Information Bulletin

2016–17

With Application Form
For Diploma (Dairy Technology) &
Diploma (Animal Husbandry and Dairying)

ICAR-National Dairy Research Institute
(Deemed University) KARNAL-132001 (Haryana) India

Cost of Information Bulletin including entrance examination fees and postal charges ₹1200/- (for General, OBC) & ₹600/- (for SC/ST/PH)
All correspondences concerning admission to Diploma in Dairy Technology and Diploma in Animal Husbandry and Dairying should be addressed to In-Charge, Education & Training, ICAR-National Dairy Research Institute, Southern Regional Station, Bengaluru -560 030, Karnataka. Telephone: 080-25715399, 25710661 Web site: www.ndri.res.in
# Contents

1.0 ICAR-National Dairy Research Institute  1
2.0 Regional Stations  3
3.0 Academic Programmes  6
4.0 Procedure For Application  7
5.0 Entrance Examination & Selection Procedure  8
6.0 Counselling Process  9
7.0 In-service Candidates & their Selection Procedure  10
8.0 Number of Seats  11
9.0 Reservation  11
10.0 Candidates from NEH States & their Selection Procedure  11
11.0 Age Limit  11
12.0 Syllabus  12
13.0 Extra Curricular Activities  12
14.0 Hostel  12
15.0 Right to Refuse Admission  12
16.0 Registration  12
17.0 Ragging  13
18.0 Class Attendance  13
19.0 Rules for Fines  13
20.0 Summary Cancellation of Registration  13
21.0 General Information  13
22.0 Fees  14
23.0 Academic Calendar  15
   ANNEXURE-I (Syllabus for Entrance Examination for DDT/DAHD)  16
   ANNEXURE-II  30
   ANNEXURE-III  32
   ANNEXURE-IV  35
   ANNEXURE-V  36
   ANNEXURE-VI  38
   General Administration and Faculty at SRS & ERS  40
   Application Form
   Admit Card
   Form A & B
   Important Instructions
   Directions to Candidates and Important Dates
1.0 ICAR-National Dairy Research Institute

1.1 Introduction

ICAR - National Dairy Research Institute (NDRI), Deemed University (here-in-after referred to as the Institute) serves as the prime centre for Research, Extension and Human Resource Development Programmes of the country in the field of Dairying. The Institute was developed from the erstwhile Imperial Institute of Animal Husbandry and Dairying established at Bengaluru in 1923. The Main Campus of ICAR - NDRI is now located at Karnal (Haryana). It has two Regional Stations: Southern Regional Station at Bengaluru (Karnataka) and Eastern Regional Station at Kalyani (West Bengal).

1.2 Objectives of the Institute

1.2.1 Dairy Education: Organizing and conducting programmes at the undergraduate, postgraduate and doctoral levels in various branches of dairy science to meet the scientific and technical human resources needs of the country.

1.2.2 Dairy Production: Conducting research and training in livestock nutrition, growth, reproduction, physiology, genetics/breeding and management to produce milk efficiently and economically.

1.2.3 Dairy Processing: Conducting research and training in chemistry, microbiology, quality control and technology of milk and milk products and design and development of dairy equipment.

1.2.4 Economics, Management and Extension: Study and survey of economics of milk production and processing under farm and field conditions; dissemination of new technologies to farms and industry.

1.2.5 Training and Demonstration: Organizing Short Term Training programmes and demonstration of package of practices for field application.

1.2.6 Collaboration: Collaborating with national and international research and training institutions in dairying, as well as industry and allied fields for exchange of information and advancing new knowledge both in basic and applied fields of dairy science.

1.3 Organization

1.3.1 The Director and Vice Chancellor is the administrative Head of the Institute and its Regional Stations. He is assisted by three Joint Directors in Administration, Academics and Research to coordinate the activities of various Divisions and Regional Stations.
1.3.2 Various research, academic and consultancy activities of the Institute are organized in the areas of dairy production, processing and management on the subject-matter basis through different Divisions/Sections, namely, Dairy Cattle Breeding, Livestock Production and Management, Dairy Cattle Nutrition, Dairy Cattle Physiology, Dairy Chemistry, Dairy Engineering, Dairy Microbiology, Dairy Technology, Animal Biochemistry, Forage Research & Management, Dairy Economics, Statistics & Management, Dairy Extension and Animal Biotechnology.

1.4 Facilities in Education

There are modern facilities for delivery of lectures as the classrooms are provided with internet and multimedia gadgets. Each Division has well equipped UG and PG Laboratories for conducting practical classes. For Post-graduate research work, well equipped specialized laboratories are available in different Divisions. Most of the faculty have international exposure and possess degrees earned from reputed Indian and foreign universities. Additionally, subject-matter specialists from different countries of the world visit the Institute as consultants on teaching/research assignments. The teaching curricula are periodically updated keeping in view of the recent scientific developments and to fulfil the needs of the fast developing dairy industry. Centres of excellence in milk production, milk processing and biotechnology have been established at the Institute under the financial assistance from UNDP/ICAR/DBT.

1.5 Consultancy Services

In pursuance of the policy of Government of India which lays stress on the development of domestic technology and its effective transfer to the industry, a Business Process Development Unit (BPD) has been constituted. The reservoir of technology developed on the basis of R&D work done at the Institute is transferred for the infusion of science and technology in the area of Dairy Production, Dairy Processing and Dairy Management on professional basis through consultancy services. The BPD extends help for strengthening the dairy industry in the country by providing R&D support towards new product/process development, equipment development, problem solving research and also undertakes sponsored research programmes. The consultancy services are also provided for the preparation of techno-economic feasibility reports for new projects, vetting of project proposals received through financial institutions, testing of dairy products for export/import etc. Specialized training programmes are also conducted at this Institute from time to time for imparting training to the students and entrepreneurs. The revenue earned through consultancy services is utilized for strengthening R&D infrastructure of the Institute.

1.6 National Library in Dairying

The Institute Library has an impressive collection of literature on Dairy Science and related subjects. More than 200 periodicals are subscribed to keep track of the current scientific/technical developments. There are 89,451 volumes which include 51,045 books, 32,457 bound journals, 4,186 theses, 268 microfiches and 1,500 CDs. Library has an excellent computer section with fifty work stations for students and staff of the Institute. Students use these to get current information in the advanced research areas and for communication. The Library also provides Internet, Email, Documentation, Reference, Current Awareness Services, CD-ROM Literature scanning through CD-ROM of CAB Abstracts, Food Science Technology Abstracts, AGRIS, Derwent Biotechnology Abstracts, Indian Standards on CD-ROM and ISO Standards of milk and dairy products on CD-ROM.
1.7 Computer Facilities

Computer Centre is a central facility to provide computational support and training to the scientists, students and research scholars. There is a well-established Computer Laboratory equipped with latest computer systems together with laser printers. The computer systems support FORTRAN, C, C++, and Visual Programming languages. A large number of software packages such as LIMDEP, LSML-76, MATLAB, MS-Office 2003/2007, MySQL Server 2008, SAS 9.2, SPSS 18, SYSTAT, TORA, etc., are available in different environments, i.e., LINUX, Windows/Windows Server (98, 2000, 2008, XP, NT).

1.8 Placement Cell

The Institute has a Students’ Counselling and Placement Cell for which a senior faculty member acts as Chairperson. The placement committee ensures the employment of the students of the Institute. The main objective of the Cell is to collect and disseminate the information related to the job opportunities in private and government sectors and to invite various organizations for Campus interviews. Students’ counselling is also done at times of the advancement of their career in respective subject matter/discipline areas. The Institute has a very impressive track record of placement in highly competitive professions both within and outside the country.

2.0 Regional Stations

2.1 Southern Regional Station

Southern Regional Station (SRS) of ICAR-National Dairy Research Institute is the pioneering institution in Dairying and has undergone a series of changes during its history of more than ninety years. It has its origin on the 1st July 1923 as Imperial Institute of Animal Husbandry and Dairying established as a centre for training and research in dairying in the country. One of the memorable events of the Imperial Institute was the visit of Mahatma Gandhi in 1927 who got acquainted with scientific dairy farming. After independence, Imperial Dairy Research Institute was renamed as Indian Dairy Research Institute. The activities of the Institute were further strengthened during 1952-54 by locating a Central Artificial Insemination Centre, Key Village Scheme and Southern Regional Animal Nutritional Research Centre at Bengaluru. Indian Dairy Research Institute was reorganised in 1955 and renamed as ICAR-National Dairy Research Institute.
Institute with headquarters at Karnal. The establishment at Bengaluru was redesignated as Southern Regional Station of ICAR-National Dairy Research Institute.

2.1.1 Location and Climate: Southern Regional Station of NDRI is located in Adugodi, Hosur Road, National Highway No.7 about 7 Km from Bengaluru City and Cantonment Railway Stations. Bengaluru is well known for its salubrious climate with the maximum temperature of about 37°C and minimum temperature of about 8°C. The average rainfall of the city is about 100 cm per year.

2.1.2 Activities: The Station is engaged in research, teaching, training, transfer of technology, extension and consultancy activities through following Sections: Dairy Chemistry and Bacteriology, Dairy Technology, Dairy Engineering, Dairy Production (Animal Genetics & Breeding, Animal Nutrition, Livestock Production & Management and Animal Biotechnology), Education & Training, Economics and Statistics and Extension.

2.1.3 Education and Training Programmes: Post graduate programmes in Dairy Technology and Dairy Engineering and Ph.D programme in Dairy Engineering, and dissertation work in postgraduate and Ph.D programmes in various disciplines of dairying are offered at this Station. Further, a number of short term training courses in milk production, processing and quality assurance of milk and dairy products are also being offered. Since 2013, the Station has been offering Diploma in Dairy Technology Programme.

2.1.4 Dairy Production Facilities: The Regional Station has the necessary infrastructure needed for milk production. The fodder farm of 24 hectares raises high yielding fodder crops round the year for a herd of about 250 cattle. The cattle farm houses about 250 cattle (200 Deoni and 50 crossbred). The milking average is 4.5 kg/day for Deoni and 12 kg/day for crossbred cows. Best yield of Deoni cow is 11.5 kg/day and 36 kg/day for crossbred cows.

2.1.5 Dairy Processing Facilities: The Experimental Dairy Plant has the capacity to process 1000 litres of milk/day. The plant has facilities for processing liquid milk and preparation of cheese, yoghurt, ice-cream, butter, milk powder and indigenous dairy products such as dahi, ghee, khoa, channa, paneer, kunda, etc. A variety of dairy products manufactured and sold through the milk parlour are very popular in the city. The students and trainees of the Institute get hands on experience in the dairy plant. There are laboratories which are well equipped for carrying out sensory and texture analysis and characterization of dairy and food products.

2.1.6 Quality Assurance Facilities: The Station has well established laboratories for the evaluation of chemical and microbiological quality and safety of dairy and food products. These laboratories conduct research and training in Dairy Chemistry and Microbiology as well as render analytical services for the dairy and food industry.

2.1.7 Engineering Facilities: The Dairy Engineering Section has mechanical, civil and electrical workshop facilities. The Section has research facilities for analyzing the physical, thermal and rheological properties and drying, packaging, retort processing, etc. of dairy and food products. The Section is also involved in research on packaging in shelf-life prediction and modelling of heat and mass transfer associated with various unit operations in the processing of dairy and food products.

2.1.8 Library Facilities: The Library holds 12,439 books, 10,857 bound volumes, 1,975 theses and 1,259 reprints and subscribes for various Indian and Foreign Journals relevant to various disciplines of dairy science through CERA in addition to subscription for hard copies of about 30 Indian Journals. The Library also has facilities like photocopying, scanning and internet access.

2.1.9 Other Facilities: The Station has well established computer facilities with internet
access to facilitate data analysis, documentation, e-mail communication and programming packages for staff and students. Seminar Rooms and Auditoriums facilitate the conduct of meetings, student seminars and Institute functions. The Station has classrooms well equipped with audio visual aids. Workstations are established in the Sections for the PG and Ph.D students.

The Station has good hostel and guest house facilities for the students and visitors. The staff dispensary meets the medical needs of the staff and students. The Placement Committee of the Station ensures the employment of the students in dairy and food industry, regulatory bodies and academic institutions. The students of the Station are well placed professionally both in India and abroad.

2.2 Eastern Regional Station

The Eastern Regional Station was established at the Central Dairy, Calcutta in 1964 and was shifted to Kalyani during 1966 about 50 km north of Calcutta and was located in the Administrative Building of the Kalyani University. The regional Animal Nutrition Research Centre of the ICAR till then located at Haringhata, West Bengal, was merged with the ERS of NDRI with effect from June 1, 1968. In 1978, the government of West Bengal granted 100 acres of land at Kalyani where cattle sheds, forage unit, staff quarters, etc. were gradually built up. The station built its own laboratory building and the entire station started functioning within the same campus from May, 1987.

The main objective of establishing the Eastern Regional station is to identify the major constraints of dairy production and management in eastern and north eastern India and to offer plausible solutions through research and extension activities to those problems. It serves as a vital link between the main Institute and the far flung areas of the Eastern and North Eastern parts of the country for transfer of technology developed at the institute and provide appropriate feedback after trial for perfection. The research work undertaken at this station is mainly strategic and applied in nature, and the thrust of research is to improve the socio-economic condition of dairy farmers of the region.

2.2.1 Location and Climate: Kalyani is located at the lower Gangetic basin of West Bengal in Nadia district, 48 km north from Kolkata and is well connected by rail and road. ERS is around 2 km away from the Kalyani railway station. The climatic condition is hot humid. The average annual maximum temperature is 32°C and the minimum temperature is 20°C. The maximum humidity is 91% and minimum humidity is 58%. The annual rainfall is around 1250 mm.

2.2.2 Infrastructure: The Eastern Regional Station of ICAR – NDRI has effective infrastructure facilities like Research laboratories, Dairy Farm, Fodder Farm, Library and Computer Unit, Guest House, Student
2.2.3 Research Laboratories: The station has research laboratories that are actively involved in strategic and applied research in the disciplines of Animal Nutrition, Livestock Production Management, Dairy Economics, Dairy Extension, Animal Biotechnology, Animal Physiology, Animal Reproduction & Animal Genetics and Breeding.

2.2.4 Cattle Yard: The Cattle yard of the station maintains around 160 crossbred cattle. The cattle yard comprises of Calf shed, Heifer shed, Experimental animal shed, Milch animal shed, Milking Byre etc. which are being utilized for production, research as well as for hands on training, demonstration and orientation for the dairy farmers of the region on different aspects of scientific dairy breeding.

2.2.5 Fodder Farm: Forage section is engaged in cultivation of quality fodder crops (including organic fodder) in about 30 hectare areas. The section manages harvesting and provides chaffed or unchaffed fodder crops to the farm animals. Besides cultivation of fodder crops, the section also has a mini workshop for regular servicing of agricultural machineries including tractors, chaff cutter etc. There is also an agri-meteorological observatory from where regular meteorological observations are recorded. There are about 700 plants of teak, sissam, etc. growing around the institute premises. Besides, there is a fodder herbarium for training and demonstration purpose. Recently, a feed milling plant is being installed at this campus for preparing the experimental concentrate formulations.

2.2.6 Library: The library contains 1521 books, 3458 volumes of bound journals and other periodicals in the field of Dairying. Besides, Annual Reports of different Institutes and proceedings of various workshops and seminars are also available for reference.

2.2.7 Computer Centre: The computer centre has networking and data entry facilities for statistical analysis of experimental data of various research projects and Cattle Yard. In addition, the data of milk production, fodder and feed supply, reproductive performance and meteorology is maintained on a day to day basis.

2.2.8. Extension and Transfer of Technology: The round the year extension services includes Training programmes, Exhibitions, Health & fertility camps, off-campus training camps etc. ERS is established on a plot of 100 acres of Training Programmes on “Scientific Dairy land with good infrastructure in terms of Farming” and “Animal Nutrition and Fodder Production” for educated unemployed rural youth are organized at regular interval. Field visits, capsule courses and orientation programmes are also organized for the farmers of Dairy Cooperative Societies and NGOs on request.

2.2.9. Academic Programmes: Dissertation work in Masters and Ph.D programmes in various disciplines of dairying are offered at this Station. Since 2014, the Station has been offering Diploma in Animal Husbandry & Dairying (DAHD) Programme.

3.0 Academic Programmes

The following educational programmes are being offered at NDRI, Karnal and/or its Regional Stations.

Programmes offered at ICAR - NDRI

<table>
<thead>
<tr>
<th>Programme</th>
<th>Offered at</th>
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<tbody>
<tr>
<td>Diploma in DT</td>
<td>SRS of ICAR - NDRI, Bengaluru</td>
</tr>
<tr>
<td>Diploma in AHD</td>
<td>ERS of ICAR - NDRI, Kalyani</td>
</tr>
<tr>
<td>B.Tech. (DT)</td>
<td>ICAR - NDRI, Karnal</td>
</tr>
<tr>
<td>PG and Ph.D</td>
<td>ICAR - NDRI, Karnal&lt;br&gt; SRS of ICAR - NDRI, Bengaluru&lt;br&gt; ERS of ICAR - NDRI, Kalyani</td>
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Academic Highlights

a. Admissions are strictly through Entrance Examinations.
b. Institute follows a semester system. Each semester is of 18 to 19 weeks duration.
c. Summer vacation is of 6 to 7 week duration.
d. Regular academic sessions.
e. Strict adherence of academic calendar and academic regulations.

3.1 Diploma Programmes

3.1.1 Diploma in Dairy Technology is being offered from the year 2013 at Southern Regional Station of the Institute, Bengaluru. This Diploma programme offers intensive training in dairy processing, quality assurance of milk and milk products, engineering aspects of dairy processing equipments and dairy business management.

3.1.2 Diploma in Animal Husbandry and Dairying is being offered from the year 2014 at Eastern Regional Station of the Institute, Kalyani, Nadia District of West Bengal. This Diploma programme offers intensive curriculum on different aspects of animal husbandry and dairying.

4.0 Procedure for Application

4.1 Eligibility

The candidates having passed their 12th Standard Examination of the Central Board of Secondary Education or any other examination within scope and standard found to be equivalent to the Secondary School Examination of a recognized Indian University/Board after a period of 10 + 2 years of study are eligible to apply for the Entrance Examination for admission into Diploma Programme. For Diploma (Dairy Technology) the candidate must have taken Physics, Chemistry and Mathematics during his / her 12th standard or equivalent programme, while for Diploma (Animal Husbandry and Dairying) the candidate must have taken Physics, Chemistry and Biology / Agriculture as his / her subjects in the 12th standard examination. The candidates must have passed the qualifying examination securing not less than 50% marks in aggregate in Physics, Chemistry and Mathematics / Biology / Agriculture by General, OBC and UPS categories and 40% for SC/ST, PH and In-service categories. The candidates due to appear for the final examination of 12th Standard in 2016 may also apply for the Entrance Examination provided they complete the examinations and obtain the results on or before 31st July 2016.

Admission shall be made on the basis of merit through All India Entrance Examination conducted by the ICAR-National Dairy Research Institute, Karnal. The Entrance Examination will be conducted at all the three centres namely ICAR - NDRI Karnal, SRS of ICAR - NDRI, Bengaluru and ERS of ICAR - NDRI, Kalyani, West Bengal.

4.2 Application

1) Application for admission shall be submitted in the prescribed form meant for the purpose. (Enclosed/Attached with this Bulletin)

2) The Application Form bears an Application Number at the top left corner on page 1. This number must be quoted in all correspondence regarding admission to this Institute. For the downloaded forms, the demand draft number should be quoted as reference number.

3) All correspondence for admission should be addressed to the Incharge, Education and Training Section, Southern Regional Station, ICAR-National Dairy Research Institute, Adugodi, Bengaluru - 560 030. For all important dates please see the back of cover page of the Bulletin.
4) Application for admission must be completed in BLOCK LETTERS. All entries in the Application Form must be filled up and attested copies of the following certificates and documents should be attached, failing which the Application is liable to be rejected. Original certificates should not be sent along with the Application Form.

i. Certificate of date of birth.
ii. Certificate of 12th standard examination or its equivalent examination passed.
iii. Marks list indicating percentage of marks in each subject, total marks and class obtained, etc. of 12th standard or equivalent examination passed.
iv. A Certificate from Head of the Institution indicating the marks/division obtained in the 12th Standard examination or equivalent examination passed.

v. In case of SC/ST and OBC candidates, a Certificate as per Annexure II/III, respectively from a First class Magistrate of a District/Competent Authority indicating that the candidate belongs to a particular category. Application without such certificate will be considered against General quota only.

vi. Three recent passport size photographs duly attested should be affixed at appropriate places on the Application Form and Admit Card.

5) If a candidate wilfully furnishes wrong information or suppresses any relevant information, his/her candidature/admission will automatically stand cancelled.

6) In order to obtain acknowledgement for the receipt of the Application by the Institute, candidates are advised to send their Application by registered post with acknowledgement due attached with the envelope containing the Application Form.

7) All original certificates and mark sheets are to be produced at the time of Counselling and Registration. Candidates who do not produce all the original certificates and mark sheets will not be admitted.

8) Roll Nos. and centre of examination of the eligible candidates will be displayed only on ICAR - NDRI website (www.ndri.res.in) on 30-05-2016. The names of those who are not found eligible will be displayed separately. No dispatch of admit card shall be made. Therefore, all candidates are advised to visit the NDRI website (www.ndri.res.in) and note down the Roll Nos. on both the copies of their admit card and bring the same with them to appear in the Entrance Examination.

9) Candidates are advised to retain a photocopy of the Application Form and bank draft for their personal record. It may be used at any time in support of having submitted Application and also retain a copy of post office receipt for dispatch through registered post or speed post. Without these papers, an eligible candidate shall not be allowed to appear in examination, in the absence of admit card.

5.0 Entrance Examination and Selection Procedure

5.1 The Entrance Examination will be conducted at following centres on **18-06-2016**

a) ICAR - NDRI, Karnal-132 001 (Haryana)
b) Southern Regional Station, ICAR - NDRI, Adugodi, Bengaluru-560 030 (Karnataka)
c) Eastern Regional Station, ICAR - NDRI, Kalyani-741 235 (West Bengal)

I. Students seeking admission to
Diploma (Dairy Technology) programme will attempt a question paper with Physics, Chemistry and Mathematics based on 12th Standard syllabus for 150 min duration and of 180 marks. Paper will be of objective type with multiple choice questions.

ii. Students seeking admission to Diploma (Animal Husbandry and Dairying) programme will attempt a question paper with Physics, Chemistry and Biology based on 12th Standard syllabus for 150 min duration and of 180 marks. Paper will be of objective type with multiple choice questions.

iii. The syllabus for Entrance Examination for Diploma (DT) and Diploma (AHD) programme is appended in the Information Bulletin as Annexure-I.

iv. The qualifying marks in the Entrance Examination will be 50% for General, OBC and UPS and 45% for SC/ST, PH and In-service categories.

v. The final selection for admission to Diploma Programme will be based on rank list prepared on the basis of marks obtained in the Entrance Examination. Separate rank lists will be published for D (DT) and D (AHD).

vi. Only those students who complete their qualifying examination in all respects latest before the commencement of academic session – 2016-17 (i.e., 31-07-2016) will be considered.

vii. The results in the form of the merit list showing marks of qualified candidates will be announced on 05-07-2016 on NDRI website (www.ndri.res.in).

6.0 Counselling Process

6.1 The qualified candidates will be called for counselling on 19-07-2016. Students seeking admission to Diploma (Dairy Technology) may report for counselling at Southern Regional Station of ICAR-National Dairy Research Institute, Adugodi, Bengaluru–560 030. Students seeking admission to Diploma (Animal Husbandry and Dairying) may report for counselling at Eastern Regional Station of ICAR-National Dairy Research Institute, Kalyani, Nadia, West Bengal–741 235. The candidates will mark their attendance on arrival and will be considered for counselling. Those reporting late will have to register arrival time as late entry in the attendance register and will be considered for counseling as per the latest situation of seat availability at that time. The seats already filled up will not be disturbed in such situation.

6.2 The candidates belonging to PH category will be called first and offered seat against the category to which they belong. The seats for PH category are 3% and will be filled within the overall number of total seats. If the number of PH candidates available is more than the number of reserved seats for PH category, then priority will be decided based on the ranks of Entrance Examination. If the ranks are same, then the marks obtained in the qualifying examination (12th standard or equivalent) will be used as selection criterion. The same process will be repeated to fill the UPS quota of 2%.

6.3 The candidates belonging to other reserved categories will be called in order of ST, SC and OBC after the admission of PH and UPS candidates is over. The seats in SC and ST categories are interchangeable and in case candidates of SC/ST categories are not available, the seats thus remaining vacant will be filled from General Category. Similarly, if the candidates from OBC category are not available, the same will be filled from General Category.

6.4 The General Category candidates will be called after the counselling of candidates of above categories is over. The reserved seats left vacant, if any and the vacant seats for unreserved category will be filled-up from the
General Category in the order of merit.

6.5 The counseling will be held at SRS of NDRI, Bengaluru for Diploma (DT) candidates and at ERS of ICAR – NDRI, Kalyani for Diploma (AHD) as per the dates given on the back of cover page under “Important Dates” of the Information Bulletin. The merit list, showing names of qualified candidates, made on the basis of marks obtained in the Entrance Examination will be displayed on the NDRI website only and no intimation will be given to candidates by letter or fax or any other means. The candidates are advised to visit NDRI website (www.ndri.res.in) from time to time.

6.6 Candidates called for counselling should bring admit card, all original certificates with mark sheets, SC/ST/OBC category certificate (Annexure - II / III) and appropriate certificates for PH and UPS Categories in original for verification and submission.

6.7 Immediately on offer of admission, candidates are required to deposit counselling fee (Non-refundable) ₹ 5000/- in the form of a Bank Draft. Students seeking admission to Diploma (DT) should prepare the Draft in favour of ICAR Unit, NDRI, Bengaluru payable at Bengaluru. Students seeking admission to Diploma (AHD) should prepare the CTS Demand Draft in favour of “ERS of NDRI” payable at Kalyani. The deposit will be adjusted towards fee payable during registration.

6.8 Candidates must appear in person at the time of counseling. In case a candidate is not in the position to present himself/herself, an authorized representative can attend the counseling on production of original certificates and authorization letter (Annexure-IV).

7.0 In-service Candidates and their Selection Procedure

An additional five seats in the Diploma (DT) programme will be reserved for in-service candidates. However, the in-service candidates also should qualify in the Entrance Examination and a separate merit list will be prepared in this category.

(i) Candidates in permanent employment with Central/State Governments and Dairies/Food Industries with minimum two years service (as on 31-7-2016) in the relevant field and meeting the eligibility requirements given above are eligible to apply under this category. The minimum marks for the in-service candidates, however, shall be 40% in the 12th standard or equivalent examination and 45% in the Entrance Examination. The candidates must be fully sponsored by the employer.

ii) In-service candidates shall be admitted over and above the seats with the approval of the Competent Authority.

iii) The Application Form duly completed and attached with all documents should reach the Incharge, Education and Training Section, Southern Regional Station, ICAR-National Dairy Research Institute, Adugodi, Bengaluru- 560 030 on or before 20-05-2016. Advance copy of the Application by the candidate will be accepted for the purpose of examination. However, the In-service candidates must submit the application (including Form-A) through proper channel (forwarded by the Employer/Organisation) so as to reach the office on or before 05-07-2016.

iv) The eligible candidates will have to appear and qualify in the Entrance Examination.

v) The admission of in-service candidates will be decided on merit obtained in the Entrance Examination.

vi) The Application of ineligible candidates shall be rejected.
8.0 Number of seats:

8.1. D (DT): 20 + 5 (in-service candidates)
- General (unreserved): 10
- SC (15%): 03
- ST (7.5%): 02
- OBC (27%): 05
- Total: 20

*PH: 3% *UPS: 2% (*The seats will be provided to the candidates against the category i.e. General/SC/ST/OBC/ to which they belong).

Five in-service candidates will be admitted over and above the seats making the total number of seats to 25.

8.2. D (AHD): 20 + 5 (North Eastern State Candidates)
- General (unreserved): 10
- SC (15%): 03
- ST (7.5%): 02
- OBC (27%): 05
- Total: 20

*PH: 3% *UPS: 2% (*The seats will be provided to the candidates against the category i.e. General/SC/ST/OBC/ to which they belong).

Five NEH states nominated candidates shall be admitted over and above the seats with the approval of the Competent Authority making the total number of seats to 25.

9.0 Reservation

9.1 15% of total seats are reserved for bonafide candidates belonging to Scheduled Castes, 7.5% for Scheduled Tribes, 27% seats for OBC, 3% for Physically Handicapped subject to their being otherwise eligible. The reservation of seats is interchangeable amongst the SC/ST candidates depending upon the availability of such candidates. In case candidates from Reserved Categories are not available, the same will be filled up from General Category.

9.2 Candidates from NEH States and Their Selection Procedure

Five seats additionally will be reserved for candidates from NEH region. Five NEH states nominated candidates shall be admitted over and above the seats for Diploma (Animal Husbandry and Dairying) with the approval of Competent Authority making the total number of seats to 25.

9.3 Definition for Physically Handicapped

Candidates having permanent disability of not less than 40%, provided they are otherwise fit for admission are eligible under the category of physically handicapped. Such candidates will have to bring a certificate from the Chief Medical Officer of the District to which the candidate belongs. Such candidates will also have to appear before the Medical Officer/Board constituted by the Head, SRS of NDRI, Bengaluru for determining the percentage of disability and for assessment whether they are fit to carry out the studies despite being handicapped.

10.0 Age Limit

Minimum age limit for Diploma in DT and AHD candidates shall be 17 years on or before 31-07-2016 and the maximum age limit shall be 23 years as on 31-07-2016. Maximum age limit for in-service candidates will be 45 years as on 31.07.2016.

11.0 Award of Medals and Merit Certificates

11.1 The Diploma students will be awarded one each of Gold and Silver medals based on the overall performance of 2 years. All the students securing above 80% marks will be eligible for merit certificates.

11.2 In case a student has been punished for act of indiscipline during the course of study at ICAR - NDRI, he/she may be debarred from the award of Director’s Gold/Silver medal/merit certificates.
12.0 Syllabus

12.1 The syllabus for Diploma programme is governed by the regulations of the Institute and as modified by it from time to time. Physical Education during the first year and In-Plant training in a commercial dairy plant / farm for one semester are part of the syllabus. The medium of instruction is English.

12.2 The Diploma (DT) students have to complete their Diploma programme at SRS of ICAR - NDRI, Bengaluru

12.3 The Diploma (AHD) students have to complete their Diploma programme at ERS of ICAR - NDRI, Kalyani.

13.0 Extra Curricular Activities

13.1 Students are encouraged to participate in activities such as Music, Art, Dramatics, Paper Reading, Literary Activities, Declamation, Debate and Recitation Contests, etc. The Director reserves the right to refuse admission of 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 otherwise be eligible for admission on the basis of assigning any reason thereof. The decision of the Director shall be final and legally binding.

13.2 Facilities are available for indoor and outdoor games, sports etc. and students are required to take part in sports activities.

14.0 Hostels

14.1 Hostel accommodation with mess facility is available in the Campuses on sharing basis. In order to regulate community living harmoniously in the Hostels, certain rules have been framed for compliance by the students. These rules are meant for the students to maintain a high order of discipline, honesty and moral conduct for self and fellow hostellers. Students admitted in this Institute are all meritorious. They are supposed to lead a career oriented living in the Hostels. While in the Hostel they are responsible for up keep and look after of rooms, furnishing and fixtures. They are also supposed to conduct extremely well within and outside the Hostels. Payment of fees and dues, proper use of Hostel facilities, common room, mess, harmonious living and regulations regarding Hostel visiting hours are some of the important points that have to be adhered to by the hostellers.

14.2 Students seeking admission to the Hostel must apply separately at the beginning of each semester/year in the prescribed Form.

14.3 Students admitted to the Hostel shall abide by the decision of the Chief Hostel Warden with respect to the enforcement of Hostel Rules. Copy of the Hostel Rules will be provided to each hosteller at the time of admission. Those infringing the Hostel Rules are liable to be expelled from the Hostels. The decision of the Chief Hostel Warden/Head of the Station shall be final in this regard.

14.4 In view of the limited availability of Hostel seats, accommodation will be on the basis of merit in Entrance Examination.

15.0 Right to Refuse Admission

The Director reserves the right to refuse admission of 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 otherwise be eligible for admission on the basis of assigning any reason thereof. The decision of the Director shall be final and legally binding.

16.0 Registration

17.1 Students must report for registration on the due date mentioned in the admission letter/e-mail failing which offer for admission is liable to be withdrawn automatically. The candidates are also required to check for this information on the website of the Institute.

17.2 At the time of registration, the students must produce the following original documents:-

   a) Certificate of date of birth
   b) Original certificates and mark sheets of all the examinations passed.
   c) In case of SC/ST candidates, a certificate from a first class Magistrate of a District/Competent Authority
indicating that the candidate belongs to a particular SC/ST category which is included in the latest list appended to the constitution of India, SC/ST 1950.

d) Three passport size photographs (which should not be more than 6 months old) for the preparation of ID card/Hostel Forms.

17.3 The students and the parents will have to submit affidavits as per UGC guidelines not to indulge in ragging and other related activities.

17.0 Ragging

Ragging in any form is totally banned. As per directives from Hon’ble Supreme Court of India, if any incident of ragging comes to the notice of the authority, the concerned student shall be given liberty to explain and if his/her explanation is not found satisfactory, the authority would expel him/her from the Institute. Affidavits need to be submitted by the student and Parent/Guardian as given in Annexure V & VI, respectively that the student/ward will not indulge in ragging and other related activities.

18.0 Class Attendance

Students are expected to attend all the theory and practical classes. The regulations require that the students must maintain prescribed minimum attendance of 75% in the classes.

19.0 Rules for Fines

19.1 Fines for absence from the Hostel

A special fine considered adequate according to the seriousness of the case will be levied by the Chief Hostel Warden/Head of the Station for overnight absence from the Hostel without prior permission of the competent authority.

19.2 Such students who do not clear mess charges by the due date will be removed from the Hostel and disciplinary action as deemed fit will be taken.

19.3 Fine recovered from the students towards late payment of fees, fines for act of indiscipline etc., will be credited to “R” Deposit and used for Students’ Welfare Activities.

20.0 Summary Cancellation of Registration

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

20.2 The students who have been permanently dropped from the Institute on account of acts of indiscipline shall not be eligible to make an Application for re-admission.

20.3 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 by the University Office and detected subsequent to the admission and joining of the candidate, would be cancelled at the cost and risk of the student.

21.0 General Information

21.1 The selected candidates should join the course by the date indicated in the admission letter/e-mail or as displayed on the website.

21.2 The admission of a candidate who fails to join the course by the stipulated date will stand cancelled automatically.

21.3 Candidates should produce Migration Certificate from the Board from which they have obtained the eligible qualification within three months of commencement of session.

21.4 Once the admissions are finalized for an academic session, there will be no scope for
lateral entry via transfer from any other Institutes to the ICAR - NDRI.

21.5 The Institute reserves the right of admission and also the right to cancel the admission of a candidate at any stage if it is found that the information furnished by the candidate in his/her Application is not true or is incomplete.

21.6 While every care is taken to call the eligible candidates for the Entrance Examination and admit only those who have qualified, it is the responsibility of the candidate to fully ensure his/her eligibility. NDRI will not be responsible for inadvertently calling the candidates for the Entrance Examination or in granting them admission.

21.7 Admission to the Institute implies acceptance by the student and his/her parents/guardian of all provisions given in the Bulletin and/or change in the Institute Rules, Regulation, Fee, etc. that are made from time to time.

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

21.9 The result of the Entrance Examination declared by the Institute shall be treated as final. There is no provision for scrutiny of answer books.

21.10 In case of any legal dispute, the same shall be subject to Bengaluru court jurisdiction only.

22.0 Fees

All fees (see Table below) must be paid on the due date in each Semester. Fees cannot be adjusted against stipends/scholarship. Non-receipt of scholarship etc. will not be considered as a valid reason for late payment of fees. Fees and annual dues once paid will not be refunded to the students leaving the course for any reason what-so-ever.

<table>
<thead>
<tr>
<th>SL No</th>
<th>Description of fee</th>
<th>Fee (₹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Caution Money</td>
<td>10000.00</td>
</tr>
<tr>
<td>2</td>
<td>Registration Fee (per annum)</td>
<td>50.00</td>
</tr>
<tr>
<td>3</td>
<td>*Tuition Fee, per annum</td>
<td>4000.00</td>
</tr>
<tr>
<td></td>
<td>(To be paid in two installments semester wise)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Students Hostel Fee</td>
<td>2000.00</td>
</tr>
<tr>
<td></td>
<td>Hostel Fee, per annum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(to be paid in two installments semester wise)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Married Hostel Fee</td>
<td>3000.00</td>
</tr>
<tr>
<td></td>
<td>(i) Hostel Fee, per annum (To be paid on monthly basis)</td>
<td>Actual</td>
</tr>
<tr>
<td></td>
<td>(ii) Electricity &amp; Water charges</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Charges for Guest Room in Hostel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Hostel charges for students/students guests for short stay are recommended as Rs.50/- per day.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The permission to stay in Hostel may be allowed by the authorities as under:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(i) Up to 3 days-Hostel Warden of the concerned Hostel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(ii) Up to 7 days by the Chief Hostel Warden</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(iii) Beyond 7 days by the Head</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Students Council Fee</td>
<td>150.00</td>
</tr>
<tr>
<td>8</td>
<td>Magazine Fee</td>
<td>50.00</td>
</tr>
<tr>
<td>9</td>
<td>*Welfare Fund</td>
<td>100.00</td>
</tr>
<tr>
<td>10</td>
<td>Sports Fund</td>
<td>100.00</td>
</tr>
<tr>
<td>11</td>
<td>Cultural and Literary Activities Fee</td>
<td>100.00</td>
</tr>
<tr>
<td>12</td>
<td>*Examination Fee (per semester)</td>
<td>300.00</td>
</tr>
<tr>
<td>13</td>
<td>Identity Card Fee</td>
<td>50.00</td>
</tr>
<tr>
<td>14</td>
<td>**Provisional Diploma Certificate</td>
<td>100.00</td>
</tr>
<tr>
<td>15</td>
<td>Late Registration Fee</td>
<td>250.00</td>
</tr>
<tr>
<td>16</td>
<td>**Alumni Association</td>
<td>250.00</td>
</tr>
<tr>
<td>17</td>
<td>**Migration Certificate</td>
<td>50.00</td>
</tr>
<tr>
<td>18</td>
<td>**Convocation Fee</td>
<td>100.00</td>
</tr>
</tbody>
</table>
(i) Fee at * marked is exempted for students belonging to SC/ST category.

(ii) Fee at ** marked will be charged in the 2nd year 1st Semester at the time of Registration along with the normal fee.

(iii) Caution money will not be refunded to the candidates if they leave the course after the closing of admission and without completing their degree. If the seat vacated by a candidate is filled up from the waiting list, the caution money will be refunded in full.

Note:

a) In-service candidates shall also be required to pay all the fees as applicable in the case of other candidates.

b) The Institute shall reserve the right to recover any kind of dues from the fellowship amount or any other amount payable to the students.

c) Unless specially permitted by the Head/Joint Director/Director, the name of the defaulter shall stand struck off from the rolls if he/she does not report for registration within a period of two weeks from the date of commencement of the respective semester. He/She may, however, be re-admitted at the discretion of the Head/Joint Director/Director on the submission of an Application through the Incharge, Education and Training Section, and on payment of re-admission fee at the prescribed rate and also the fine.

d) The fee and other charges once paid are not refundable. However, the caution money will be refundable only to the passed out students, if claimed within one year of completion of the course. The unclaimed amount will be transferred to Students Union Fund. Caution money will not be refunded if the seat-vacated by the student remains vacant.

23.0 Academic Calendar (2016-17 Session)

2016

August

1st
Registration and payment of fees (for fresh students)

3rd
Orientation Programme for freshers

4th
Classes begin

December

1st
Last working day

7th
Examinations begin (Tentative)

2017

January

11th
Registration and payment of fees

12th
Classes begin

May

17th
Last working day

26th
Examinations begin (Tentative)
ANNEXURE-I
SYLLABUS FOR ENTRANCE EXAMINATION FOR DIPLOMA IN DAIRY TECHNOLOGY (12™ STANDARD LEVEL)

PHYSICS

Unit-1: Physical World and Measurement Physics - scope and excitement; nature of physical laws; Physics, technology and society.

Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures. Dimensions of physical quantities, dimensional analysis and its applications.


Unit-3: Laws of Motion Intuitive concept of force. Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion.


Unit-4: Work, Energy and Power Scalar product of vectors. Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power. Notion of potential energy, potential energy of a spring, conservative forces: conservation of mechanical energy (kinetic and potential energies); non-conservative forces: elastic and inelastic collisions in one and two dimensions.

Unit-5: Motion of System of Particles and Rigid Body Centre of mass of a two-particle system; momentum conservation and centre of mass motion. Centre of mass of a rigid body; centre of mass of uniform rod. Vector product of vectors; moment of a force, torque, angular momentum, conservation of angular momentum with some examples. Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions; moment of inertia, radius of gyration. Values of moments of inertia for simple geometrical objects. Statement of parallel and perpendicular axes theorems and their applications.


Unit-7: Properties of Bulk Matter Elastic behaviour, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity. Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes). Effect of
gravity on fluid pressure. Viscosity, Stokes’ law, terminal velocity, Reynold’s number, streamline and turbulent flow. Bernoulli’s theorem and its applications. Surface energy and surface tension, angle of contact, application of surface tension ideas to drops, bubbles and capillary rise.

Heat, temperature, thermal expansion; specific heat - calorimetry; change of state - latent heat. Heat transfer (conduction, convection and radiation), thermal conductivity, Newton’s law of cooling.


Unit-9: Behaviour of Perfect Gas and Kinetic Theory Equation of state of a perfect gas, work done on compressing a gas. Kinetic theory of gases - assumptions, concept of pressure. Kinetic energy and temperature; rms speed of gas molecules; degrees of freedom, law of equipartition of energy (statement only) and application to specific heats of gases; concept of mean free path, Avogadro’s number.

Unit-10: Oscillations and Waves Periodic motion - period, frequency, displacement as a function of time. Periodic functions. Simple Harmonic Motion (S.H.M) and its equation; phase; oscillations of a spring–restoring force and force constant; energy in S.H.M.-kinetic and potential energies; simple pendulum–derivation of expression for its time period; free, forced and damped oscillations, resonance. Wave motion. Longitudinal and transverse waves, speed of wave motion. Displacement relation for a progressive wave. Principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics, Beats, Doppler effect.

Unit-11: Electrostatics Electric Charges; Conservation of charge, Coulomb’s law - force between two point charges, forces between multiple charges; superposition principle and continuous charge distribution. Electric field, electric field due to a point charge, electric field lines; electric dipole, electric field due to a dipole; torque on a dipole in uniform electric field. Electric flux, statement of Gauss’s theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside). Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two point charges and of electric dipole in an electrostatic field. Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarisation, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor. Van de Graaff generator.

Unit-12: Current Electricity Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm’s law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity. Carbon resistors, colour code for carbon resistors; series and parallel combinations of resistors; temperature dependence of resistance. Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel. Kirchoff’s laws and simple applications. Wheatstone bridge, metre bridge. Potentiometer - principle and its applications to measure potential difference and for comparing emf of two cells; measurement of internal resistance of a cell.

Unit-13: Magnetic Effects of Current and Magnetism Concept of magnetic field, Oersted’s experiment. Biot - Savart law and its
application to current carrying circular loop. Ampere’s law and its applications to infinitely long straight wire, straight and toroidal solenoids. Force on a moving charge in uniform magnetic and electric fields. Cyclotron. Force on a current-carrying conductor in a uniform magnetic field. Force between two parallel current-carrying conductors—definition of ampere. Torque experienced by a current loop in uniform magnetic field; moving coil galvanometer—its current sensitivity and conversion to ammeter and voltmeter. Current loop as a magnetic dipole and its magnetic dipole moment. Magnetic dipole moment of a revolving electron. Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; Earth’s magnetic field and magnetic elements. Para-, dia- and ferro- magnetic substances, with examples. Electromagnets and factors affecting their strengths. Permanent magnets.

Unit-14: Electromagnetic Induction and Alternating Currents Electromagnetic induction; Faraday’s law, induced emf and current; Lenz’s Law, Eddy currents. Self and mutual inductance. Need for displacement current. Alternating currents, peak and rms value of alternating current/voltage; reactance and impedance; LC oscillations (qualitative treatment only), LCR series circuit, resonance; power in AC circuits, wattless current. AC generator and transformer.

Unit-15: Electromagnetic waves Displacement current, Electromagnetic waves and their characteristics (qualitative ideas only). Transverse nature of electromagnetic waves. Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.


Unit-18: Atoms & Nuclei Alpha-particle scattering experiment; Rutherford’s model of atom; Bohr model, energy levels, hydrogen spectrum. Composition and size of nucleus, atomic masses, isotopes, isobars; isotones. Radioactivity, alpha, beta and gamma particles/rays and their properties; radioactive decay law. Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear reactor, nuclear fusion.

Unit-19: Electronic Devices Semiconductors; semiconductor diode – I-V characteristics in
forward and reverse bias, diode as a rectifier; I-V characteristics of LED, photodiode, solar cell, and Zener diode; Zener diode as a voltage regulator. Junction transistor, transistor action, characteristics of a transistor; transistor as an amplifier (common emitter configuration) and oscillator. Logic gates (OR, AND, NOT, NAND and NOR). Transistor as a switch.

Unit-20: Communication Systems Elements of a communication system (block diagram only); bandwidth of signals (speech, TV and digital data); bandwidth of transmission medium. Propagation of electromagnetic waves in the atmosphere, sky and space wave propagation. Need for modulation. Production and detection of an amplitude-modulated wave.

CHEMISTRY


Unit-2: Solid State Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea), unit cell in two dimensional and three dimensional lattices, calculation of density of unit cell, packing in solids, voids, number of atoms per unit cell in a cubic unit cell, point defects, electrical and magnetic properties.

Unit-3: Solutions Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties – relative lowering of vapour pressure, elevation of Boiling Point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass.


Unit-5: Classification of Elements and Periodicity in Properties Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements - atomic radii, ionic radii. Ionization enthalpy, electron gain enthalpy, electron negativity, valence.

Unit-6: Chemical Bonding and Molecular Structure Valence electrons, ionic bond, covalent bond: bond parameters. Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, molecular orbital; theory of homo nuclear diatomic molecules (qualitative idea only), hydrogen bond.

Unit-7: States of Matter: Gases and Liquids: Three states of matter. Intermolecular interactions, type of bonding, melting and boiling points. Role of gas laws in elucidating the concept of the molecule, Boyle's law. Charles law, Gay Lussac's law, Avogadro's law. Ideal behaviour, empirical derivation of gas
equation, Avogadro's number. Ideal gas equation. Derivation from ideal behaviour, liquefaction of gases, critical temperature. Liquid State - Vapour pressure, viscosity and surface tension (qualitative idea only, no mathematical derivations).

Unit-8: Thermodynamics Concepts of System, types of systems, surroundings. Work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics - internal energy and enthalpy, heat capacity and specific heat, measurement of DU and DH, Hess's law of constant heat summation, enthalpy of: bond dissociation, combustion, formation, atomization, sublimation. Phase transformation, ionization, and solution. Introduction of entropy as a state function, free energy change for spontaneous and nonspontaneous processes, criteria for equilibrium.

Unit-9: Equilibrium Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle; ionic equilibrium - ionization of acids and bases, strong and weak electrolytes, degree of ionization, concept of pH. Hydrolysis of salts. Buffer solutions, solubility product, common ion effect.

Unit-10: Redox Reactions Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, applications of redox reactions.

Unit-11: Hydrogen Position of hydrogen in periodic table, occurrence, isotopes, preparation, properties and uses of hydrogen; hydrides - ionic, covalent and interstitial; physical and chemical properties of water, heavy water; hydrogen peroxide-preparation, properties and structure; hydrogen as a fuel.

Unit-12: s-Block Elements (Alkali and Alkaline earth metals) Group 1 and Group 2 elements General introduction, electronic configuration, occurrence, anomalous properties of the first element of each group, diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii), trends in chemical reactivity with oxygen, water, hydrogen and halogens; uses.

Unit-13: Preparation and properties of some important compounds Sodium carbonate, sodium chloride, sodium hydroxide and sodium hydrogen carbonate, biological importance of sodium and potassium. CaO, CaCO3 and industrial use of lime and limestone, biological importance of Mg and Ca.

Unit-14: Some p-Block Elements General Introduction to p-Block Elements: Group 13 elements General introduction, electronic configuration, occurrence. Variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group; Boron- physical and chemical properties, some important compounds: borax, boric acids, boron hydrides. Aluminum: uses, reactions with acids and alkalis.

Unit-15: Group 14 elements General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous behaviour of first element, Carbon - catenation, allotropic forms, physical and chemical properties; uses of some important compounds: oxides. Important compounds of silicon and a few uses: silicon tetrachloride, silicones, silicates and zeolites.

Unit-16: Organic Chemistry Some Basic Principles and Techniques General introduction, methods of qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds, Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions;
electrophiles and nucleophiles, types of organic reactions.


Unit-18: Electrochemistry Conductance in electrolytic solutions, specific and molar conductivity variations of conductivity with concentration, Kohlrausch's Law, electrolysis and laws of electrolysis (elementary idea), dry cell – electrolytic cells and Galvanic cells; lead accumulator, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, fuel cells; corrosion.

Unit-19: Chemical Kinetics Rate of a reaction (average and instantaneous), factors affecting rate of reaction; concentration, temperature, catalyst; order and molecularity of a reaction; rate law and specific rate constant, integrated rate equations and half life (only for zero and first order reactions); concept of collision theory (elementary idea, no mathematical treatment)

Unit-20: Surface Chemistry Adsorption – physisorption and chemisorption; factors affecting adsorption of gases on solids; catalysis: homogenous and heterogeneous, activity and selectivity: enzyme catalysis; colloidal state: distinction between true solutions, colloids and suspensions; lyophilic, lyophobic, multimolecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation; emulsion – types of emulsions.

Unit-21: General Principles and Processes of Isolation of Elements Principles and methods of extraction - concentration, oxidation, reduction electrolytic method and methods of refining; occurrence and principles of extraction of extraction of aluminium, copper, zinc and iron.

Unit-22: p-Block Elements Group 15 elements General introduction, electronic configuration, occurrence, oxidation states, trends in physical and chemical properties; nitrogen - preparation, properties and uses; compounds of nitrogen: preparation and properties of ammonia and nitric acid, oxides of nitrogen (structure only); Phosphorous-allotropic forms; compounds of phosphorous: preparation and properties of phosphine, halides (PCl3, PCl5) and oxoacids

Unit-23: Group 16 elements General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; dioxygen: preparation, properties and uses; simple oxides; Ozone. Sulphur - allotropic forms; compounds of sulphur: preparation, properties and uses of sulphur dioxide; sulphuric acid: industrial process of manufacture, properties and uses, oxoacids of sulphur (structures only).

Unit-24: Group 17 elements General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; compounds of halogens: preparation, properties and uses of
chlorine and hydrochloric acid, interhalogen compounds, oxoacids of halogens (structures only).

Unit-25: Group 18 elements General introduction, electronic configuration. Occurrence, trends in physical and chemical properties, uses.

Unit-26: d and f Block Elements General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour catalytic property, magnetic properties, interstitial compounds, alloy formation preparation and properties of K2Cr2O7 and KMnO4. Lanthanoids - electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction. Actinoids - Electronic configuration, oxidation states.

Unit-27: Coordination Compounds Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding; isomerism, importance of coordination compounds (in qualitative analysis, extraction of metals and biological systems).

Unit-28: Haloalkanes and Haloarenes Haloalkanes: Nomenclature, nature of C-X bond, physical and chemical properties, mechanism of substitution reactions. Haloarenes: Nature of C-X bond, substitution reactions (directive influence of halogen for monosubstituted compounds only). Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

Unit-29: Alcohols, Phenols and Ethers Alcohols-Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only); identification of primary, secondary and tertiary alcohols; mechanism of dehydration, uses of methanol and ethanol. Phenols- Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols. Ethers-Nomenclature, methods of preparation, physical and chemical properties, uses.


Unit-31: Organic compounds containing Nitrogen Amines- Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines. Cyanides and Isocyanides- will be mentioned at relevant places in context. Diazonium salts- Preparation, chemical reactions and importance in synthetic organic chemistry.

Unit-32: Biomolecules Carbohydrates-Classification (aldoses and ketoses), monosaccharides (glucose and fructose), oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); importance. Proteins - Elementary idea of ?-amino acids, peptide bond, polypeptides, proteins, structure of amines-primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Vitamins -Classification and functions. Nucleic Acids: DNA and RNA.

Unit-33: Polymers Classification - natural and synthetic, methods of polymerization (addition and condensation), copolymerization. Some
important polymers: natural and synthetic like polythene, nylon, polyesters, bakelite, rubber.

Unit-34: Environmental Chemistry

Environmental pollution - air, water and soil pollution, chemical reactions in atmosphere, smog, major atmospheric pollutants; acid rain, ozone and its reactions, effects of depletion of ozone layer, greenhouse effect and global warming - pollution due to industrial wastes; green chemistry as an alternative tool for reducing pollution, strategy for control of environmental pollution.

Unit-35: Chemistry in Everyday life


MATHEMATICS

Unit-1: Sets and Functions


2. Relations & Functions: Ordered pairs, Cartesian product of sets. Number of elements in the cartesian product of two finite sets. Cartesian product of the reals with itself (upto R x R x R). Definition of relation, Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions, composite functions, inverse of a function. Binary operations, Pictorial representation of a function, domain. Co-domain and range of a relation. Function as a special kind of relation from one set to another. Real valued function of the real variable, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum and greatest integer functions with their graphs. Sum, difference, product and quotients of functions.

3. Trigonometric Functions: Positive and negative angles. Measuring angles in radians & in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity sin2x + cos2x=1, for all x. Signs of trigonometric functions and sketch of their graphs. Expressing sin (x+y) and cos (x+y) in terms of sinx, siny, cosx & cosy. Deducing the common trigonometric identities Identities related to sin2x, cos2x, tan2x, sin3x, cos3x and tan3x. General solution of trigonometric equations Inverse Trigonometric Functions: Definition, range, domain, principal value branches. Graphs of inverse trigonometric functions. Elementary properties of inverse trigonometric functions. Properties of triangles, including centroid, incentre, circum-centre and orthocentre, Solution of triangles. Heights and Distances.

Unit-2: Algebra

1. Principle of Mathematical Induction: Processes of the proof by induction, motivating the application of the method by looking at natural numbers as the least inductive subset of real numbers. The principle of mathematical induction and simple applications.

2. Complex Numbers and Quadratic Equations: Need for complex numbers, especially \( \sqrt{-1} \), to be motivated by inability to solve every quadratic equation. Brief description of algebraic properties of complex numbers. Argand plane and polar representation of complex numbers. Statement of Fundamental Theorem of Algebra, solution of quadratic equations in the complex number system.

3. Linear Inequalities: Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representation on the number line. Graphical solution of linear inequalities in two variables. Solution of system
of linear inequalities in two variables graphically.

4. Permutations & Combinations: Fundamental principle of counting. Factorial n. (n!). Permutations and combinations, derivation of formulae and their connections, simple applications.


7. Matrices: Concept, notation, order, equality, types of matrices, zero matrix, transpose of a matrix, symmetric and skew symmetric matrices. Addition, multiplication and scalar multiplication of matrices, simple properties of addition, multiplication and scalar multiplication. Non-commutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). Concept of elementary row and column operations. Invertible matrices and proof of the uniqueness of inverse, if it exists.

8. Determinants: Determinant of a square matrix (up to 3 x 3 matrices), properties of determinants, minors, cofactors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.

Unit-3: Coordinate Geometry

1. Straight Lines: Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axes, point-slope form, slope-intercept form, two-point form, intercepts form and normal form. General equation of a line. Distance of a point from a line.

2. Conic Sections: Sections of a cone: circle, ellipse, parabola, hyperbola, a point, a straight line and pair of intersecting lines as a degenerated case of a conic section. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.

3. Introduction to Three-dimensional Geometry: Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points and section formula.

Unit-4: Calculus

Calculus 1. Limits and Derivatives: Derivative introduced as rate of change both as that of distance function and geometrically, intuitive idea of limit. Definition of derivative, relate it to slope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.


3. Applications of Derivatives: Applications of derivatives: rate of change,
increasing/decreasing functions, tangents & normals, approximation, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems.

4. Integrals: Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts; Definite integrals as a limit of a sum, Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals.

5. Applications of the Integrals: Applications in finding the area under simple curves, especially lines, areas of circles/parabolas/ellipses (in standard form only), area between the two above said curves. 6. Differential Equations: Definition, order and degree, general and particular solutions of a differential equation. Formation of differential equation whose general solution is given. Solution of differential equations by method of separation of variables, homogeneous differential equations of first order and first degree. Solutions of linear differential equation of the type: \( dx + p\, dy = q \), where \( p \) and \( q \) are functions of \( x \).

Unit-5: Vectors and Three-Dimensional Geometry


2. Three-dimensional Geometry: Direction cosines/ratios of a line joining two points. Cartesian and vector equation of a line, coplanar and skew lines, shortest distance between two lines. Cartesian and vector equation of a plane. Angle between (i) two lines, (ii) two planes, (iii) a line and a plane. Distance of a point from a plane. Unit-6: Linear Programming 

Linear Programming: Introduction, definition of related terminology such as constraints, objective function, optimization, different types of linear programming (L.P) problems, mathematical formulation of L.P. problems, graphical method of solution for problems in two variables, feasible and infeasible regions, feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

Unit-7: Mathematical Reasoning 

Mathematical Reasoning: Mathematically acceptable statements. Connecting words/phrases - consolidating the understanding of “if and only if (necessary and sufficient) condition”, “implies”, “and/or”, “implied by”, “and”, “or”, “there exists” and their use through variety of examples related to real life and Mathematics. Validating the statements involving the connecting words, difference between contradiction, converse and contrapositive.

Unit-8: Statistics & Probability


2. Probability: Random experiments: outcomes, sample spaces (set representation). Events: occurrence of events, 'not', 'and' and 'or' events, exhaustive events, mutually exclusive events Axiomatic (set theoretic) probability, Probability of an event, probability of 'not', 'and' & 'or' events. Multiplication theorem on probability. Conditional probability, independent events, total probability, Bayes’ theorem, Random variable and its probability distribution, mean and variance of stochastic variable. Repeated independent (Bernoulli) trials and Binomial distribution.
Unit-9: Statics Introduction, basic concepts and basic laws of mechanics, force, resultant of forces acting at a point, parallelogram law of forces, resolved parts of a force, Equilibrium of a particle under three concurrent forces. Triangle law of forces and its converse, Lami’s theorem and its converse, Two Parallel forces, like and unlike parallel forces, couple and its moment.

Unit-10: Dynamics Speed and velocity, average speed, instantaneous speed, acceleration and retardation, resultant of two velocities. Motion of a particle along a line, moving with constant acceleration. Motion under gravity. Laws of motion, Projectile motion. A variables, feasible and infeasible regions, feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

BIOLOGY

Unit 1 Diversity in Living World : What is living?; Biodiversity; Need for classification; Three domain of life; Taxonomy & Systematics; Concept of species and taxonomical hierarchy; Binomial nomenclature; Tools for study of Taxonomy– Museums, Zoos, Herbaria, Botanical gardens. Five kingdom classification; Salient features and classification of Monera; Protista and Fungi into major groups; Lichens; Viruses and Viroids. Salient features and classification of plants into major groups- Algae, Bryophytes, Pteridophytes, Gymnosperm and Angiosperm (three to five salient and distinguishing features and at least two examples of each category); Angiosperms-classification up to class, characteristic features and examples. Salient features and classification of animals- non chordate up to phyla level and chordate up to classes level (three to five salient features and at least two examples).

Unit 2 Structural Organisation in Animals and Plants : Morphology and modifications; Tissues; Anatomy and functions of different parts of flowering plants: Root, stem, leaf, inflorescence- cymose and racemose, flower, fruit and seed (To be dealt along with the relevant practical of the Practical Syllabus). Animal tissues; Morphology, anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of an insect (cockroach). (Brief account only)

Unit 3 Cell Structure and Function : Cell theory and cell as the basic unit of life; Structure of prokaryotic and eukaryotic cell; Plant cell and animal cell; Cell envelope, cell membrane, cell wall; Cell organelles– structure and function; Endomembrane system- endoplasmic reticulum, Golgi bodies, lysosomes, vacuoles; mitochondria, ribosomes, plastids, microbodies; Cytoskeleton, cilia, flagella, centrospheres (ultra structure and function); Nucleus–nuclear membrane, chromatin, nucleolus. Chemical constituents of living cells: Biomolecules–structure and function of proteins, carbohydrates, lipid, nucleic acids; Enzymes–types, properties, enzyme action. Cell division : Cell cycle, mitosis, meiosis and their significance.

Unit 4 Plant Physiology : Transport in plants: Movement of water, gases and nutrients; Cell to cell transport– Diffusion, facilitated diffusion, active transport; Plant – water relations–Imbibition, water potential, osmosis, plasmolysis; Long distance transport of water–Absorption, apoplast, symplast, transpiration pull, root pressure and guttation; Transpiration– Opening and closing of stomata; Uptake and translocation of mineral nutrients–Transport of food, phloem transport, Mass flow hypothesis; Diffusion of gases (brief mention). Mineral nutrition: Essential minerals, macro and micronutrients and their role; Deficiency symptoms; Mineral toxicity; Elementary idea of Hydroponics as a method to study mineral nutrition; Nitrogen metabolism – Nitrogen cycle, biological nitrogen fixation. 4 Photosynthesis: Photosynthesis as a means of Autotrophic nutrition; Where does photosynthesis take place; How many pigments are involved in Photosynthesis
(Elementary idea); Photochemical and biosynthetic phases of photosynthesis; Cyclic and non cyclic photophosphorylation; Chemiosmotic hypothesis; Photorespiration; C3 and C4 pathways; Factors affecting photosynthesis. Respiration: Exchange of gases; Cellular respiration – glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); Energy relations – Number of ATP molecules generated; Amphibolic pathways; Respiratory quotient. Plant growth and development: Seed germination; Phases of plant growth and plant growth rate; Conditions of growth; Differentiation, dedifferentiation and redifferentiation; Sequence of developmental process in a plant cell; Growth regulators–auxin, gibberellin, cytokinin, ethylene, ABA; Seed dormancy; Vernalisation; Photoperiodism.

Unit 5 Human Physiology: Digestion and absorption: Alimentary canal and digestive glands; Role of digestive enzymes and gastrointestinal hormones; Peristalsis, digestion, absorption and assimilation of proteins, carbohydrates and fats; Calorific value of proteins, carbohydrates and fats (for box item not to be evaluated); Egestion; Nutritional and digestive disorders– PEM, indigestion, constipation, vomiting, jaundice, diarrhea. Breathing and Respiration: Respiratory organs in animals (recall only); Respiratory system in humans; Mechanism of breathing and its regulation in humans– Exchange of gases, transport of gases and regulation of respiration, Respiratory volumes; Disorders related to respiration-Asthma, Emphysema, Occupational respiratory disorders. Body fluids and circulation: Composition of blood, blood groups, coagulation of blood; Composition of lymph and its function; Human circulatory system– Structure of human heart and blood vessels; Cardiac cycle, cardiac output, ECG; Double circulation; Regulation of cardiac activity; Disorders of circulatory system–Hypertension, Coronary artery disease, Angina pectoris, Heart failure. Excretory products and their elimination: Modes of excretion – Ammonotelism, ureotelism, uricotelism; Human excretory system–structure and function; Urine formation, Osmoregulation; Regulation of kidney function– Renin–angiotensin, Atrial Natriuretic Factor, ADH and Diabetes insipidus; Role of other organs in excretion; Disorders-Uraemia, Renal failure, Renal calculi, Nephritis; Dialysis and artificial kidney. Locomotion and Movement: Types of movement– ciliary, flagellar, muscular; Skeletal muscle – contractile proteins and muscle contraction; Skeletal system and its functions (To be dealt with the relevant practical of Practical syllabus); Joints; Disorders of muscular and skeletal system- Myasthenia gravis, Tetany, Muscular dystrophy, Arthritis, Osteoporosis, Gout. Neural control and coordination: Neuron and nerves; Nervous system in humans– central nervous system, peripheral nervous system and visceral nervous system; Generation and conduction of nerve impulse; Reflex action; Sensory perception; Sense organs; Elementary structure and function of eye and ear. Chemical coordination and regulation: Endocrine glands and hormones; Human endocrine system-Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action (Elementary Idea); Role of hormones as messengers and regulators, Hypo-and hyperactivity and related disorders (Common disorders e.g. Dwarfism, Acromegaly, Cretinism, goiter, exophthalmic goiter, diabetes, Addison’s disease). Imp: Diseases related to all the human physiology systems to be taught in brief.

Unit 6 Reproduction: Reproduction in organisms: Reproduction, a characteristic feature of all organisms for continuation of species; Modes of reproduction – Asexual and sexual; Asexual reproduction; Modes- Binary fission, sporulation, budding, gemmule, fragmentation; vegetative propagation in plants. Sexual reproduction in flowering plants:
Flower structure; Development of male and female gametophytes; Pollination–types, agencies and examples; Outbreedings devices; Pollen-Pistil interaction; Double fertilization; Post fertilization events– Development of endosperm and embryo, Development of seed and formation of fruit; Special modes–apomixis, parthenocarpy, polyembryony; Significance of seed and fruit formation. Human Reproduction: Male and female reproductive systems; Microscopic anatomy of testis and ovary; Gametogenesis–spermatogenesis & oogenesis; Menstrual cycle; Fertilisation, embryo development upto blastocyst formation, implantation; Pregnancy and placenta formation (Elementary idea); Parturition (Elementary idea); Lactation (Elementary idea). Reproductive health: Need for reproductive health and prevention of sexually transmitted diseases (STD); Birth control- Need and Methods, Contraception and Medical Termination of Pregnancy (MTP); Amniocentesis; Infertility and assisted reproductive technologies – IVF, ZIFT, GIFT (Elementary idea for general awareness).

Unit 8 Biology and Human Welfare : Health and Disease: Pathogens; parasites causing human diseases (Malaria, Filariasis, Ascariasis, Typhoid, Pneumonia, common cold, amoebiasis, ring worm); Basic concepts of immunology–vaccines; Cancer, HIV and AIDS; Adolescence, drug and alcohol abuse. Improvement in food production: Plant breeding, tissue culture, single cell protein, Biofortification; Apiculture and Animal husbandry. Microbes in human welfare: In household food processing, industrial production, sewage treatment, energy generation and as biocontrol agents and biofertilizers.

Unit 9 Biotechnology and Its Applications : Principles and process of Biotechnology: Genetic engineering (Recombinant DNA technology). Application of Biotechnology in health and agriculture: Human insulin and vaccine production, gene therapy; Genetically modified organisms- Bt crops; Transgenic Animals; Biosafety issues– Biopiracy and patents.

Unit 10 Ecology and environment : Organisms and environment: Habitat and niche; Population and ecological adaptations; Population interactions–mutualism, competition, predation, parasitism; Population attributes–growth, birth rate and death rate, age distribution. Ecosystems: Patterns, components; productivity and decomposition; Energy flow; Pyramids of number, biomass, energy; Nutrient cycling (carbon and phosphorous); Ecological succession;
Ecological Services—Carbon fixation, pollination, oxygen release. Biodiversity and its conservation: Concept of Biodiversity; Patterns of Biodiversity; Importance of Biodiversity; Loss of Biodiversity; Biodiversity conservation; Hotspots, endangered organisms, extinction, Red Data Book, biosphere reserves, National parks and sanctuaries. Environmental issues: Air pollution and its control; Water pollution and its control; Agrochemicals and their effects; Solid waste management; Radioactive waste management; Greenhouse effect and global warming; Ozone depletion; Deforestation; Any three case studies as success stories addressing environmental issues.

**RECOMMENDED BOOKS (for the entrance examination)**

Standard Textbooks of 12th Standard
ANNEXURE-II
SCHEDULED CASTE/TRIBE CERTIFICATE
FORMAT CASTE CERTIFICATE

1. This is to certify that Shri/Smt/Kumari................................................................. Date of Birth 
.................................................................Son/Daughter of .................................................................of village/town 
.................................................................in District/Division of State/Union Territory ..........................belongs to the 
.................................................................Caste/Tribe which is recognized as SC/ST under The Constitution (Scheduled 
Constitution (Scheduled Tribes) Union Territories Order. 1951, as amended by the SCs And STs 
List (Modification) Order. 1950. The Bombay Reorganisation Act, 1960; The Punjab 
Reorganisation Act, 1966; The State Of HP Act, 1970; The North Eastern Areas (Reorganisation) 
Act, 1971 and the SCs And STs Order (Amendment) Act, 1976. The Constitution (Jammu & 
amended by SCs and STs Order (Amendment) Act, 1976. The Constitution (Dadra And Nagar 
Constitution (Pondicherry) SCs Order, 1964. The Constitution Scheduled Tribes (Uttar Pradesh) 

2. Shri/Smt/Kumari........................................................................and/or his/her family ordinarily reside(s) 
in Village/ Town........................................ of District........................................of State/Union Territory 
of........................................

3. Applicable in the case of SC/ST persons who have migrated from State/Union Territory 
Administration to another State/Union Territory. The certificate is issued on the basis of the 
SC/ST Certificate to Shri/Smt. ............... ..................... father/mother of 
Shri/Smt/Kumari................................................................. of Village/Town................................................................. in District/ 
Division................................................................. of the State/Union Territory ........................................... who 
belongs to the ................................................................. Scheduled Caste/ Scheduled Tribe in the State/Union 
Territory issued by the ................................................................. (Name of the prescribed authority) vide their No 
.......................... Dated.................................

Signature

Designation (With Seal of Office)

Place........................................ (State/Union Territory)

Date.................................

*Please delete the words which are not applicable. Please quote specific presidential order.
NOTE: The term ordinarily reside(s) used here has the same meaning as in section 20 of the representation of the people’s act, 1950.

List of Authorities Empowered to Issue SC/ST Certificates

1. District Magistrate/Additional District Magistrate/Deputy Commissioner/Additional Deputy Commissioner/Deputy Collector/1st Class Stipendiary Magistrate/City Magistrate/Sub-divisional Magistrate/Taluka Magistrate/Executive Magistrate/Extra Assistant Commissioner not below the rank of 1st class Stipendiary Magistrate.

2. Chief Presidency Magistrate/Additional Chief Presidency Magistrate/Presidency Magistrate

3. Revenue Officers, not below the rank of Tehsildar

4. Sub-divisional Officer of the area where the candidate and/or his family normally resides

5. Administrator/Secretary to Administrator/Development Officer (Lakshadweep Islands)
ANNEXURE-III
FORM OF CERTIFICATE TO BE PRODUCED BY OTHER BACKWARD CLASS (OBC APPLYING FOR ADMISSION TO CENTRAL EDUCATIONAL INSTITUTIONS (CEIs), UNDER THE GOVERNMENT OF INDIA

This is to certify that Shri/Smt./Kum. ________________________ Son/Daughter of Shri/Smt. _________________________ of Village/Town ________________ District/Division _______________ in the ___________________________ State belongs to the ___________________________ Community which is recognized as a backward class under:

(i) i. Resolution No. 12011/68/93-BCC(C) dated 10/09/93 published in the Gazette of India Extraordinary Part I Section I No186 dated 13/09/93.

ii. Resolution No. 12011/9/94-BCC dated 19/10/94 published in the Gazette of India Extraordinary Part I Section I No. 163 Dated 20/10/94.

iii. Resolution No. 12011/7/95-BCC dated 24/05/95 published in the Gazette of India Extraordinary Part I Section I No. 88 Dated 25/05/95.


vi. Resolution No. 12011/13/97-BCC dated 03/12/97.


xvi. Published in the Gazette of India Extraordinary Part I Section I No. 210 dated 16/01/2006.


Shri/Smt./Kum. _________________________and/or his family ordinarily reside(s) in the
District/Division of __________________________ State. This is also to certify that he/she does not belong to the persons/sections (Creamy Layer) mentioned in Column 3 of the Schedule to the Government of India, Department of Personnel & Training O.M. No. 36012/22/93-Estt.(SCT) Dated 08/09/93 which is modified vide OM No. 36033/3/2004 Estt.(Res.) dated 09/03/2004

Dated: ________________________

DISTRICT MAGISTRATE/
DEPUTY COMMISSIONER, ETC.

SEAL

NOTE:

(a) The term _Ordinarily_ used here will have the same meaning as in Section 20 of the Representation of the People Act, 1950.

(b) The authorities competent to issue Caste Certificates are indicated below:

(i) District Magistrate / Additional Magistrate / Collector / Deputy Commissioner / Additional Deputy Commissioner / Deputy Collector / I Class Stipendiary Magistrate / Sub-Divisional Magistrate / Taluka Magistrate / Executive Magistrate / Extra Assistant Commissioner (Not Below The Rank Of I Class Stipendiary Magistrate).

(ii) Chief Presidency Magistrate / Additional Chief Presidency Magistrate / Presidency Magistrate.

(iii) Revenue Officer not below the rank of Tehsildar’ and

(iv) Sub-Divisional Officer of the area where the candidate and / or his family resides.
DECLARATION /UNDERTAKING - FOR OBC CANDIDATES ONLY

I, ___________________________________ Son/Daughter of Shri __________________________ resident of Village/Town/City ____________________ District ___________________ State hereby declare that I belong to the _______________________ Community which is recognized as a Backward Class by the Government of India for the purpose of reservation in services as per orders contained in Department of Personnel and Training Office Memorandum No.36012/22/93- Estt. (SCT), dated 8/9/1993. It is also declared that I do not belong to persons/Sections (Creamy Layer) mentioned in Column 3 of The Schedule to the above referred Office Memorandum, Dated 8/9/1993, which is Modified vide Department of Personnel and Training Office Memorandum No.36033/3/2004 Estt. (Res.) Dated 9/3/2004.

Place: .................................. Signature of the Candidate
Date: ...................................

Declaration/undertaking not signed by candidate will be rejected.
False declaration will render the applicant liable for termination of enrollment at any time.

Creamy Layer Definition

OBC Creamy layer is defined comprehensively at http://ncbc.nic.in/html/creamylayer.html all candidates for the OBC reserved seats should make sure that they do not satisfy any of the creamy layer criteria as listed in the website. Some general exclusion for quick reference (no way comprehensive) is as follows.

1. Any of the parents holds a constitutional position in Govt. of India
2. Any one of the parents is a class I officer.
3. Both the parents are class II officers.
4. Any one of the parents is employed in an equivalent rank to class I officer or both parents equivalent to class II officer in a public sector, insurance companies, banks, universities or in other organizations
5. Land holdings on irrigated land is 85% or more of the statutory ceiling area.
6. Parents income is more than ₹ 4.5 lakhs per year.
ANNEXURE-IV
PROFORMA FOR AUTHORITY LETTER AND UNDERTAKING FOR AUTHORISED REPRESENTATIVE TO PARTICIPATE IN COUNSELING ON BEHALF OF CANDIDATE

AUTHORITY LETTER

I................................................................................Son/Daughter of Shri………………………… bearing Roll No............................... do hereby authorize Shri/Mrs/Miss. .............................. Son/Wife/Daughter of Shri..................................................................... R/o.............................. to represent me on................................................. (date) before the Committee for allotment of a seat in University/Institute.

The signature and photograph of above named person are attested below:

Attested by the Principal Name ___________________________
of School/College/Head ___________________________
of Institution Last ___________________________
attended or by a Gazetted Roll. No. ___________________________
Officer (With full of ___________________________
address of Attesting ___________________________
Authority)

Photograph of representative to be attested by Gazetted Officer. (Signature of the representative to be authorized representative)
(Signature of the authorized representative)
(Attested by the Candidate)

I .............................................................................Son/Daughter of Shri.....................................................................aged Years...................................... bearing Roll No. ........................................................... placed at Merit Rank ..................................in DIPLOMA in DT / AHD Entrance Examination 2016 for Admission at NDRI, Bengaluru do hereby solemnly affirm and undertake that the decision of my authorized representative Shri/Mrs./Miss .............................................................................................................. Son/Daughter/Wife of Shri .............................................................................................................. regarding the allotment of seat in the University on the date of personal appearance .............................................................................................................. shall be binding on me and I shall not have any claim whatsoever, other than the decision taken by my authorized representative on my behalf.

..............................................................................................................
(Signature of the Candidate)

Name: ......................................................
Roll No: ......................................................
Merit Rank: ......................................................

NOTE: Any authorized representative cannot represent more than two candidates.
ANTI-RAGGING MEASURES: SUBMISSION OF AFFIDAVIT BY THE STUDENTS/PARENT/GUARDIAN

Dear Parents/Guardian/Student,

You are fully aware of the orders of the Government and of Hon'ble Supreme Court on the Anti-Ragging measures. As per the latest policy all students and parent/guardians are required to submit an affidavit before a student is allowed registration in the University. The Format of Affidavits is given at Annexure- V and Annexure-VI and to be submitted on a Non-Judicial paper of ₹ 10/- duly attested by the oath commissioner.

All parents/guardian/students may get them duly attested by the Oath commissioner and bring it on the day of student's registration. Kindly note that there are two Affidavits as Annexure-V & VI. The Annexure-V is to be signed by the student and Annexure-VI shall be signed by the parent / guardian.

In case a student does not submit the same he/she shall not be allowed to proceed with the registration.

It is further, requested that this information be passed amongst friends.

Best wishes,
Sd/-
Director

ANNEXURE-V
AFFIDAVIT BY THE STUDENT

1) I, ___________________________(full name of student with admission/registration/ enrolment number) S/o D/o Mr. /Mrs. /Ms. ________________________________ , having been admitted to (name of the institution) , have seen the UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009, as placed on the NDRI website; www.ndri.res.in (hereinafter called the —Regulations!) carefully read and fully understood the provisions contained in the said Regulations.

2) I have, in particular, perused 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 of 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 liable 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 no part of the affidavit is false and nothing has been concealed or misstated therein. Verified at .................. (place)..................on this the........... (day......) of ....... (month), .....................................(year).

__________________
Signature of Deponent

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

OATH COMMISIONER
ANNEXURE-VI

AFFIDAVIT BY PARENT/GUARDIAN

1) I, Mr./Mrs./Ms. ________________________________________________ (full name of parent/guardian) father/mother/guardian of, (full name of student with admission/registration/enrolment number), having been admitted to the ICAR-National Dairy Research Institute, have been informed about the UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009, (hereinafter called the Regulations), carefully read and fully understood the provisions contained in the said Regulations as placed on NDRI website (www.ndri.res.in).

2) I have, in particular, perused 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 my ward 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 behavior 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 of ragging, my ward is 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, the admission of my ward is liable to be cancelled.

Declared this __________ day of __________ month of __________ year.

________________________
Signature of Deponent

Name:

Address:
Telephone/Mobile No:
VERIFICATION

Verified that the contents of this affidavit are true to the best of my knowledge and no part of the affidavit is false and nothing has been concealed or misstated therein.

Verified at _______________(place) on this the ___________ (day) of _______ (month),_______(year).

________________
Signature of Deponent

Solemnly affirmed and signed in my presence on this the ______(day) of ________ (month),______(year) after reading the contents of this affidavit.

OATH COMMISSIONER
### GENERAL ADMINISTRATION
1. A.K. Srivastava, Ph.D
2. R.K. Malik, Ph.D
3. R. R. B. Singh, Ph.D
4. Susanta Saha, MBA
5. S.K. Kanawjia, Ph.D
6. Sumit Arora, Ph.D

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
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<tbody>
<tr>
<td>Director and Vice Chancellor</td>
<td>A.K. Srivastava, Ph.D</td>
</tr>
<tr>
<td>Joint Director (Research)</td>
<td>R.K. Malik, Ph.D</td>
</tr>
<tr>
<td>Joint Director (Academics)</td>
<td>R. R. B. Singh, Ph.D</td>
</tr>
<tr>
<td>Joint Director (Administration) &amp; Registrar</td>
<td>Susanta Saha, MBA</td>
</tr>
<tr>
<td>Academic Coordinator</td>
<td>S.K. Kanawjia, Ph.D</td>
</tr>
<tr>
<td>Controller of Examinations</td>
<td>Sumit Arora, Ph.D</td>
</tr>
</tbody>
</table>

### SRS of NDRI, BENGALURU
1. K. P. Ramesha, Ph.D
2. Menon Rekha Ravindra, Ph.D
4. V. R. V. Surendranath Naik, M.B.B.S, M.D.
5. S. Shashikala
6. M.C.A. Devi, Ph.D,
7. Mukund A. Kataktalware, Ph.D
8. S. Jeyakumar, Ph.D
9. S. Subash, Ph.D

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>K. P. Ramesha, Ph.D</td>
</tr>
<tr>
<td>Incharge, Education and Training Section</td>
<td>Menon Rekha Ravindra, Ph.D</td>
</tr>
<tr>
<td>Technical Officer, Education &amp; Training</td>
<td>T.R. Thivija Kumari, M.A., B.Ed</td>
</tr>
<tr>
<td>Sr. Medical Officer</td>
<td>V. R. V. Surendranath Naik, M.B.B.S, M.D.</td>
</tr>
<tr>
<td>Asst. Admn. Officer</td>
<td>S. Shashikala</td>
</tr>
<tr>
<td>Chief Hostel Warden</td>
<td>M.C.A. Devi, Ph.D</td>
</tr>
<tr>
<td>Hostel Warden &amp; In-charge Guest House</td>
<td>Mukund A. Kataktalware, Ph.D</td>
</tr>
<tr>
<td>Associate Warden</td>
<td>S. Jeyakumar, Ph.D</td>
</tr>
<tr>
<td>Associate Warden</td>
<td>S. Subash, Ph.D</td>
</tr>
</tbody>
</table>

### ERS of NDRI, KALYANI
1. T. K. Datta, Ph.D
2. Anupam Chatterjee, Ph.D
3. Mohan Mondal, Ph.D
4. M. Karunakaran, Ph.D
5. S. K. Das, Ph.D
6. A. Ghosh, Ph.D
7. Saroj Rai, Ph.D

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>T. K. Datta, Ph.D</td>
</tr>
<tr>
<td>Incharge Academic Cell</td>
<td>Anupam Chatterjee, Ph.D</td>
</tr>
<tr>
<td>Member Academic Cell</td>
<td>Mohan Mondal, Ph.D</td>
</tr>
<tr>
<td>Member Academic Cell</td>
<td>M. Karunakaran, Ph.D</td>
</tr>
<tr>
<td>Chief Hostel Warden</td>
<td>S. K. Das, Ph.D</td>
</tr>
<tr>
<td>Boys’ Hostel Warden</td>
<td>A. Ghosh, Ph.D</td>
</tr>
<tr>
<td>Girls’ Hostel Warden</td>
<td>Saroj Rai, Ph.D</td>
</tr>
</tbody>
</table>

### SRS of NDRI FACULTY, BENGALURU
K. P. Ramesha, Ph.D
B. Surendra Nath, Ph.D
B. C. Ghosh, Ph.D
B. V. Balasubramanyam, Ph.D
P. K. Dixit, Ph.D
Bandla Srinivas, Ph.D
K. Jayaraj Rao, Ph.D
D. N. Das, Ph.D
M. C. A. Devi, Ph.D
S. Jeyakumar, Ph.D
P. Heartwin Amaladhas, Ph.D
M. Sivaram, Ph.D
Menon Rekha Ravindra, Ph.D
M. A. Kataktalware, Ph.D

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>K. P. Ramesha, Ph.D</td>
</tr>
<tr>
<td>Principal Scientist</td>
<td>B. Surendra Nath, Ph.D</td>
</tr>
<tr>
<td>Principal Scientist</td>
<td>B. C. Ghosh, Ph.D</td>
</tr>
<tr>
<td>Principal Scientist</td>
<td>B. V. Balasubramanyam, Ph.D</td>
</tr>
<tr>
<td>Principal Scientist</td>
<td>P. K. Dixit, Ph.D</td>
</tr>
<tr>
<td>Principal Scientist</td>
<td>Bandla Srinivas, Ph.D</td>
</tr>
<tr>
<td>Principal Scientist</td>
<td>K. Jayaraj Rao, Ph.D</td>
</tr>
<tr>
<td>Principal Scientist</td>
<td>D. N. Das, Ph.D</td>
</tr>
<tr>
<td>Senior Scientist</td>
<td>M. C. A. Devi, Ph.D</td>
</tr>
<tr>
<td>Senior Scientist</td>
<td>S. Jeyakumar, Ph.D</td>
</tr>
<tr>
<td>Senior Scientist</td>
<td>P. Heartwin Amaladhas, Ph.D</td>
</tr>
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<td>Senior Scientist</td>
<td>M. Sivaram, Ph.D</td>
</tr>
<tr>
<td>Senior Scientist</td>
<td>Menon Rekha Ravindra, Ph.D</td>
</tr>
<tr>
<td>Senior Scientist</td>
<td>M. A. Kataktalware, Ph.D</td>
</tr>
</tbody>
</table>
ERS OF NDRI FACULTY, KALYANI

T. K. Datta, Ph.D
M. K. Ghosh, Ph.D
S. K. Das, Ph.D
Ashok Santra, Ph.D
Champak Bhakat, Ph.D
Ajoy Mandal, Ph.D
Dilip Kumar Mandal, Ph.D
Anupam Chatterjee, Ph.D
Mohan Mondal, Ph.D
M. Karunakaran, Ph.D
Saroj Rai, Ph.D
Asif Mohammad, Ph.D
Rajlaxmi Behera, M.V.Sc
Alokesh Goswami, M.Sc
Amitava Ghosh, M.V.Sc
Somnath Dutta, M.V.Sc
Prabir Saha, M.Sc

F. Magdaline E. Emerald, ME
Manjunatha. M., Ph.D
S. Varalakshmi, M.V.Sc
S. Subash, Ph.D
A. Manimaran, Ph.D
H. C. Devaraj
M. H. Satish Kumar
Laxmana Naik, Ph D
Monika Sharma, Ph D
P. Muruganantham, M.Lib
V. R. V. Naik, MBBS, MD
B. K. Rajashekaraih, B.Sc (Ag.)
Veeraju. B.E
K. L. Sampath, B.Sc, LLB
Siddaramanna, Ph.D
T. R. Thivija Kumari, M.A., B.Ed
P. G. Satish, B.V.Sc.
Sri. R. Keshavamurthi, B.Sc (Ag.)
Sri. Gurunath Gouda Patil, B.Sc (Ag.)
K. Geetha Kumari, M.A.
Sri. K. P. Lakshminarayanappa, Dip.
Sri. Meganathan, Dip
Smt. Janakshi, MCA
Dr. K. Ningaraju, Ph.D
Nagarajaiah M. S.
Sri. Sreekanta, Di
Smt. Vimala, B.Sc

Smt. Janakshi, MCA

Head
Principal Scientist
Principal Scientist
Principal Scientist
Principal Scientist
Principal Scientist
Principal Scientist
Senior Scientist
Senior Scientist
Scientist
Scientist
Chief Tech. Officer
Chief Tech. Officer
Chief Tech. Officer
Asst. Chief Tech. Officer

Scientist (SS)
Scientist
Scientist
Scientist
Scientist
Scientist
Scientist
Scientist
Chief Technical Officer
Chief Technical Officer
Asst. Chief Tech. Officer
Asst. Chief Tech. Officer
Senior Tech. Officer
Senior Tech. Officer
Senior Tech. Officer
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Tech. Officer
Tech. Officer

Glimpses of

SRS, ICAR-NDRI, Bengaluru
Glimpses of

SRS, ICAR-NDRI, Bengaluru
Glimpses of
ERS, ICAR-NDRI, Kalyani
APPLICATION FORM

Note: Please read Information Bulletin carefully before filling the Application Form and use correct code.

Application should be filled in BLOCK LETTERS. Leave a box between two words.

FOR OFFICE USE ONLY

Programme: Diploma in DT / AHD
Examination Centre: ___________
Roll No: ________________
Dealing Asst. I/c, Education & Training Head

Applying for DDT DAHD (please Tick mark)

<table>
<thead>
<tr>
<th>Applying for DDT</th>
<th>DAHD</th>
<th>(please Tick mark)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Name of the Applicant
   (As per the last examination passed)

2. Father’s Name

3. Mother’s Name

4. Corresponding Address

5. Permanent Address

6. Nearest Post office

7. Date of Birth
   DD   MM   YR

8. Nationality

9. State of Domicile

10. Caste Code
    (SC-1, ST-2, OBC-3, Gen./Others-4)

11. Sex (Male 1, Female 2)

12. Are you physically handicapped?
    Yes [ ] No [ ]

If yes,
a. Nature and Degree of physical disability
   (i) Nature: [ ]
   (ii) Degree: [ ]

   (*Please attach a copy of Medical Certificate)

b. Whether you are fit to carry out the studies & In-plant Training
   Yes/No

13. Choice of Examination Centre
    Karnal-1, Bengaluru-2, Kalyani-3

14. Give particulars of the 12th class examinations passed
    (Note: Attach attested copies of all certificates and marks sheets)

   a. Name of the Examination:
   b. Name of the Board:
   c. Subject wise marks & Percentage:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Max Marks</th>
<th>Marks obtained</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>II Language</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biology / Agriculture</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Physics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. Are you appearing in the final year examination in 2016?
    Yes/No
    (For admission into the Diploma Programme, all requirements for the qualifying examination must
    be completed on or before 31.07.2016).
    If yes, please give the details

   a) Name of the Examination: ____________________________________________________
   b) Likely date of completion: _________________________________________________
   c) Name of Board: ____________________________________________________________

16. Are you In-service candidate being in regular employment?
    Yes/No
    (Must have two years of service as on 31.07.2016 for consideration in-service category)
    If yes, attach Form ‘A’ and give the following information

   a) Whether employed in Central govt./State Govt./Dairy/ Food Industry
   b) Employment record details in the present organisation

<table>
<thead>
<tr>
<th>Name of the Organisation</th>
<th>Regular Post Held</th>
<th>Date of Joining</th>
<th>Total Service</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

c) Nature of Duties _______________________________________________________________

d) Are you sponsored by your Employer? Yes/No

17. If the Application Form is downloaded from the website, please attach a crossed Demand Draft for
    ₹ 1200/- (for General, OBC) & ₹ 600/- (for SC/ST/PH) drawn in favour of ICAR Unit, NDRI, Bengaluru and
    payable at Bengaluru, along with the Application Form and give the details of the D.D.

   D.D. No.______________ Date______________ Drawn on______________

18. Declaration by the candidate:
    I hereby solemnly and sincerely affirm that the statement made/information furnished by me with Application
    Form is true and correct.

    Date:__________________ Signature of the Candidate
OFFICE COPY
(For office use only)

Application No.__________________ Roll No. ___________

ADMIT CARD
(To be filled in by the candidate and sent along with application form)

1. Name: ___________________________
2. Programme: Diploma in DT / Diploma in AHD
3. Date of Examination: 
4. Examination Centre (Code): ________________
5. Signature of Applicant: ______________________

I/c, Education & Training, ICAR-NDRI, SRS, Bengaluru

INSTRUCTIONS
1. You must report at the examination centre at least 30 minutes before the commencement of the examination.
2. Show your admit card to the Supervisory Staff; otherwise you will not be allowed to appear in the Examination.
3. In case you have brought Form-A or B personally, hand it over to the supervisory staff.
4. Use of unfair means will disqualify you from the examination.

CANDIDATE COPY
(To be retained by the candidate and produced at the time of examination)

Application No.__________________ Roll No. ___________

ADMIT CARD
(To be filled in by the candidate)

1. Name: ___________________________
2. Programme: Diploma in DT / Diploma in AHD
3. Date of Examination: 
4. Examination Centre (Code): ________________
5. Signature of Applicant: ______________________

Academic Coordinator, NDRI, Karnal / I/c, Education & Training, SRS of ICAR-NDRI, Bengaluru / I/c, Academic Cell, ERS of NDRI, Kalyani

INSTRUCTIONS
1. You must report at the examination centre at least 30 minutes before the commencement of the examination.
2. Show your admit card to the Supervisory Staff; otherwise you will not be allowed to appear in the Examination.
3. In case you have brought Form-A or B personally, hand it over to the supervisory staff.
4. Use of unfair means will disqualify you from the examination.

Please retain this copy with you and note down your Roll Number as displayed on the NDRI website.
FORM – A

SPONSORSHIP CERTIFICATE OF THE EMPLOYER FOR SEEKING ADMISSION TO
DIPLOMA IN DAIRY TECHNOLOGY PROGRAMME
FOR IN-SERVICE CANDIDATES ONLY

I, __________________________________________ (Name and designation of employer) hereby sponsor
Mr/Ms _________________________ son of _________________________ who is a permanent employee working as
_________________________________ (designation of the applicant) since _________________ at _________________________ (Name of the
Organization) for pursuing his/her Diploma in Dairy Technology at National Dairy Research Institute, Deemed University,
Bengaluru.

It is also certified that in case of admission the above employee will be relieved to join the programme at NDRI, Bengaluru by
1st Aug., 2016 and will be paid salary and other allowances as per Study Leave Rules.

Place__________ Date_____________ Signature:___________
(Head of Organisation only)
Address__________________________

FORM – B

Application No._____________ Roll No.___________

(To be used by the candidate who is not able to submit marks list for Qualifying Examination (12th Standard and
equivalent) at the time of submitting the Application)

1. If you have not been able to complete the column No. 14 of Application, retain this Form - B with you and submit it to
the Incharge, Education & Training Section, ICAR-NDRI (Deemed University), SRS, Bengaluru – 560 030 along with
attested copies of marks list by 31.07.2016 (by registered post), failing the same your Application will be rejected.
For admission at NDRI your qualifying course must be completed latest by 31.07.2016.

2. Please indicate the Roll No. on the top of your marks sheet attached with this Form.

3. Full Name (In Block Letters) : __________________________________________________

4. Programme applied for : Diploma in Dairy Technology / Diploma in Animal Husbandry and Dairying

5. Name of the examination passed :

6. Name of the Board :

<table>
<thead>
<tr>
<th>Details of the marks obtained in the Qualifying Examination subject wise</th>
<th>Year of Passing</th>
<th>Maximum Marks</th>
<th>Marks obtained</th>
<th>Percentage</th>
</tr>
</thead>
</table>
| Encl. photo copy of mark sheet

Place__________ Date_____________ Signature of Applicant_________________
IMPORTANT INSTRUCTIONS

1. Before submission of Application Form, candidates may ensure that -
   a. All the columns of Application Form have been duly filled in.
   b. Attested copies of all the certificates have been attached (including Annexure-II/III for SC/ST/OBC categories)
   c. Attested photographs are affixed at the appropriate places in the Application Form and the Admit Card.
   d. Admit cards have been duly filled in. Office copy of the Admit Card should be attached with the Application Form.

2. Incomplete Application is liable to be rejected.

3. NDRI will not be responsible for any postal delay.

4. Admit Cards will not be sent by post. Candidates have to retain their copy of Admit Card with them and note down the Roll No. as displayed on NDRI website.

5. Candidates are advised to visit the NDRI website to note down the Roll No. on their Admit Cards and bring the same with them to appear in the examination.
### Directions to Candidates and Important Dates

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>Incomplete/unsigned/mutilated application form or form without photographs or with unclear</td>
<td></td>
</tr>
<tr>
<td></td>
<td>photograph/form having overwriting/without requisite fee amount or amount lesser than prescribed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fee shall be summarily rejected and no correspondence in this regard shall be entertained.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Request for change in any particulars in the application form shall not be entertained under any</td>
<td></td>
</tr>
<tr>
<td></td>
<td>circumstances.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Admission of a candidate to the entrance examination is provisional subject to his/her being</td>
<td></td>
</tr>
<tr>
<td></td>
<td>found otherwise eligible for admission to the course.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Candidates are advised to retain at least three photographs same as pasted on the form for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>subsequent uses during counseling/admission.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>A candidate is allowed to submit only one application form. If a candidate submits more than</td>
<td></td>
</tr>
<tr>
<td></td>
<td>one application form, his/her candidature shall be cancelled. Candidates for reserved categories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i.e. SC/ST/PH category must attach the certificate in the prescribed format.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Application form must be sent in original, duly completed in all respects. Application is to be</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dispatched through registered/speed post well in advance.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Last date for receipt of Application Forms</td>
<td>20.05.2016</td>
</tr>
<tr>
<td></td>
<td>Display of Roll Nos. on website</td>
<td>30.05.2016</td>
</tr>
<tr>
<td></td>
<td>Display of list of rejected application on website</td>
<td>30.05.2016</td>
</tr>
<tr>
<td></td>
<td>Institute shall not be responsible for any postal delay/loss of transit in respect of application.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>The candidates are advised to retain a photocopy of the application for their personal record.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>It may be used at any time in support of having submitted application and also retain a copy of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>post office receipt for dispatch through registered or speed post.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Use or attempt to use unfair means of any kind for this examination will automatically lead to the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cancellation of candidature besides legal action.</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>The records of the Entrance Examination shall be preserved for a period of six months only from</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the last date of counseling.</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Date of entrance examination at all the three centres i.e., NDRI, Karnal, SRS, Bengaluru and ERS,</td>
<td>18.06.2016</td>
</tr>
<tr>
<td></td>
<td>Kalyani</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Last date for receipt of nomination of In-service candidates (DDT) / candidates from NEH states</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(DAHD) from the Competent Authority</td>
<td>05.07.2016</td>
</tr>
<tr>
<td>15.</td>
<td>Declaration of merit list for qualified candidates &amp; display on NDRI website</td>
<td>2nd week of July, 2016</td>
</tr>
<tr>
<td>17.</td>
<td>Date of First Counseling for admission Diploma in AHD Programme at ERS, Kalyani</td>
<td>19.07.2016</td>
</tr>
<tr>
<td>18.</td>
<td>Date of Registration for 2016-17 session</td>
<td>01.08.2016</td>
</tr>
<tr>
<td>19.</td>
<td>Display of vacant seats on NDRI website</td>
<td>05.08.2016</td>
</tr>
<tr>
<td>20.</td>
<td>Second counseling for wait listed candidates for filling up of vacant seats</td>
<td>12.08.2016</td>
</tr>
<tr>
<td>22.</td>
<td>Closing date for admissions</td>
<td>20.08.2016</td>
</tr>
</tbody>
</table>

Website: [www.ndri.res.in](http://www.ndri.res.in)