged in rural development. Structure and function of rural institutions and process of activating them; Factors influencing their involvements in rural development; Concept and theories of leadership, Identification and training of local leaders, Basic patterns of leader-group relationship in rural society; Role and importance of local leaders in rural development. Rural sociology and social psychology- their scope and importance in extension work. Concept of human society; characteristics of rural people; Scientific study of human behaviour, Socio-phsychological factors in transfer of technology, Theory and principles of social structure; Social interactions and processes; Process of socialization values and norms of rural social system; resulting socio-psychological changes in rural society.

Diffusion and adoption of innovation. Models and theories of diffusion and adoption; Process of diffusion and adoption, Adoption process and sources of information; Adoption curve-adoptors categories and their characteristics: Factors associated with adoption and rate of adoption; Role of adoption in relation to attributes of innovations; Role of change agents in adoption and diffusion; consequences of adoption of innovations.

Process and media of communication : Models and theories of communication; Nature and importance of communication; Communication process and elements of communication; Fidelity in communication and factors affecting it; Role of mass media in transfer of technology; Effective media-mix for rural audience; Problems and barriers in communication.

Research and evaluation in extension programmes : Social research and evaluation in extension programmes; Process of scientific research-various designs; Measurement, levels of measurements and corresponding statistical techniques; validity and reliability of measuring devices; Methods of observation and data collection; Techniques of tabulation; analysis of data and report writing; Importance of research and evaluation in extension programmes.

Veterinary Gynaecology & Obstetrics [Code: VGO]

Gynaecology-Functional anatomy of female reproduction-Anatomy and pre-natal and post-natal development of the reproductive organs of female farm animals and their specific sexual functions. Functional histology of the female reproductive organs; Physiology of Reproduction-Endocrinology of reproduction in females; Hypophysial hormones, Gonadal Steroid hormones, and placental hormones; their chemical structures, functions and mechanism of actions. Prostaglandins and synthetic hormones, hormonal interrelationships; Neuroendocrinology of reproduction-Hypothalamus, neurohypophysis and pineal gland, Reproductive life cycles-Foetal and neonatal life; puberty, adult sexuality, aging and fertility; Folliculogenesis-egg maturation and Ovulation; Transport and survival of gametes sperm transport in the female reproductive tract, ova pickup and their transport in the oviduct; gamet transport and

conception rate; fertilizable life and ageing of egg. Transuterine migration and loss of eggs; Embryonic development in oviduct; Fertilization, Cleavage and implantation; Gestation, Maternal physiology in pregnancy, prenatal physiology and parturition; Anatomy of the udder, mammary growth and lactation, sexual maternal and neonatal behaviour.

Reproductive cycles-Reproductive cycles in cattle, buffaloes, sheep, goats, swine and horses. Puberty; oestrus Ovulation and oestrus Cycles, Breeding and conception. Gestation, parturition. The post-partum period. Reproduction efficiency.

Reproductive failure-Reproductive failure in female farm animal, ovarian dysfunction, disorders of fertilizations, prenatal mortality, perinatal and neonatal mortality, disorders of gestation, parturition and lactation; sexual health control; diagnosis, prevention and control of different reproductive disorders.

Techniques for improving reproduction efficiency- Artificial insemination of the female; Induction and synchronization of ovulation-Control of ovulation; Clinical methods of inducting ovulation in different farm animals; Synchronization of ovulation; pregnancy diagnosis. Laboratory methods-Pregnancy diagnosis in cow, mare, ewe and sow; Embryo Transfer-Superovulation, collection of ova, selection of ova for transfer. Transfer of Ova, Synchronization of oestrous between donor and recipient-Composition of media for embryos; Storage of embryos-maintenance of pregnancy after embryo *in-vitro* maturation of oocytes, *in-vitro* fertilization-potential uses and limitation of embryo transfer and related techniques.

Obstetrics - Obstetrical Anatomy-Diseases and Accidents during the Gestation Period, Abortion in Cattle, Horses, Swine, Sheep and Goats; Mumification of the Fetus, Fetal Maceration; Prevention of Conception and induction of Abortion; Extra- uterine pregnancies and fetuses; Dropsy of the fetal mambranes and abdominal hernias resulting in hysterocael; Torsion of the uterus;

Vaginocervical prolapse; Paraplagia of pregnancy, Miscellaneous accidents during pregnancy; Parturition-Normal parturition; Artificial interferences in normal parturition; Diseases and care of the newborn, care of the postpartum dam; Dystokia-Cause of dystokia; Diagnosis of various types of dystokia, obstetrical operations for relieving dystokia, Injuries and diseases of the puerperal period; infertility-infertility in the cow; Infectious diseases, Miscellaneous Infestation of the bovine female genital tract; Hormonal disturbances resulting in Infertility; causes; Pathological causes.

The "Repeat Breeder" cow. Management problems-Infertility in the mare, sow, ewe and doe.

Andrology, Seminology and Artifical insemination; Andrology and Seminology-Functional anatomy of reproduction in male farm animal; Endocrinology and neuroendocrinology of male reproduction; Mechanisms of action of gonadotrophins, Puberty and sexual maturity; Spermatogenesis; Factors affecting spermatogenesis; Passage of sperm through the excurrent ducts; Function of epididymis; Semen and its various components; Metabolism of semen; Sexual behaviour-endocrine and neural mechanisms of sexual behaviour; factors affecting sexual behaviour; contribution of gonads and

accessory sex glands to semen ejaculate; survival of sperm *in vivo*, *in vitro* and the female reproductive tract; fertilizable life of sperm; hereditary, congenital and acquired factors leading to infertility, abnormalities of sperm; Bacteriological aspects of semen and diseases transmissible through semen; sexual health control, diagnosis, treatment and prevention of different types of infertility.

Aritificial Insemination-Advantages and limitations; sterilization of artificial insemination equipments; methods of collection of semen; evaluation of semen; principles of sperm preservation; extension of unfrozen semen and extenders used for the same; principles and techniques of freezing of spermatozoa, Storage and transportation of semen; Insemination Techniques; dose, time and site of insemination; conception rates; measures of reproductive efficiency; management and training of males for use in artificial insemination.

Veterinary Immunology [Code : VIM]

Some historical perspectives, basic concepts of immunity, host-parasite relationship, defence mechanism of hosts, types and grades of immunity, local and non specific immunity. Factors influencing immunity. Antigens and their properties, specificity, haptens. Heterophilic antigens and Bacterial toxins, Immunoglobulins, classes of immunoglobulins, their structural and functional properties, comparison of immunoglobulins, immunogenetics, synthesis of antibody. Types of cells in antibody fomration, theories of antibody synthesis, mechanism of antigen antibody reactions. Precipitation, complement fixation, ELISA, RIA etc., Allergy, Hypersensitivity, Types of Hypersensitivity, Cellular and Humoral responses, Transplantation, Immunological tolerance, autoimmunity, Tumour immunity, graft rejection, Major Histocompatibility antigens and their significance, Lymphokines, Interferon, Inter- leukins etc.

Veterinary Medicine [Code : VMD]

General clinical examination, anamnesis and determining the present status, general examination with regard to signalment of the patient, habitus, skin, conjunctiva, temperature. Special examination of the cardiovascular, respiratory, digestive, urino-genital, nervous, muscular and lymphatic systems. Special examination with regard to locomotion, allergic and serological tests, examination of blood, urine, faeces and special diagnostic procedures like passage of stomach tube, catheters, exploratory puncture, rectal examination, use of ophthalmoscope and radiological examination.

Definition, aetiology, incidence, mode of infection, symptoms, course, clinical pathology, diagnosis, differential diagnosis, prognosis, postmortem findings, and curative and preventive treatment of the diseases affecting different systems of various species of domestic animals.

Diseases of digestive system and pertitoneum. stomatitis, parotitis, pharyngitis, paralysis of pharyax, spasm of oesophagus, paralysis of oesophagus, obstruction of oesophagus, oesophagitis, dilation of oesophagus, stenosis of oesophagus and vomitting, impaction of rumen and tympany, traumatic reticulitis, impaction of omasum, omasitis, abomasitis, displacement of abomasum, indigestion in ruminants, constipation and diaphragmatic hernia, Gastritis, rupture of stomach, enteritis, obstruction of intestines, diarrhoea and dysentery and diarrhoea in young stock and colic in equines. peritonitis and ascites, volvulus, intusussepition.

Diseases of liver and pancreas: Jaundice, hepatitis, cirrhosis, hepatic abscess, tumours of the liver, gall stone, pancreatitis.

Respiratory system: Rhinitis, epistaxis, laryngitis, tracheitis bronchitis, pulmonary emphysema, pulmonary oedema, heamopyths, pneumonia, pleurisy, hydrothorax, and pneumothorax.

Circulatory system: pericarditis, myocarditis, endocarditits, hypertrophy of heart, dilatation of heart, functional diseases of heart, heart failure, bradycardia, tachycardia, Diseases of the blood vessels, Diseases of the blood and blood forming organs: Dehydration, haemorrhage, shock, oedema, anaemia, leukaemia, leucopaenia and abnormalities of acid base balance. Diseases of the spleen and lymphnodes.

Urino-genital system; Albuminuria, chronic haematuria in cattle, nephritis pyelonephrits, cystitis, urolithiasis, retention of urine, paralysis of urinary bladder, urethritis and prostatitis, Vaginitis, Metritis, cervicitis.

Skin and Muscular system: Pruritis, urticaria, pityriasis, eczema, dermatitis, dematophytosis, dematosis, keratosis, hyper keratosis, para keratosis, erythema, psoriasis, pyoderma, acanthosis, dermatomycosis, elephantiasis, alopecia, ecthyma, acne, impetigo, seborrhoea, myositis, muscular atrophy and muscular dystrophy.

Nervous system: Meningitis, encephalitis, sunstroke, heat stroke, lightning stroke, vertigo, epilepsy, eclampsia, chorea, spinal meningitis, neuritis.

Occular diseases, Conjunctivitis, Keratitis, iritis, cataract, iridocyclitis glaucoma, corneal opacity, irriditis, amaurosis, retinitis, uvetis.

Diseases of ear; Otitis externa, otitis media, otitis interna, otorrhoea, labyronthitis, perforated drum, tympanitis.

Veterinary Jurisprudence: Legal duties of veterinarian, examination of animals for soundness, examination of injuries, postmortem examination, causes of sudden death in animals, collection and dispatch of material for chemical analysis, detection of frauds, evidence procedure in court, legal enactment in I.P.C. relating to animals, provincial and central acts relating to livestock, code of conduct and ethics of Veterinarians.

Veterinary Parasitology [Code : VPA]

General classification, morphology, life cycle and bionomics of trematodes, cestodes and nematodes belonging to the following families affecting livestock with particular reference to the epidemiology, clinical signs, pathogenesis, diagnosis, ecology, immunity, control, economic importance and zoonotic importance.

Cestoda (Platyhelminthes)-Mesocestoididae, Anoplocephalidae, Dilepidiadae, Hymenolepididae, Davaineidae, Taeniidae, Diphyllobothriidae.

Nematoda, (Nemathelminthes), Acanthocephala and Annelida-Acaridiae, Nanisakidae, Ascaridiidae, Oxyridae, Heterakidae, Rhaditidae, Strongylidae, Trichonematidae, Stephanuridae, Syngamidae, Ancylostomatidae, Amidostomidae, Trichostrogylidae, Ollulanidae, Dictyocaulidae, Metastronglidae, Protostrongylidae, Filaroididae, Spiruridae,

Thelaziidae, Accurdidae, Terameridae, Physalophteridae, Gnathostomatidae, Setariidae, Dracunculidae, Trichinellidae, Trichuridae, Dioctophymidae, Polymorhidae, Oliga-canthorhychidae, Pachysentidae, Gnathobdellidae.

Recording system, laboratory procedures, planning of control programmes and experiments in the study of helminthiasis in livestock.

Helminthic immunity-Host-parasite relationship; Types and grades of immunity, mechanism of host resistance, effect of host's immune reactions on helmiths, antigen antibody system, antigenic characters of helminths, cellular and humoral factors in immunity to helminths; latent infection and premunity, self cure phenomenon, larva migrans; allergy and allergic reactions; mechanisms of serological manifestation of antigen antibody reaction; immunodiagnosis, immunoelectrophoresis and immunofluorescence.

Veterinary Protozoology-Classification, morphology, nutrition and reproductive processes and patterns, life-history, transmission, pathogenicity, and control (Prophylactics & therapeutics against important species belonging to the following families and genera):

Trypanosomatidae *(Trypanosoma, Leishmania)*

Trichomonadidae *(Tritrichomonas, Giardia)*

Mastigamaebidae *(Histomonas)*

Endamoebidae *(Entamoeba)*

Balantiidae *(Balantidium)*

Eimeriidae-Coccidia *(Eimeria, Isospora, Cryptosporidium, Sarcocystis, Toxoplasma)*

Plasmodiidae *(Plasmodium)*

Haemoproteidae *(Haemoproteus, Leucocytozoon)*

Babesiidae *(Babesia)*; Theileriidae *(Theileria)*, Haemagregarinidae *(Hepatozoon)*.

Symptoms of diseases, caused by these parasites in livestock, and drugs employed in the treatment of such conditions; host parasite relationship; immune responses; immunodiagnosis and immunizing procedures; epizootiology and zoonotic importance.

Veterinary entomology-Classification of arthropoda, with special reference to insects and acarines of medical and veterinary importance, morphology, life history, transmission, pathogenecity of the genera and species responsible for injury and disease transmission to livestock in the following groups:

Insecta-Phthiraptera (Anoplura and Mallophaga); Hemiptera; Coleoptera; Apahaniptera,; Diptera (Certopogonidae, simuliidae, Psycodiae, Culicidae, Tabanidae, Anthomyidae, Tachinidae, Oestridae, Hippoboscidae).

Acarina-Ixodiodae (Argasidae, Isodidae); trombidigormes (Trombiculidae, Pediculoididae, Demodicidae, Cheyletidae, Myobiidae); Sarcoptiformes, Psoroptidae, Acaridae, Laminosioptidae, Analgesidae, Dermoglyphidae).

Pentastomida-Porocephalidae (Porocephaulus, Linguatula-Control of parastic arthropods and vectors, physical, chemical and biological insecticides and their application; toxicology and antidotes of important insecticides; principles of integrated control.

Veterinary Pathology [Code : VPL]

Etiology of diseases and concept of multiple-factor etiology; Predisposing factors of disease; Extrinsic or environmental factors in relation to soil, air, humidity and temperature; Susceptibility and resistance to disease; Intrinsic factors e.g. species, age, sex heredity, Physical agents; Mechanical Injuries, heat, cold, decreased atmospheric pressure, injuries due to light e.g. photosensitization, injuries due to electricity; Chemical agents as causes of disease, Poisoning caused by Exogenous and Endogenous poisons; Microorganisms and animal parasites; Bacteria, fungi and viruses; protozoa, platyhelminthes and nemathelminthes.

Inflammation-Macroscopic and microscopic observations, chemical mediators of increased vascular permeability; Chemotaxis and phagocytosis; Adhesions and emigration of leucocytes, sequence of cellular reaction; Formation of abscesses, Defence mechanism and reticulo-endothelial system; chronic inflammation; non-suppurative and suppurative granul tomatous reactions; Reaction of blood to injury-Reaction of the plasma; Blood coagulation and retraction of clot, cellular reaction; Haemostasis and thrombosis and subsequent changes in thrombi. Effects of thrombosis and embolism. Haemorrhage and shock; Oedema-Tissue fluid formation, lymphatic drainage; general fluid balance; Inflammatory oedema, oedema of venous and lymphatic obstruction, cardiac and pulmonary oedema; Fever-Causes of fever, fever producing substances; functions of fever; Degenerative changes and their consequences-Degenerations and infiltrations; Cloudy swelling and hydropic degeneration; fatty changes; glycogenic infiltration; amyloid infiltration; hyaline degeneration; Necrosis, classification and autolysis; Gangrene.

Healing-Microscopical changes of healing tissue; Healing of wounds by first intention; formation of granulation tissue; Healing by second intention; Factors influencing would healing; Control of healing process, local and general factors influencing healing; Healing of some special tissues; Mucous membranes, liver, kidneys and urinary passages, respiratory tissue, cartilage, bone, muscle, nervous tissue; Atherosclerosis- Morphology of atherosclerosis, Pathogenesis of the lesions, Chemical constituents of normal and diseased arteries, reactions of intima to injury; the organisation of surface deposits; Pathological consequences of chromosomal abnormality-Pathological effects of radiation of higher animals-Acute effects of radiation, histological changes in haemopoietic and lymphoid tissues. Late effects of total radiation; Ageing, leukaemia, carcinogenic effects; Host-parasite relationship. Germ theory of disease, and the relationship between host and parasite; factors determining invasion; barriers to invasion; Types of infection-Pathological features of mycotic, bacterial and viral infections; pathology of infections due to protozoa, platyhelminthes and nemathelminthes; Immunopathology, Hypersensitivity reactions-Anaphylaxis, cytotoxic antibody reactions, immune complex, Arthus type reaction, delayed hypersensitivity; Hypersensitivity to drugs and chemicals; Auto-immune type hypersensitivity reactions; Rejection of transplanted tissues; Immunological deficiency States; Pathology of nutritional diseases-Protein deficiency; carbohydrate deficiency; mineral deficiency; vitamin deficiency; Growth and its disorders-Metaplasia; atrophy; hypertrophy; hyperplasia, Nature of tumours, growth-Growth etiology, classification, morphology and behaviour of tumours; Benign and malignant tumours in domestic animals, their pathological features and diagnosis.

Functional disturbances, malformations, degeneration, circulatory disturbances, inflammation and pathogenesis of the cardio-vascular system. Pathology of haemic and lymphatic system, anaemia; Lymphangitis and lymphadenitis. Circulatory disturbances and inflammation of different parts of the respiratory systems; Aetiology, pathogenesis, classification of specific pneumonia and pneuomoconiosis. Circulatory disturbances and inflammation of different parts of digestive system; congenital abnormalities of intestines; Disturbances of circulation and pigmentation, degeneration, necrosis and cirrhosis of liver; Degeneration and inflammation of different parts of the urinary system; disturbances of growth and inflammation of various parts of genital system including mammary gland. Disturbances of circulation, growth and inflammation of bone and skeletal muscles. Inflammation of meninges, brain and spinal cord. Pathology of the endocrine glands, special sense organs and skin and its appendages. Pathology of bacterial diseases, mycotic infections, viral diseases, PPLO and rickettsial infections, and parasitic diseases.

Veterinary Pharmacology [Code: VPT]

General Pharmacology: Development and scope of pharmacology, sources and nature of drugs, pharmacopoeia and drugs compendia, pharmacokinetics (absorption, distribution, biotransformation and excretion), principles of drug action (factors modifying drug action, physicochemical basis of drug action, drug receptor interaction, types and sites of drug action etc.) and pharmaco-metrics (Principles of bioassay and pharmacological evaluation of different types of drugs, determination of LD_{50}, ED_{50}, organization of screening and drug development).

Drugs Acting on Central Nervous System : General anaesthetics, hypnotics, sedatives, anti-convulsants, tranquilizers and other drugs affecting behaviour, (including antipyretics and anti-inflammatory drugs) and CNS stimulants including analeptics.

Drugs Acting on Peripheral Nervous System; Adrenergics, anti-adrenergics, Cholinergics, anti-cholinergics, drugs acting on ganglia, muscle relaxants, (Including central muscle relaxants) and local anaesthetics.)

Drugs acting on Cardiovascular and Respiratory Systems: Drugs acting on heart, blood vessels, blood pressure, blood (coagulants and anticoagulants) and haemopoietic system. Expectorants, anti-tussives and bronchodilators.

Drugs Acting on Digestive System, Stomachics, antacids, carminatives and antizymotics, emetics and antimetics, cathartics, intestinal astringents, and drugs acting on liver, Pharmacology of rumen.

Drugs acting on Endocrine and Reproductive Systems; Pituitary hormones, thyroid hormone, and antithyroid drugs, parathyroid extract, insulin and other antidiabetic drugs, adrenal corticoids and sex hormones, Drugs acting on uterus and drugs used for fertility and contraception.

Drugs Affecting Body Fluids and Electrolytes; Drugs altering fluid balance, Diuretics, antidiuretics, Pharmacology of electrolytes and fluid therapy.

Autacoids : Histamine and antihistaminics, Serotonin, Polypeptides and prostaglandins.

General Chemotherapy: Historical development of chemotherapy, General principles of chemotherapy-selection of antimicrobial agents, combination therapy, mechanism and problem of drug resistance, misuse of chemotherapeutic agents and public health problem. Drug allergy and hypersensitivity.

Pharmacology, Pharmacokinetics and Toxicity of the following groups of Chemotherapeutic Agents:

(a) Sulfonamides: Gut-acting and systematic sulfonamides, Long- acting sulfonamides, Pharmacotherapy with sulfonamides.

(b) Antibiotics : Natural and semisynthetic penicillins; Streptomycin and other aminoglycoside antibiotics (Kannamycin, Gentamycin, neomycin), Tetracyclines, chloramphenicol, microlide antibiotics (erythromycin, oleandomycin, typerothricin). Surface acting antibiotics (polymyxins, bacitracins), Antifungal antibiotics (griseofulvin, nystain, amphotericin-B, Hamycin) and other antibiotics-linomycin, vancomycin, cephalosporins, colistin, novobiocin. etc.

(c) Antitubercular, antiviral and antineoplastic drugs.

(d) Nitrofurans : Nitrofurantoin, nitrofurazone, nitrofurazolidone, etc.

(e) Antiprotozoan drugs : Drugs acting against coccidia, trypanosomes, babesia, theileria, anaplasma, amoeba and plasmodium.

(f) Anthelminitics, Drugs acting against nematodes, cestodes and trematodes.

(g) General Antiseptics and Disinfectants : Halogenated compounds, coal tar derivatives, dyes and sulphur compounds.

General Toxicology : Mechanism of detoxification of poisons, General principles of diagnosis and non-antidotal therapy of poisoning, Principles of antidotal therapy.

Toxicology of inorganic compounds: Arsenic, lead, selenium, molybdenum, fluorine, copper, mercury, nitrate and nitrite and oxalates.

Toxicology of Agro-chemicals : Insecticides (organophosphates), chlorinated hydrocarbons and carbamates), fungicides, herbicides and rodenticides.

Toxicology of Poisonous Plants: Cyanogenetic plants, Plants producing photosensitization, teratogenic effect, anticoagulating action, thiamine deficiency. Mycotoxins (ergot alkaloids, aflatoxins and other mycotoxins). Some other important toxic plants and weeds (Milk weeds, tobacco, castor plant, oleander, nuxvomica, solanum, jimson weed, abrus precatorius etc.)

Toxicology of Industrial contamination, food additives, chemical warfare agents and radioactive substances.

Veterinary Physiology [Code: VPY]

Digestion-Control of motility and secretion of alimentary canal; gastric hormones and reflexes in the control of digestive functions; control of rumen motility; digestion in the ruminent and monogastric animals; absorption from rumen and the digestive tract; avian digestion, physiological basis of gastric disorders.

Blood and circulation -Blood coagulation; haemoglobin and its polymorphism, anaemias, reticuloendothelial system, body defence mechanism and immunogenesis, Electrophysiology of heart, electro-cardiography; principles and interpretation; haemodynamics and concerned biophysical principles; neural and humoral control of heart and blood vessels; cardiac output and vascular reflexes; autoregulation mechanisms in the heart, lungs, brain, muscle, kidneys and skin, blood-brain barrier, circulatory shock and hypertension.

Respiration-Mechanics of respiration; neural and chemical control of respiration, gaseous transport and exchange; hypoxia, anoxia, hypo-barrism and high altitude living; physiology of work and exercise.

Excretion-Modern concepts of urine formation; control of renal circulation; secretion and absorption in the renal tubules; regulation of acid-base balance by the lungs and the kidneys, hormonal and renel regulation of body fluid and electrolytes balance, renal function in desert animals; physiology of micturation; uraemia and other renal disorders.

Climatology-Physiology of climatic stress: effects of stress on production and reproduction; neural and hormonal regulation of body temperature in homeotherms, mechanism and adaptation; Photoperiodicity and biological rhythm.

Muscle contraction- Muscle types; their intracellular contractile mechanisms, electrophysiology of muscles; neuromuscular junction; excitation-contraction coupling, its biochemical and ionic mechanisms, Myopathies.

Nervous System-Neurons, neurotransmission and neurotransmismitters, Electrophysiology of nerves; synapses, neuronal circuit receptors, reflexes; cerebral cortex, control of motor & sensory functions; Physiology of plain sensory pathway, Hypothalamus, control of endocrine and visceral functions, autonemic nervous system; basal ganglia structures; Limbic system animal instincts and neurophysiology of behaviour, control of food intake, Special senses.

Endocrinology-Hormones, hormone receptors, mechanism of hormones action at cellular and subcellular levels; Hypothalamic and feed-back control of hormone secretion. Releasing & inhibiting factors; Pineal gland and its hormones; Hormones of hypophyses and all other endocrine glands; non-conventional hormones; mechanisms of different hormone synthesis; endocrine disorders.

Reproductive Physiology-Hypothalamic and hypophysial control of testicular function, spermatogenesis and androgen secretion; inhibition; control of fertility by epididymis; control of male sexual behaviour, erection,ejaculation, semen production and accessory sex glands, male reproductive disorders.

Control of ovarian function, oestrus, ovulation; C.L. and its role in oestrus cycle and pregnancy; oestrogens, progesterone, relexin and prostaglandins, etc. effect on female genital tract; hormones on oestrus synchronisation and superovulation; female reproductive disorders.

Mechanism of sperm capacitation, sperm and ovum transport,the female genital tract; fertilization, implantion, maintenance of pregnancy and physiology of placenta; Zygote as an endocrine and immunogenic structure.

Physiology of parturition, adrenal corticoids, PGs and oxytocin.

Lactation-Hormonal control of mammary gland, growth before puberty, during pregnancy and after parturition; hormonal control of milk let-down; control of initiation, maintenance and cessation of lactation; hormone and nutrients in milk production; mammary involution, milk precursors and synthesis of milk con-stitutents.

Artificial Insemination-Collection, preservation, transport of semen, semen dilutors; aritificial insemination.

Embryo Transfer-Collection, preservation, transport and transplantation of zygotes, oocyte culture and *in vitro* fertilization.

Veterinary Public Health [Code : VPH]

Zoonoses-Concept and classification of zoonoses, Ecological aspects of zoonoses, Role of diseased and reservoir wild animal hosts. Role of vector and natural habitats of the agents. Human diseases already spread by animals. Animals as agents and vectors of human diseases.

Studies on the epidemiology and control of zoonoses of public health importance caused by viral, rickettsial, bacterial, mycotic and zoo-parasitic agents.

Meat Hygiene-Elements of meat inspection. Slaughter house construction and management. Antemortem inspection, methods of slaughter, carcass dressing and postmortem examination. Handling, storage of fresh meat, Sanitation facilities in plant operations, Deteriorative changes in meat. Meat and Meat Products preparation, Foodborne illness due to meat and meat products, poultry and poultry products.

Milk Hygiene-Microbiological methods for hygienic qualities of milk and milk products (pasteurized, sterilized, flavoured milk, cream, butter, curd, cheese, cultured milk, milk powder, condensed and evaporated milk etc.) Cleanliness and sterility of dairy equipments. Adulteration in milk and milk products and its public health significance. Health hazards caused by diseased dairy animals. Milkborne infections and intoxications. Infant milk food and its relation to disease. Microbiological standards for milk and milk products.

Food Hygiene-Sampling, collection, shipment and preparation of analysis of foods. Microbial evaluation of hygienic quality of food, spoilage microbes in foods, foodborne illness, collection and analysis of foods and specimens. Microbiological evaluation of fruits and vegetables, drinks, juice and confectionery products in relation to their safety and quality of products. Microbiology of potable water and evaluation for use in food industry. Public health significance of viruses through food and its prevention and control.

Sea food Hygiene-Description of fish and shellfish and other sea foods in relation to food industry. Marine environmental factors affecting sanitary quality of seafoods diseases transmitted through fish and other seafoods. Marine biotoxins, ciguatera, tetradotoxin, paralytic shellfish and scromboid poisoning.

Veterinary Surgery & Radiology [Code : VSR]

Current concepts in all species of domestic, livestock and poultry of inflammation, asepsis, antisepsis, in surgery and surgical bacteriology, sterilization, preoperative considerations, physiopathology of trauma, surgical stress and shock; blood and fluid therapy; post-operative care; phenomenon of wound healing; principles of tissue and organ transplantation.

Study of fracture dislocations, diseases of the bones, their symptoms, diagnosis and treatment, healing of fracture and factors influencing them, complication and their surgical treatments, repair of fractures of different bones of the body by internal and external fixation; various affections of the joints, their diagnosis and treatment.

Surgical management of affections of sinuses, nasal and boucle cavities, pharynx, larynx, trachea and oesophagus in domestic animals.

Affections of eye lids, lacrimal apparatus, orbit and its contents, cornea, conjunctiva, iris and lens and ocular therapeutics.

Surgical interventions in various affections of thoracic cavity viz. lung, pleura, mediastinal lymph glands and oesophagus. Various approaches for manipulating thoracic organs in large and small animals.

Disease of vascular system viz. aneurysm, avasular, necrosis, heart block and coronary occlusion, pericarditis, endocarditis patent ductus arteriosus, persistent foramen ovale, mitral and tricuspid stenosis and insufficiency; persistent aoritic arch, and open heart surgery.

Diagnosis and correction of various surgical affections of abdominal organs; traumatic reticulitis, abomasal displacement, impaction of omasum, intestinal obstruction, hernias and neoplasms; surgical treatment of cardiac and pyloric stenosis, gastric torsion, renal and urethral and rupture of urniary bladder in animals.

Relationship between conformation of the limbs, foot and its axis, lameness and allied surgical conditions of fore and hind limbs. Surgical anatomy of udder and teats of domestic animals in relation to different surgical affections.

Selection of various anesthetic and preanaesthetic agents; their effects on different systems of the body, administration of anesthesia in small and large animals; study of the various parameters used in the evaluation of patient during anaesthesia accidents, complication and their remedies; non brabiturate intrvaenous anesthetics; anaesthesia for special surgical procedures on gut, adrenals and heart, electronarcosis; and hypothermia.

Instrumentation, X-ray machine, formulation of radiographic technique chart; artifacts and their prevention; special diagnostic radiographic densities in relation to clinical diagnosis; deep X-ray unit, isotopic unit for radiation therapy, quality of radiation hazards on man, animals and plants and radiation protection; Cytological changes due to radiation (alpha- X-ray and gamma rays) *in vivo* cellular response following therapy, radiation as an immuno suppresive agent.

Veterinary Virology [Code : VVY]

History of Virology, classification and nomenclature of viruses, nature of viruses, morphology, size and shape, biophysical and biochemical characteristics of viruses, cultivation of viruses and their growth characteristics in cell culture, embryonated eggs and experimental animals.

Purification, concentration and preservation, replication of viruses, assay of viruses, interference, transformation, incomplete and latent viruses, viral immunity.

General principles of laboratory diagnosis of viral diseases, serological test, epidemiology, methods of spread of viral infections, etiology, transmission and pathogenesis; viral vaccines, chemotherapy, prevention and control of viral diseases, latest trends in rapid viral diagnosis, statistical methods of virology.

RNA and DNA viruses: RNA viruses-Reoviruses, Arboviruses, Rotaviruses, Coronaviruses, Togaviruses, (Alphavirus, Flavi, virus, Mucosal disease virus group), Paramyxoviruses, orthomyxoviruses, Rhabdoviruses, Retroviruses, Pricoronaviruses, Bunymweraviruses, Arenaviruses.

DNA Viruses : Pox Viruses, Herpesviruses, Andenoviruses, Papovaviruses, Parvoviruses.

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ANNEXURE-II

FORM OF SURETY BOND TO BE EXECUTED BY A CANDIDATE WHO IS PURSUING Ph.D. AS INSTITUTE SCHOLAR IN IVRI DEEMED UNIVERSITY THROUGH AN ENTRANCE EXAMINATION CONDUCTED BY INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR

KNOW ALL MEN BY THESE PRESENT THAT I _____ ___ _____ _____ Son/Daughter of _____ resident of _____District of _____ ___ at present pursuing Ph.D in Indian Veterinary Research Institute deemed to be university under ICAR as Institute Scholar (hereinafter called the obligor) and Sh. / Smt. / Kum. _____ Son/daughter of _____ resident of _____ (full address). (hereinafter called surety) do hereby jointly and severally bind ourselves and our-respective heirs, executors and administrators to pay to the Indian Council of Agricultural Research, a Society registered under the Societies Registration Act-1860 Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi- 110 001 (hereinafter called The ICAR") on demand the sum of **Rs.50,000/- (Rupees Fifty Thousands only)** together with interest thereon from the date of demand of Government rates for the time being in force on Government loans (if payments is made in a country other than India, equivalent of the said amount in the currency of that country converted at the official rate of exchange between that country and India) and together with all costs between attorney and client and all charges and expenses that shall or may have been incurred by the I.V.R.I.

WHEREAS the obligor has been pursuing Ph.D. Institute Scholarship of the Indian Veterinary Research Institute as a result of the entrance examination held in the year 2005.

AND WHEREAS for the better protection of the I.V.R.I. the obligor has agreed to execute this bond with such condition as here under is written.

AND WHEREAS the said surety has agreed to execute this bond as Surety on behalf of the above bounden_____.

NOW THE CONDITION OF THE ABOVE WRITTEN OBLIGATION IS THAT in the event of the named obligor, Sh./Smt./Kum. _____ leaving the studies after taking admission as Ph.D. on the basis of the entrance examination without completion of Ph.D. of 3 Years or on his/her being rusticated I removed from the Deemed University, the obligor and/or the Surety shall forthwith pay either jointly or severally to the IVRI as may be directed by the IVRI on demand the sum of Rs. 50,000/- (Rupees Fifty Thousands) only together with interest thereon from the date of demand at Government rates for the time being in force on Government loans.

AND upon the obligor Sh./Smt./Kum._____ and/ or Sh./ Smt./Kum _____ the surety aforesaid, making such payment the above written obligation shall be void and if no effect otherwise, it shall remain in full force and virtue.

PROVIDED ALWAYS that the liability of the surety hereunder shall not be impaired or discharged by reasons of time being granted or by any forbearance, act or omission of the IVRI or any person authorized by them (whether with or without the consent or knowledge of the surety) nor shall it be necessary for the IVRI to sue the obligor first before suing the surety Sh./Smt./ Kum. _____ for amounts due hereunder :-

The bond shall in all respect be governed by the laws of India for the time being in force and the rights and liabilities hereunder shall, where necessary, be accordingly determined by the appropriate courts in India.

Signed and dated this_____ day of _____ two thousand signed and delivered by the obligor above named Sh./Smt./Kum, _____ _____ in the presence of _____.

Witnesses:

(Signature, Name and Address)

1.

Signature of student

Obligor

2.

Signed and delivered by the surety above named (surety) Sh./Smt./ Kum _____ _____ in the presence of _____.

Witnesses:

(Signature, Name and Address) **(Signature of Surety)**

1.

2.

ANNEXURE-III

FORM OF SURETY BOND TO BE EXECUTED BY A CANDIDATE WHO IS PURSUING M.V.Sc. AS JUNIOR RESEARCH FELLOW/INSTITUTE SCHOLARSHIP IN ICAR/IVRI DEEMED UNIVERSITY THROUGH AN ENTRANCE EXAMINATION CONDUCTED BY EDUCATION DIVISION OF ICAR

KNOW ALL MEN BY THESE PRESENT THAT I _____ _____Son/Daughter of _____ _____ resident of _____ _____ District of_____ at present pursuing MVSc in Indian Veterinary Research Institute deemed to be university under ICAR as Junior Research Fellow/ Institute Scholarship (hereinafter called the obligor) and Sh./Smt./Kum. _____ _____ Son/daughter of _____ _____ resident of _____ _____ _____ (full address). (hereinafter called surety) do hereby jointly and severally bind ourselves and our-respective heirs, executors and administrators to pay to the Indian Council of Agricultural Research, a Society registered under the Societies Registration Act-1860 Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi- 110 001 (hereinafter called The ICAR") on demand the sum of **Rs.30,000/- (Rupees Thirty Thousands) only** together with interest thereon from the date of demand of Government rates for the time being in force on Government loans (if payments is made in a country other than India, equivalent of the said amount in the currency of that country converted at the official rate of exchange between that country and India) and together with all costs between attorney and client and all charges and expenses that shall or may have been incurred by the ICAR/IVRI.

WHEREAS the obligor has been pursuing MVSc. Junior Research Fellow/Institute Scholarship of the Indian Veterinary Research Institute as a result of the competitive examination held in the year 2005.

AND WHEREAS for the better protection of the ICAR the obligor has agreed to execute this bond with such condition as here under is written.

AND WHEREAS the said surety has agreed to execute this bond as Surety on behalf of the above bounden_____.

NOW THE CONDITION OF THE ABOVE WRITTEN OBLIGATION IS THAT in the event of the named obligor, Sh./Smt./Kum. _____ leaving the studies after taking admission as MVSc on the basis of the competitive examination without completion of MVSc of 2 Years or on his/her being rusticated I removed from the Deemed University, the obligor and / or the Surety shall forthwith pay either jointly or severally to the ICAR/IVRI as may be directed by the ICAR/IVRI on demand the sum of **Rs. 30,000/- (Rupees Thirty Thousands) only** together with interest thereon from the date of demand at Government rates for the time being in force on Government loans.

AND upon the obligor Sh./Smt./Kum._____ and or/Sh./Smt./Kum._____ and _____ the surety aforesaid, making such payment the above written obligation shall be void and if no effect otherwise, it shall remain in full force and virtue.

PROVIDED ALWAYS that the liability of the surety hereunder shall not be impaired or discharged by reasons of time being granted or by any forbearance, act or omission of the ICAR/IVRI or any person authorized by them (whether with or without the consent or knowledge of the surety) nor shall it be necessary for the IVRI to sue the obligor first before suing the surety Sh./Smt./Kum. _____ for amounts due hereunder :-

The bond shall in all respect be governed by the laws of India for the time being in force and the rights and liabilities hereunder shall, where necessary, be accordingly determined by the appropriate courts in India.

Signed and dated this_____ day of _____ Two thousand and _____ signed and delivered by the obligor above named Sh./Smt./Kum,_____ in the presence of_____.

Witnesses:

(Signature, Name and Address)

1.

Signature of Student

(Obligor)

2.

Signed and delivered by the surety above named (Surety) Sh./Smt./ Kum. _____ _____ in the presence of _____ _____.

Witnesses:

(Signature, Name and Address)

(Signature of Surety)

1.

2.

ANNEXURE-IV

AFFIDAVIT BY THE STUDENT

I, _____ Son/D/o Mr./ Mrs._____, having being admitted to _____ (Name of the Institute), have received a copy of UGC regulations on curbing the menace of ragging in higher educational Institution 2009, (hereinafter called "Regulations") carefully read and fully understood the provisions contained in the said regulations

2. I have, in particular, persued clause 3 of the Regulations and am aware as to what constitutes ragging.

3. I have also, in particular, perused clause 7 and clause 9.1 of the Regulations and am fully aware of the penal and administrative action that is liable to be taken against me in case I am found guilty of or abetting ragging, actively or passively, or being part of a conspiracy to promote ragging.

4. I hereby solemnly aver and undertake that

a) I will not indulge in any behaviour or act that may be constituted as ragging under clause 3 of the Regulations.

b) I will not participate in or abet or propagate through any act of commission or omission that may be constituted as ragging under clause 3 of the Regulations.

5. I hereby affirm that, if found guilty or ragging, I am liable for punishment according to clause 9.1 of the Regulations, without prejudice to any other criminal action that may be taken against me under any penal law or any law for the time being in force.

6. I hereby declare that I have not been expelled or debarred from admission in any institution in the country on account of being found guilty of, abetting or being part of a conspiracy to promote, ragging; and further affirm that, in case the declaration is found to be untrue, I am aware that my admission is libale to be cancelled.

Declared this _____ day of _____ month of _____ year,

_____

Signature of deponent

Name :

VERIFICATION

Verified that the contents of this affidavit are true to the best of my knowledge and not part of the affidavit is false and nothing has been concealed or misstated therein.

Verified at _____on this day of _____ month of _____ year,

Signature of deponent

Solemnly affirmed and signed in my presence on this day of _____ month of _____ year after reading the contents of this affidavit.

OATH COMMISSIONER

ANNEXURE-V

AFFIDAVIT BY THE PARENTS

Mr./Mrs. _____ Father of /Mother of _____ Full Name of student with admission registration No., having being admitted to _____ (Name of the Institute), have received a copy of UGC regulations on curbing the menace of ragging in higher educational Institution 2009, (hereinafter called "Regulations") carefully read and fully understood the provisions contained in the said regulations

2. I have, in particular, persued clause 3 of the Regulations and am aware as to what constitutes ragging.

3. I have also, in particular, perused clause 7 and clause 9.1 of the Regulations and am fully aware of the penal and administrative action that is liable to be taken against me in case He/She is found guilty of or abetting ragging, actively or passively, or being part of a conspiracy to promote ragging.

4. I hereby solemnly aver and undertake that

a) My ward will not indulge in any behaviour or act that may be constituted as ragging under clause 3 of the Regulations.

b) My ward will not participate in or abet or propagate through any act of commission or omission that may be constituted as ragging under clause 3 of the Regulations.

5. I hereby affirm that, if found guilty or ragging, I am liable for punishment according to clause 9.1 of the Regulations, without prejudice to any other criminal action that may be taken against my ward under any penal law or any law for the time being in force.

6. I hereby declare that my ward has not been expelled or debarred from admission in any institution in the country on account of being found guilty of, abetting or being part of a conspiracy to promote, ragging; and further affirm that, in case the declaration is found to be untrue, I am aware that the admission of my ward is libale to be cancelled.

Declared this _____ day of _____ month of _____ year,

_____

Signature of deponent

Name :

Address & Tel./Mobile No.

VERIFICATION

Verified that the contents of this affidavit are true to the best of my knowledge and not part of the affidavit is false and nothing has been concealed or misstated therein.

Verified at _____on this day of _____ month of _____ year,

Signature of deponent

Solemnly affirmed and signed in my presence on this day of _____ month of _____ year after reading the contents of this affidavit.

OATH COMMISSIONER

LIST OF FACULTY MEMBERS

S. No.	Name of Scientist	Qualification	Designation	Date of Induction
1. ANIMAL GENETICS & BREEDING				
1.	Sharma, Arjava	MSc (Dairying), Ph.D.	PS & HD	7.11.01
2.	Bhushan Bharat	MSc, Ph.D.	SS	28.6.96
3.	Kumar Pushpendra	MSc, Ph.D.	SS	28.6.96
4.	Singh, Ran Vir	M.Sc(AGB), Ph.D.(AGB)	SS	18.12.97
5.	Mitra, Abhijeet	B.V.Sc. & AH M.Sc.(AGB), Ph.D.	SS	7.11.01
6.	Kumar Subodh	M.Sc., Ph.D.	S(SS)	15.1.03
Member Located at other Division/Section/Station				
7.	Kumar Sanjeev (CARI)	BVSc & AH, MVSc, Ph.D.	SS	26.7.94
8.	Sharma, A.K.	MVSc, Ph.D.	SS & Actg. HD (Temperate Ani. Hus., Muk.)	15.5.99
9.	Das Dharmeswar	MVSc, Ph.D.	Joint Director (Acad.)cumDean	29.7.06
10.	Ramesha, K.P. (LPM)	MVSc, Ph.D.	SS	21.12.09
11.	Animaka Mishra	MVSc, Ph.D.	S(SS)	22.6.09
2. ANIMAL NUTRITION				
1.	Kamra, D.N.	MSc, Ph.D.	PS	20.10.90
2.	Dass, R.S.	MSc, Ph.D.	PS	22.8.88
3.	Garg, A.K.	MSc, Ph.D.	PS	22.8.88
4.	Chaudhury, L.C.	MSc(Ag), Ph.D.	SS	30.8.95
5.	Singh, Putan	MSc, Ph.D.	SS	30.8.95
6.	Verma, A.K.	MSc(Ag), Ph.D.	SS	30.8.95
7.	Dutta Narayan	MSc, Ph.D.	SS	18.12.97
8.	Bhar, R.	MVSc, Ph.D.	SS	15.5.99
9.	Pattanaik, A.K.	MVSc, Ph.D.	SS	29.12.99
10.	Chaturvedi, V.B.	M.Sc., Ph.D.	SS	29.4.01
11.	Saha, S.K.	M.Sc.(Dairy), Ph.D.	S(SS)	28.4.03
Member Located at other Division/Section/Station				
12.	Das, Asit (Wild Life)	MSc, Ph.D.	S(SS)	27.12.03
3. VETERINARY PHYSIOLOGY				
1.	Sharma, G.Taru	MSc, Ph.D.	HD	28.6.96
2.	Mazumdar, A.C.	MSc, Ph.D.	PS & Head	22.8.88
3.	Bag, Sadhan	M.Sc., Ph.D.	S(SS)	7.11.01
4.	Singh, Gyanendra	M.V.Sc., Ph.D.	S(SS)	15.1.03
5.	Das, B.C.	M.Sc. Ph.D.	Scientist	29.7.06
6.	Mahapatra, R.K.	Ph.D.	S (SS)	9.4.07
7.	Sarkar, Mihir	MSc, Ph.D.	SS	22.6.09
4. ANIMAL BIOCHEMISTRY				
1.	Sharma, Bhaskar	MSc, Ph.D.	HD	22.8.88
2.	Joshi, P.	MSc, Ph.D.	PS	22.8.88

3.	Kataria, M. (Mrs.)	MSc, Ph.D.	PS	22.8.88
4.	Bhure, Sanjeev Kumar	MVSc, Ph.D.	SS	22.6.09
Member Located at other Division/Section/Station				
5.	Bhat, T.K. (PLP)	MSc, Ph.D.	PS	22.8.88
6.	Bhanumathi, N. (Bhopal)		SS	22.8.88
7.	Reddy, G.R. (B'lore)	MSc	PS	25.2.94
8.	Sharma, O.P. (PLP)	MSc, Ph.D.	PS	25.2.94
9.	Saini, Mohini (Mrs.) (Wild Life)	MSc, Ph.D.	S(SS)	5.4.97

5. ANIMAL BIOTECHNOLOGY

1.	Goswami, P.P.	MSc, Ph.D.	PS	20.10.90
2.	Kumar, Satish	(Elect.Micro.)MSc, Ph.D.	PS	20.10.90
3.	Tiwari, A.K.	MVSc, Ph.D.	SS	18.12.97
4.	Gupta, Praveen Kr.	MVSc, Ph.D.	SS	29.12.99
5.	Chaudhari, Pallab	MVSc, Ph.D.	SS	17.5.2000
6.	Dey, (Mrs). Sohni	MVSc, Ph.D.	S(SS)	29.7.06
7.	C. Madhan Mohan	MVSc, Ph.D.	S(SS)	29.7.06
Member Located at other Division/Section/Station				
8.	Suryanarayan, V.V.S. (B'lore)	BSc(Ag), MSc, Ph.D.	PS	22.8.88
9.	Raut, A.A.	MVSc, Ph.D.	S(SS)	12.9.07
10.	Dechamma, H.J	MVSc, Ph.D.	S(SS)	12.9.07
11.	Venkatesh, G. (Bpl.)	MVSc, Ph.D.	S(SS)	10.6.08
12.	Nagarajan, S. (Bp.)	MVSc, Ph.D.	S(SS)	10.6.08

7. EPIDEMIOLOGY

1.	Shankar, Hari	MVSc, Ph.D	PS & I/C	19.12.98
2.	Sinha, D.K.	MVSc, Ph.D.	S(SS)	10.6.02

8. VETERINARY EXTENSION EDUCATION

1.	Chandra Mahesh	MSc, Ph.D.	SS & HD I/c	30.8.95
2.	Tripathi, Hema (Mrs.)	MSc, Ph.D.	SS	25.11.94
3.	Tiwari, Rupasi (Mrs.)	MSc, Ph.D.	S(SS)	10.6.02
4.	Singh, B.P.	MSc(Dairy Ext.), Ph.D. (Agri.Ext.)	S(SS)	27.12.03
5.	Meena, H.R. (Muk.)	MSc, Ph.D.	Sci.	29.7.06

9. LIVESTOCK PRODUCTION & MANAGEMENT

1.	Joshi, H.C.	M.Tech	PS	20.10.90
2.	Tomar, A.K.S.	Ph.D.(Ani.Breeding)	SS	7.11.01
3.	Singh, Mukesh	Ph.D. (FM&P Engineering)	S(SS)	2.2.05
4.	Mondal S. K. (on Dep.)	MSc, Ph.D.	Scientist	29.7.06
Member Located at other Division/Section/Station				
5.	Dutt, Triveni	M.V.Sc., Ph.D.	JD,EE	8.1.96
6.	Naskar, Syamal (Kol.)	MSc., Ph.D	SS	21.12.09

10. VETERINARY GYNAECOLOGY & OBSTETRICS

1.	Yadav, M.C.	MVSc, Ph.D.	PS & HD	24.4.91
2.	Shankar, Uma	MVSc, Ph.D.	PS	22.8.88
3.	Agarwal, S.K.	MVSc, Ph.D.	PS	24.4.91
4.	Srivastava, S.K.	MVSc, Ph.D.	SS	28.6.96

5.	Kumar Harendra	MVSc, Ph.D.	SS	18.12.97
6.	Mehrotra, Sanjeev	MVSc, Ph.D.	SS	15.1.03
7.	Singh, Sanjay Kumar	MVSc, Ph.D.	S	27.9.05
8.	Das G.K.,	M.V.Sc., Ph.D.,	SS	29.7.06
9.	Ghosh S.K.	M.V.Sc, Ph.D.,	SS	29.7.06

Member Located at other Division/Section/Station

10.	Sardar Mehmood	MVSc, Ph.D.	SS	5.4.97

11. VETERINARY IMMUNOLOGY

1.	Ram, G.C.	MVSc, Ph.D.	Incharge & PS	22.8.88
2.	Tomar Alka (NBC)	MVSc, Ph.D.	SS	28.11.94
3.	Goswami, T.K.	MVSc, Ph.D.	SS	15.5.99
4.	Dandapat, S.	MVSc, Ph.D.	S(SS)	18.12.2000

Member Located at other Division/Section/Station

5.	Kishore Subodh (B'lore)	MVSc, Ph.D.	SS	19.6.92
6.	Ganesh, K. (B'lore)	MVSC, Ph.D.	S(SS)	28.6.96
7.	Verma, P.C. (BP Div.)	MVSc, Ph.D.	PS	18.12.97
8.	Dhama, K.	M.V.Sc., Ph.D.	S(SS)	15.1.03
9.	Bhatia, Sandeep (Bpl)	M.V.Sc., Ph.D.	SS	10.6.08

12. VETERINARY MEDICINE

1.	Pandey, N.N.	MVSc, Ph.D.	HD	22.8.88
2.	Dey, S.	MVSc, Ph.D.	PS	28.6.96
3.	Mukherjee, Reena	MVSc & AH, Ph.D.	SS	30.6.98
4.	Dimri, Umesh	MVSc, Ph.D.	PS	17.5.2000
5.	Mondal, D.B.	MVSc, Ph.D.	SS	15.1.03

Member Located at other Division/Section/Station

6.	Sharma, M.C.	MVSc, Ph.D.	Director, IVRI	22.8.88

13. LIVESTOCK PRODUCTS TECHNOLOGY

1.	Sharma, B.D.	MVSc, Ph.D.	PS & HD	20.10.90
2.	Keshri, R.C.	MVSc, Ph.D.	PS	22.8.88
3	Mendiratta, S.K.	MVSc, Ph.D.	SS	28.6.96
4.	Chauhan, Geeta	M.Sc, Ph.D	S(SS)	10.06.08

14. POULTRY SCIENCE

1.	Singh, R.P.	MVSc, Ph.D.	Director, CARI	22.8.88
2.	Shrivastav, A.K.	MVSc, Ph.D.	PS	22.8.88
3.	Sachdeva, A.K.	MVSc, Ph.D.	PS	22.8.88
4.	Pandey, N.K.	MVSc, Ph.D.	PS	22.8.88
5.	Moudgal, R.P.	MSc, Ph.D.	PS	22.8.88
6.	Chaudhuri D.	M.V.Sc., Ph.D.	PS	19.7.90
7.	Shrivastava, H.P.	MVSc, DFE, Ph.D.	PS	20.10.90
8.	Agarwal, S.K.	MVSc, Ph.D.	PS	20.10.90
9.	Kataria, M.C.	MVSc, Ph.D.	PS	20.10.90
10.	Majumdar, Samir	MVSc, Ph.D.	PS	20.10.90
11.	Singh, D.P.	MVSc, Ph.D.	PS	20.10.90
12.	Jag Mohan	MSc, Ph.D.	SS	20.10.90
13.	Sharma, Deepak	MVSc, Ph.D.	SS	30.8.95
14.	Tyagi, Pravin, K.	MSc, Ph.D.	SS	28.6.96

15.	Tyagi Pramod Kumar	MSc, Ph.D.	SS	28.6.96
16.	Saxena, V.K.	MVSc, Ph.D.	SS	30.6.98
17.	Raj Narayan	MSc, Ph.D.	SS	30.6.98
18.	Singh, Jagbir	MSc, Ph.D.	PS	29.12.99
19.	Mandal, A.B.	MVSc, Ph.D.	PS	17.5.2000
20.	Yadav, A.S.	MVSc, Ph.D.	SS	18.12.2000
21.	Beura, C.K.	MVSc, Ph.D.	S(SS)	15.1.03
22.	Sastry, K.V.H.	MVSc, Ph.D.	S(SS)	15.1.03
23.	Deo Chandra	MSc, Ph.D.	SS	27.12.03
24.	Bhanja, S.K.	MVSc, Ph.D.	SS	27.12.03
25.	Bais, R.K.S.	MVSc & AH, Ph.D.	Sr. Sci.	2.2.05
26.	Mishra, Suryakant	MVSc, Ph.D.	Sr. Sci.	27.9.05
27.	Singh, Ram	MSc, Ph.D.	S(SS)	29.7.06
28.	Kumar, Anil	MSc, Ph.D.	SS	21.12.09
29.	Tomar, Simmi	MVSc, Ph.D.	SS	21.12.09

15. VETERINARY PARASITOLOGY

1.	Rao, J.R.	MVSc, Ph.D.	HD	22.8.88
2.	Singh, B.P.	MVSc, Ph.D.	PS	22.8.88
3.	Gupta, S.C.	MSc, M.Phil.	PS	22.8.88
4.	Bansal, G.C.	MVSc, Ph.D.	PS	22.8.88
5.	Prasad, A.	MSc, D.Phil.	PS	22.8.88
6.	Ray, D.D.	MVSc, Ph.D.	PS	29.8.92
7.	Ghosh, S.	MSc, Ph.D.	SS	30.8.95
8.	Tiwari, A.K.	MSc, Ph.D.	SS	30.6.98
9.	Raina, O.K.	M.Phil, Ph.D.	SS	29.12.99
10.	Samanta, S.	MVSc, Ph.D.	SS	29.12.99
11	P.S. Banerjee	MVSc, & AH, Ph.D.	SS	29.7.06
12.	Saravanan, B.C.	MVSc, Ph.D.	S	22.06.09

Member Located at other Division/Section/Station

13.	Chandra Dinesh (CADRAD)	MVSc, Ph.D.	SS	29.12.99
14.	Bhattacharya, D. (Kol.)	MVSc, Ph.D.	SS	27.12.03
15.	Bandyopadhyay, S. (Kol)	MVSc, Ph.D	SS	22.06.09

16. VETERINARY PATHOLOGY

1.	Somvanshi, R.	MVSc, FRVC, Ph.D.	HD	24.4.91
2.	Singh, S.D	MVSc, Ph.D.	PS	24.4.91
3.	Kumar, Ram	MVSc, Ph.D.	PS	9.8.91
4.	Sharma, A.K.	MVSc, Ph.D.	PS	30.3.93
5.	Saikumar, G.	MVSc, Ph.D.	SS	30.6.98
6.	Rai R.B.,	MVSc, Ph.D.,	PS	9.4.07
7.	Pawaiya Rajveer Singh,	M.V.Sc, Ph.D.	SS,	9.4.07

Member Located at other Division/Section/Station

8.	Gajendragad, M.R. (B'lore)	MVSc, Ph.D.	PS	30.8.90
9.	Singh, K.P. (CADRAD)	MVSc, Ph.D.	SS	25.2.94
10.	Singh, Rajendra (CADRAD)	MVSc, Ph.D.	SS	5.4.97

11.	Kurade, N.P. (PLP)	MVSc, Ph.D.	SS	10.6.02
12.	Rajkumar, K. (Bhopal)	MVSc, Ph.D.	S(SS)	21.12.09

17. VETERINARY VIROLOGY

1.	Bhanuprakash, V.	MVSc, Ph.D.	PS & HD I/C	27.9.05
2.	Mondal, B.	MVSc, Ph.D.	PS	15.1.03
3.	Saravanan, P.	MSc(Dairying), Ph.D.	S	27.9.05
4.	Balamurgan, V.	MVSc, Ph.D.	S	29.7.06
5.	Malik, Y.P.	MVSc, Ph.D.	SS	22.6.09
6.	Sen, Arnab	MVSc, Ph.D.	SS	21.12.09

Member Located at other Division/Section/Station

7.	Prabhudas, K. (B'lore)	MVSc, Ph.D.	PS	24.4.91
8.	Venkantaraman, R. (B'lore)	MVSc, Ph.D.	PS & JD	24.4.91
9.	Pattanaik, B. (Mukt.)	MVSc, Ph.D.	SS	24.4.91
10.	Nandi, S. (CADRAD)	MVSc, Ph.D.	SS	28.6.96
11.	Pandey, A.B. (CADRAD)	MVSc, Ph.D.	SS	15.5.99
12.	Sanyal, A. (PDFMD)	MVSc, Ph.D.	S	15.5.99
13.	Himadari, D. (PDFMD)	MVSc, Ph.D.	S	15.5.99
14.	Rao, T.V.S. (B'lore)	MVSc, Ph.D.	SS	18.12.2000
15.	Dhar, Pranab (Stand.Div.)	MVSc, Ph.D.	SS	17.5.2000
16.	Sreenivasa, B.P. (B'lore)	MVSc, Ph.D.	S	17.5.2000
17.	Tosh, C. (PDFMD)	MVSc, Ph.D.	S	17.5.2000
18.	Dash, B.B.	MVSc, Ph.D.	SS	10.6.02
19.	Singh, R.P. (Director's Lab)	MVSc, Ph.D.	S(SS)	15.1.2003
20.	Mishra, Niranjan (Bhopal)	MVSc, Ph.D.	S(SS)	27.12.03
21.	Hosamani, Madhusudan	MVSc, Ph.D.	S	27.9.05
22.	Kulkarni, D.D. (Bhopal)	MVSc, Ph.D.	PS	12.9.07
23.	Mahapatra, J.K.	MVSc, Ph.D.	S	21.12.09

18. VETERINARY SURGERY

1.	Jama, M.M.S	MVSc, Ph.D.	HD	21.12.09
2.	Sharma, A.K.	MVSc, Ph.D.	PS	20.10.90
3.	Amarpal	MVSc, Ph.D.	PS	30.8.95
4.	Maiti, S.K.	MVSc, Ph.D.	SS	28.6.96
5.	Hoque, M.	MVSc, Ph.D.	PS	5.4.97
6.	Kinjavdekar, P.	MVSc, Ph.D.	PS	30.6.98
7.	Kumar, Naveen	MVSc, Ph.D.	PS	30.6.98
8.	Pawde, A.M.	MVSc, Ph.D.	SS	30.6.98
9.	Aithal, H.P.	MVSc, Ph.D.	SS	29.12.99

19. STATISTICS

1.	Singh, Rajendra	MA(Stat.), Ph.D.	HD	20.10.90
2.	Singh, B.	MSc(Stat.), Ph.D.	PS	20.10.90
3.	Prasad, Shiv	MSc(Stat.), Ph.D.	S(SS)	9.8.91

Member Located at other Division/Section/Station

5.	Gopal Ram (CARI)	MSc (Maths), PSCC	S(SS)	20.10.90
6.	Suman, C.L. (Comp. Centre)	MSc(Ag.Stat.)	PS	9.8.91

7.	Singh, Yashpal	MCA	S(SS)	10.6.08
8.	Khan, T.A. (LPM)	MSc, PSCC, Ph.D.	SS	22.06.09

20. Livestock Economics

Member Located at other Division/Section/Station

1.	Kumar, Sanjay (ARIS Cell)	MSc, Ph.D.(Agril. Eco.)	S(SS)	2.2.05
2.	Gangwar, L.S. (CARI)	MSc, (AG), Ph.D.(Ag. Eco.)	SS	12.9.07

21. VETERINARY PHARMACOLOGY

1.	Mishra, S.K.	MSc, Ph.D.	PS & HD	22.8.88
2.	Tandan, S.K.	MVSc, Ph.D.	PS	22.8.88
3	Sarkar, S.N.	MVSc, Ph.D.	SS	25.2.94
4.	Kumar, Dinesh	MVSc, Ph.D.	SS	18.12.97
5.	Rao, G.S. (on Deput.)	MVSc, Ph.D.	SS	29.4.2001

Member Located at other Division/Section/Station

6.	Malik, J.K.	MVSc, Ph.D.	JD (Res.)	28.6.96
7.	Telang, G. Avinash	MVSc, Ph.D.	SS	17.5.2000

22. VETERINARY BACTERIOLOGY

1.	Singh Vijendra Pal	MVSc, Ph.D.	PS & HD	25.2.94
2.	Rana, Rajneesh	MVSc, Ph.D.	SS	22.6.09

Member Located at other Division/Section/Station

3.	Verma, Rishendra	MVSc, Ph.D.	HD(Stand.)	22.8.88
4.	Das, P. (BP Div.)	MVSc, Ph.D.	SS	30.8.95
5.	Rawat, Mayank (Stand.)	MVSc	S(SS)	28.6.96
6.	Rathore, Rajesh (CADRAD)	MVSc, Ph.D.	S (SS)	27.9.05
7.	Chaturvedi, V.K.	MVSc, Ph.D.	SS	17.5.2000

23. VETERINARY PUBLIC HEALTH

1.	Kumar, Ashok	MVSc, Ph.d.	HD	15.599
2.	Malik, S.V.S.	MVSc, Ph.D.	PS	29.8.92
3.	Agarwal, R.K.	MVPH, Ph.D.	PS	20.10.90
4.	Singh, D.K.	MVSc, Ph.D.	PS	25.2.94
5.	Bhilegaonkar, K.N.	MVSc, Ph.D.	SS	15.5.99
6.	Rathore, R.S.	MVPH, Ph.D.	SS	18.12.2000

Member Located at other Division/Section/Station

7.	Das, S.C. (Kolkata)	MVSc, Ph.D.	S(SS)	29.12.99
8.	Murgukar, H.V. (Bpl)	MVSC, Ph.D.	SS	10.6.08