AN OVERVIEW
THE INSTITUTE

Forest Research Institute (F.R.I.), Dehra Dun made a humble beginning as Forest School established in 1878. Initially named as Imperial Forest Research Institute, F.R.I., came into being in 1906. Later renamed as Forest Research Institute and Colleges, with a number of centres located at different places all over the country administering research as well as training of Forest Officers and Forest Rangers. After reorganization of Forestry Research in the country and creation of Indian Council of Forestry Research and Education (ICFRE) in 1988, the training and research centres were given an independent status of institutes. Forest Research Institute, now one of the institutes under ICFRE, was conferred the status of Deemed University in December 1991 on the recommendations of the U.G.C., Ministry of Human Resource Development, Government of India.

OBJECTIVES OF THE FRI DEEMED UNIVERSITY

• To impart education in different branches of forestry and environment.
• To provide for research, advancement and dissemination of knowledge in the field of forestry and environment.
• To create consciousness about forest and environment among people through forestry extension programme.
• To carry out such other activities as may be necessary and desirable to further the safeguarding of environment and protection of forests and wildlife.

RESEARCH DIVISIONS AND DISCIPLINES IN THE INSTITUTE

• FOREST BOTANY (Systematic Botany, Wood Anatomy and Plant Physiology)
• CHEMISTRY of FOREST PRODUCT (ChemicalExtracts from Trees and Forest Based Oilseeds)
• EXTENSION (Social Forestry, Extension and Agro-forestry)
• FOREST ECOLOGY and ENVIRONMENT (Forest Productivity, Biodiversity, Environment and Pollution)
• FOREST ENTOMOLOGY (Control Measures and Taxonomy)
• FOREST PATHOLOGY (Forest Diseases and Biofertilizers)
• FOREST SOIL and LAND RECLAMATION (Wasteland reclamation, Soil Fertility, Soil Geology and Mineralogy)
THE APPLICATION FORM

The Forest Research Institute Deemed University admission test, 2017 will be held at 12 centres in the country on Sunday, 14th May, 2017 for the following courses:-

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Courses</th>
<th>Duration (Years)</th>
<th>No. of seats</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Indian</td>
</tr>
<tr>
<td>1.</td>
<td>M.Sc. Forestry</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>2.</td>
<td>M.Sc. Wood Science &amp; Technology</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>3.</td>
<td>M.Sc. Environment Management</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>4.</td>
<td>M.Sc. Cellulose &amp; Paper Technology</td>
<td>2</td>
<td>20</td>
</tr>
</tbody>
</table>

Applications for admission shall be made in the prescribed form available from the Registrar, Forest Research Institute Deemed University, Dehra Dun. The application form and the ‘Information Bulletin’ can be obtained in person or by post on payment of Rs.1200/- wherever applicable through bank draft drawn in favour of Registrar, Forest Research Institute Deemed University payable at Dehra Dun. **Forms can also be downloaded from the website www.fridu.edu.in**

Date of sale of forms: 23rd January, 2017 to 31st March, 2017
Application forms will be available from 23rd January to 31st March 2017 from the counter of the office of the FRI Deemed University/Union Bank of India, FRI Branch, Dehra Dun. The last date for issue of forms from the office of the FRI Deemed University by post is 24th March, 2017. Thereafter any request for sending the forms by post will not be entertained. *(For details of important dates please see the last page of the Information Bulletin, 2017)*

Application duly filled in legibly in applicant’s own handwriting with blue/black pen should be sent so as to reach the Registrar, Forest Research Institute Deemed University, P.O.: I.P.E., Kaulagarh Road, Dehra Dun – 248 195 on or before the last date. The application form can also be downloaded from the website www.fridu.edu.in. The candidates filling the downloaded form must pay fee of Rs.1200/-. The last date of receipt of completed application form: 03rd April 2017.

*(Forms received after the last date will not be accepted)*

It is advised that the application form be sent by Registered Post/Speed Post/Courier. *Postal delay will not be accepted as a plea to entertain applications after the last date.*

Admit card containing centre code and roll number will be mailed to the applicant by the forth week of April, 2017.

If the admit card is not received by 30th April, 2017, the Registrar, FRI Deemed University may be contacted on e-mail tripathiak@icfre.org & registrarfriu@icfre.org

Please quote your Name, Fathers Name and Date of Birth in all correspondence with the Registrar, FRI Deemed University, P.O. I.P.E., Kaulagarh Road, Dehra Dun – 248 195.

In case a candidate has either not received the admit card or has lost it, duplicate card can be obtained from the centre superintendent of his/her examination centre. Alternatively, the candidate may reach office of the Registrar, FRI Deemed University, Dehra Dun on working day during working hours. Where duplicate admit card will be issued after submission of a bank draft of Rs.50/- and a photograph identical to that pasted on the admission test form.

*Under no circumstances the admission test fee, once paid, will be refunded or held in reserve for any future admission test.*
ELIGIBILITY REQUIREMENTS

The eligibility requirements for admission to these courses are as follows:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Course Code No.</th>
<th>Courses of Studies</th>
<th>Eligibility requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01 (A)</td>
<td>M.Sc. Forestry</td>
<td>Three years bachelor’s degree in science with at least one of the subjects namely Botany, Chemistry, Geology, Mathematics, Physics, Zoology or a Bachelor’s degree in Agriculture or Forestry.</td>
</tr>
<tr>
<td>2</td>
<td>01 (B)</td>
<td>M.Sc. Wood Science &amp; Technology</td>
<td>Three years bachelor’s degree with Physics, Mathematics and Chemistry or B.Sc. degree in Forestry.</td>
</tr>
<tr>
<td>3</td>
<td>01 (C)</td>
<td>M.Sc. Environment Management</td>
<td>Three years bachelor’s degree in any branch of Basic or Applied Sciences or Bachelor’s degree in Forestry or Agriculture or BE/B.Tech in Environment Science.</td>
</tr>
<tr>
<td>4</td>
<td>01 (D)</td>
<td>M.Sc. Cellulose &amp; Paper Technology</td>
<td>Graduate degree with minimum 50% marks in aggregate in Science with Chemistry as one of the subjects. BE/B.Tech. (Chemical or Mechanical Engineering with minimum 50% aggregate).</td>
</tr>
</tbody>
</table>

Age Limit for In-service Candidate:

The maximum age limit in respect of in-service candidate to M.Sc. Environment Management course shall be 50 years. The age shall be reckoned as on 31st July of the year of admission and no further relaxation will be given in any case.

CHOICE BASED CREDIT SYSTEM

The FRI Deemed University has implemented the Choice Based Credit System for M.Sc. courses of FRI Deemed University from the session 2016-2017.
RESERVATION OF SEATS

A) SCHEDULED CASTES AND SCHEDULED TRIBES:

Fifteen percent (15%) of the total available seats shall be reserved for scheduled castes and seven and half percent (7.5%) for scheduled tribes candidates subject to their being otherwise suitable. These reservations shall be interchangeable e.g. if sufficient number of candidates are not available to fill up the seats reserved for scheduled tribe candidates, these can be filled up from suitable scheduled castes candidates within the course concerned.

B) OTHER BACKWARD CLASSE (OBC):

The reservation to OBC is being provided as per the policy of the Govt. of India.

C) PHYSICALLY HANDICAPPED:

3% reservation to the persons with Disabilities under the persons with Disabilities (Equal opportunities, Protection of Rights and Full Participation) Act, 1995 Chapter No. 39, in each course for the candidates with locomotor disabilities one leg, one arms (without mobility restriction) and persons with partial deafness as per Govt. of India rules. The Candidates will have to produce Disability certificate issued by competent authority at the time of Counseling for admission.

D) IN-SERVICE CANDIDATES:

Five seats shall be reserved in M.Sc. Environment Management course for in-service candidates working in Government Departments/Autonomous bodies under the Central/State/Union Territory/ICFRE. However, if in-service candidates are not available then the seats reserved for them will be filled up by general candidate(s).

E) FOREIGN NATIONALS:

Reservation to the extent of 15% of the prescribed seats on supernumerary basis for Foreign Nationals shall be made for admission to each M.Sc. course available in the Institute. The foreign nationals are exempted from appearing in admission test provided they have passed the equivalent qualifying examination from a University outside India and fulfill the following conditions:

(a) that they must have minimum eligibility requirements;

(b) that the applications of scholarship holding Foreign Nationals (Under various schemes) are routed through Indian Council for Cultural Relations /Ministry of Human Resource & Development (Dept. of Education), Govt. of India, New Delhi;

(c) that the applications of self-financing Foreign nationals should be routed through concerned Indian Diplomatic Mission abroad or Diplomatic Mission of the country of the
applicant in India and should be reached in the office of the FRI Deemed University by the 30th May, 2017. Fee to be charged from the foreign nationals is given below.

(d) that they have valid residential permit in India granted for studies/Student Visa for the prescribed duration of the concerned course;

(e) that the antecedents of the candidate have been verified by the forwarding Agencies/Ministry and found in order;

(f) that the candidate must submit certificate duly verified by the Ministry/Agencies to the effect that he/she has been subjected to AIDS test and found negative;

(g) that the degree/certificates of the candidates have been approved by the Association of Indian Universities (AIU) as equivalent to the corresponding degrees/certificates of the AIU;

(h) that they have adequate knowledge of English as per requirements of the course.

**Fee**

<table>
<thead>
<tr>
<th>Item</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Semester fee</td>
<td>750 US$ per semester</td>
</tr>
<tr>
<td></td>
<td>(1st installment is payable at the time of admission)</td>
</tr>
<tr>
<td>2. Caution money</td>
<td>50 US$ (Refundable)</td>
</tr>
<tr>
<td>3. Hostel fee</td>
<td>40 US$ per month</td>
</tr>
<tr>
<td>5. Library/Teaching aid fee</td>
<td>50 US$ per semester</td>
</tr>
<tr>
<td>6. Degree fee</td>
<td>10 US$</td>
</tr>
<tr>
<td>7. The mess charges will be around 23 US$ p.m., if they join mess run by the students.</td>
<td></td>
</tr>
</tbody>
</table>

**COMMITTEES**

The FRI Deemed University has constituted the following committees for safe, secure and stress free environment in the University to the students of the FRI Deemed University.

1. Anti-Sexual Harassment Committee
2. Committee to look after the complaints of caste discrimination of SC/ST students
3. Student Counseling Centre
4. Student’s Welfare & Disciplinary Committee

**GUIDELINES**

- In case a candidate has appeared for the degree examination required for admission but the result of the same has not been announced till the time of submission of application, the application form may still be completed in all other respects and may be submitted to the Registrar, Forest Research Institute Deemed University on or before
the last date. The degree/result (mark sheet) should however be furnished as soon as it becomes available, which must reach the office of the Registrar, FRI Deemed University on or before the date fixed for admission failing which he/she shall not be admitted treating his/her application for admission as incomplete.

- In case a candidate comes from a university/institute that follows the course credit system, the application shall be considered even though the final viva/voce is yet to be completed provided a full transcript is enclosed showing the grade point average obtained along with a course completion certificate from the Registrar of the University/Institute/Head of the College, Dean/Associate Dean of the campus of multi-campus, Universities/Institutes to the effect that the candidate has completed all the prescribed work. The certificate issued in this regard by the Head of the Department/Division shall not be entertained. However, at the time of admission a certificate shall have to be produced from the Registrar/Head of the College, Dean/Associate Dean of the campus of multicampus Universities stating clearly that the candidate has passed the last degree examination, failing which the candidate shall not be admitted treating his/her application for admission as incomplete.

- The candidate must in his/her own interest fill up the application form most carefully and ensure that all the columns are filled up correctly. Incomplete application shall be rejected out right.

- A candidate may apply in more than one course in test but he/she is required to fill up the separate admission form and separate fee for each course e.g. In case candidate applies for two courses the fee payable shall be Rs.2400/- for application forms. Similarly, for three courses the fee payable shall be Rs.3600/- respectively.

- The applicant is required to mention his/her category in clear terms. The category to which the applicant belongs once mentioned on the form shall be final and no subsequent change shall be allowed. If boxes requiring indication of category on the application form are left blank, the candidate shall be treated as general category and he/she cannot claim the benefit of any other category.

- Candidates are allowed to appear for the Admission Tests provisionally subject to the verification of equivalence of degrees/certificates and validity of certificates/marks-sheets of qualifying examination and also whether involved in the adoption of unfair means in any of the examinations of the University/Admission Tests held earlier at the time of admission in the respective courses. Degree/Certificate recognized by AIU shall be deemed as equivalent degrees.

- Candidates who were admitted as regular students to any course of studies in this Institute through Admission Test in earlier year(s) shall not be allowed to re-appear in the admission test for admission in same course.

- Please fill up all the columns correctly.

- Please read the Information Bulletin thoroughly before filling up the form.
In your own interest please do not give any false information which may make you liable for disqualification.

List of test centres and their codes are as follows.

<table>
<thead>
<tr>
<th>Test Centre</th>
<th>Code No.</th>
<th>Test Centre</th>
<th>Code No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangalore</td>
<td>1</td>
<td>Jodhpur</td>
<td>7</td>
</tr>
<tr>
<td>Chandigarh</td>
<td>2</td>
<td>Jorhat</td>
<td>8</td>
</tr>
<tr>
<td>Coimbatore</td>
<td>3</td>
<td>Kolkata</td>
<td>9</td>
</tr>
<tr>
<td>Dehradun</td>
<td>4</td>
<td>Lucknow</td>
<td>10</td>
</tr>
<tr>
<td>Delhi</td>
<td>5</td>
<td>Ranchi</td>
<td>11</td>
</tr>
<tr>
<td>Jabalpur</td>
<td>6</td>
<td>Shimla</td>
<td>12</td>
</tr>
</tbody>
</table>

Production of original certificates and mark sheet at the time of admission is an essential requirement which is not relaxable in any case under any circumstances. If any information submitted by the candidate is found to be false at any stage during his/her study at FRI Deemed University, his/her admission shall be cancelled.

The minimum qualifying marks for allowing candidate to appear in the written test are 50 percent in aggregate at B.Sc. level/M.Sc. level prescribed for admission to the different courses in respect of general category candidates including physically handicapped, in-service candidates and foreign nationals and 45 percent in aggregate in respect of SC/ST candidates.

Candidates selected for written test based on the academic and other requirements will be sent the admit card through e-mail/surface mail. In case of admission to the M.Sc. courses the aggregate marks of all the three science subjects will only be computed for ascertaining the 50% qualifying marks in respect of general candidate and 45% in respect of SC/ST candidates. The marks of other than Science subjects and aggregate marks of honours subject shall not be considered in any case for ascertaining the qualifying marks for appearing in the admission test.

In case there is any change in the date of examination for some unforeseen reasons, the final date will be indicated in the admit card.

ANNOUNCEMENT OF RESULTS & ADMISSION

A merit list of candidates including a waiting list will be formed for each course on the basis of aggregate marks secured in the written test. Candidates will be selected in order of merit in all the categories. The result of the exam will be declared on the website www.fridu.edu.in. Date of first counseling is 7th July, 2017 and date of second counseling is 10th July, 2017. The candidates will be suitably advised before they come for counseling.

The selected candidates will have to pay the prescribed fees and join the course by the due date notified. The fee has to be paid at the time of counseling otherwise the seat will be offered to the next candidate.
• If a selected candidate does not join by the prescribed date or if no extension has been asked for and granted by the University the admission shall stand cancelled automatically and the seat shall be offered to the candidate in the merit/waiting list.

**Documents in original to be produced by the candidate at the time of counselling:**

1. Transfer Certificate
2. Migration Certificate, if passed from University (to be submitted not later than 90 days of admission)
5. B.Sc. degree and Mark sheet of all the three years.
7. Admission Test admit card issued from this office.
8. SC/ST certificate on the basis of which reservation is claimed.
9. Physically Handicapped certificate from Civil Surgeon/C.M.O.

- The candidates called for admission have to produce original certificates, mark sheet etc. before the payment of fees. However in cases where the original mark sheet indicates clearly that the candidate have passed the qualifying examination prescribed for admission he/she be admitted on the condition that he/she shall produce the original degree/provisional degree within one month failing which his/her admission is liable to be cancelled. There can be no appeal to any authority if the candidate fails to produce the original documents at the time of admission.

- In case equal marks in written test, the following criteria shall be adopted for taking admission in the course concerned:

  i) Preference will be given to the candidate who has higher percentage of aggregate marks in the qualifying examination.

  ii) In case the candidates have equal percentage of aggregate marks in qualifying examination then the candidate higher % in graduation will be given preference.

**PLACEMENTS**

FRI Deemed University provides assistance in placement of deserving students. Various industries/organizations visit the campus for campus interviews. On an average 50% of the students get placements through the campus interviews. However, in case of M.Sc. Wood Science & Technology the placement is 100% in general.
**SCHOLARSHIP**

FRI Deemed University provides merit scholarship to the topper students in each course. The scholarship may be upto Rs.11,000/- per semester and is awarded separately for each semester depending on the result of the previous semester. For the purpose of award of scholarship in the first semester the result of the entrance test is considered and the topper in general category and SC/ST category are awarded the scholarship in each course. However general category candidate must score minimum 50% marks and SC/ST must score 30% marks for obtaining the scholarship.

**GENERAL**

a) Candidate who satisfies the above eligibility requirements may apply for admission test on the prescribed application form for any of the courses mentioning the name of the course with its Code No.

b) The category to which the applicant belongs once mentioned on the form is final and no subsequent change shall be allowed. Boxes requiring indication of category, if left, blank will be treated as indicating General Category.

c) Application forms of candidates, who have submitted forged/fake certificates or adopted fraudulent means, shall be rejected without any reference to the candidate. Further, such candidates are liable to be prosecuted and shall be debarred from appearing in any subsequent Admission Test conducted by FRI Deemed University.

d) Candidates are allowed to appear in the Admission Tests provisionally subject to the final decision of equivalence of degrees/certificates of qualifying examination at the time of admission in the respective courses.

e) *Mere appearance in the admission test will not entitle a candidate to be considered for admission to the course unless he/she fulfills the eligibility conditions. Applicants must fully satisfy themselves about their eligibility as prescribed above, before filling in the application form.*

f) No candidate shall be allowed to appear in the Admission Test without a valid admit card issued by the office of the Registrar, FRI Deemed University.

g) The *Admission Test will be held on 14th May, 2017.* Date, time and venue for test will be indicated on the admit card.

h) In all matters relating to the Admission Test, the decision of Registrar, FRI Deemed University shall be final and binding.

i) No scrutiny or revaluation of the answer book of the Admission Test shall be allowed on any grounds.
j) The candidate who wants to apply for more than one course may do so but he/she is required to fill up separate form and fee @ Rs. 1200/- for each course and indicate the same in prescribed column of the form. Test for all the courses will be the same.

**CANCELLATION OF ADMISSION**

**REASONS FOR REJECTION OF APPLICATION FORMS**

a) Non-submission of self-attested identical recent photographs at all appropriate places. (Xeroxed copy/copies of photographs shall not be accepted.).

b) Lack of signature of the candidate at any of the appropriate place.

c) Submission of application form by a candidate after erasing the entries made earlier by another candidate.

FRI Deemed University has the right to cancel, at any stage, the admission of a candidate who is admitted to a course to which he/she is not entitled, being unqualified or ineligible in accordance with the rules and regulations in force.

**INSTRUCTIONS FOR WRITTEN TEST**

a) There will be an objective type written test of three hours with questions grouped under the following four sections:

I. Basic Sciences including Social Science (100 questions)

II. Arithmetic and Quantitative abilities, Computational ability, Quantitative reasoning, Interpretation of Tables, Graphs, etc. (40 questions)

III. General Knowledge and Current Affairs (30 questions)

IV. English Language, Comprehension, Vocabulary, Grammar, Idioms, etc. (30 questions)

b) The candidate will check within 5 minutes of issue of the test booklet, and ensure that it contains all the pages and no question is missing. If any discrepancy is noticed the candidate must bring it to the notice of the Superintendent/Invigilator and obtain a fresh booklet.

c) The entries in answer sheet must be made with Black/Blue ball point pen only. The options in the answers are also to be rounded with ball point pen only.

d) The candidate will fill in all the details in the space provided for it on the front page and affix his signature before starting to answer the questions.

e) Each question will be followed by four alternative answers. The candidate is required to select the one which he/she feels is correct answer. The detail instructions will be printed on the answer sheet. The candidate is advised to go through the instructions.
f) There will be negative marking for wrong answer to the extent of one-fourth (¼) of the marks allotted to the questions.

g) No page from the test booklet is to be torn or removed. If candidate is found tearing any paper from the test booklet, he/she is liable to be punished for use of unfair means.

h) Inner cover page of the Test Booklet or the blank space/pages at the end of the Test Booklet may be used for rough work.

i) In case of any dispute it will be subject to jurisdiction of Dehra Dun court only.

**SAMPLE WRITTEN TEST QUESTIONS**

The set of questions given below will familiarize the candidates with the type of Questions in the FRI Deemed University Admission Test. These questions are only indicative of the nature of the test and it is possible that types of questions not illustrated here may appear in the test.

**ANSWER ALL THE QUESTIONS**

1. In case of uniform circular motion, the acceleration is ----------
   a. Variable in magnitude but constant in direction
   b. Constant in magnitude and directed radially inwards
   c. Variable in magnitude but tangential to the circle
   d. Zero

2. In an electronic watch, the component corresponding to pendulum of a pendulum clock is a -------
   a. Balance wheel
   b. Transistor
   c. Crystal oscillator
   d. Diode

3. Electromagnetic theory was proposed by ----------
   a. Maxwell
   b. Max Planck
   c. Newton
   d. Schrodinger

4. Ball bearings are used in cycles, scooters etc to ----------
   a. Increase the friction between the wheel and the axle.
   b. Reduce the friction between the wheel and the axle
   c. Reduce the friction between ground and the wheel
   d. None of the above
5. The splitting of different colours of light in a prism is -----------
   a. Refraction of light
   b. Diffraction of light
   c. Dispersion of light
   d. Reflection of light

6. Oil raise up the wick in a lamp. The principle involves ------------
   a. The diffusion of oil through the wick
   b. Capillary action phenomenon
   c. The liquid state of oil
   d. Volatility of oil

7. The difference between a nuclear reactor and an atomic bomb is that -----------
   a. The chain reaction in nuclear reactor is controlled
   b. No chain reaction takes place in nuclear reactor, while in the atomic bomb there is a chain reaction
   c. The chain reaction in nuclear reactor is not controlled
   d. No chain reaction takes place in atomic bomb while it takes place in nuclear reactor

8. The working of the quartz crystal in the watch is based on the -----------
   a. Piezo-electric Effect
   b. Edison Effect
   c. Photoelectric Effect
   d. Johnson Effect

9. RADAR is used for  ---------------
   a. Locating submerged submarines
   b. Receiving a signals in a radio receiver
   c. Locating geostationary satellites
   d. Detecting and locating the position of objects such as aeroplanes

10. On a clean glass plate a drop of water spreads to form a thin layer whereas a drop of mercury remains almost spherical because -----------
    a. Mercury is a metal
    b. Density of mercury is greater than that of water
    c. Cohesion of mercury is greater than its adhesion with glass
    d. Cohesion of water is greater than its adhesion with glass

11. A mango falling down from a tree is an example of --------
    a. Curvilinear motion
    b. Rectilinear motion
    c. Random motion
    d. Periodic motion
12. A body with constant velocity has ---------
   a. Zero speed
   b. Constant Speed
   c. Increasing speed
   d. Decreasing speed

13. Magnetism at the centre of a bar magnet is --------------
    a. Zero
    b. Maximum
    c. Minimum
    d. Minimum or Maximum

14. Which scientist discovered the radioactive element radium?
    a. Isaac Newton
    b. J. J. Thomson
    c. Marie Curie
    d. Benjamin Franklin

15. Which of the following method could be used to distinguish between $1^0, 2^0, 3^0$ amines?
    a. Hinsberg method
    b. Hofmann method
    c. Both of the above
    d. None of the above

16. Chemical name of aspirin is
    a. Acetyl salicylic acid
    b. Sodium salicylate
    c. Trinitro toluene
    d. Hydroxybenzoic acid

17. o-, p- and m- xylenes exhibit
    a. Stereoisomerism
    b. Position isomerism
    c. Chain isomerism
    d. None of the above

18. Cellulose is insoluble in water because of
    a. Hydrogen bonding
    b. Vander wall forces
    c. Both of the above
    d. None of the above.

19. Phenol is
    a. Acidic in nature
    b. Basic in nature
    c. Amphoteric in nature
    d. Neutral
20. The color of the transition metal complexes arises because of
   a. d-d transitions
   b. s-d transitions
   c. p-p transitions
   d. s-p transitions

21. Oleum is
   a. $H_2S_2O_7$
   b. $H_2SO_4$
   c. $H_2S_2O_6$
   d. $H_2SO_3$

22. If the valence shell electronic structure for an element is $ns^2np^5$, this element will belong to
   a. Alkali metal
   b. Inert metal
   c. Noble gas
   d. Halogen

23. $Al_2O_3$ is a
   a. Basic oxide
   b. Acidic oxide
   c. Amphoteric oxide
   d. Neutral oxide

24. How many atoms constitute a P molecule?
   a. 2
   b. 3
   c. 4
   d. 5

25. The term pH was introduced by
   a. Sorensen
   b. Sorenson
   c. Soren
   d. None of the above

26. Brownian movement is shown by
   a. Colloidal solutions
   b. True solutions
   c. Suspensions
   d. None of the above

27. Which of the following indicator is used in an acid-base titration?
   a. Methyl red
   b. Methyl orange
   c. Phenolphthalein
   d. None of the above
28. Which of the following essential oils is characterized by congealing point
   a. Lemongrass oil
   b. Citronella oil
   c. Mint oil
   d. Palmarosa oil

29. The density of mantle is
   a. 2.7 g/cm³  
   b. 3.0 g/cm³  
   c. 5.4 g/cm³  
   d. 4.4 g/cm³

30. Sea floor spreading hypothesis is given by
   a. Alfred Wegner  
   b. Tuzo Wilson  
   c. Newton  
   d. Henry Hess

31. Gabbro is an example of
   a. Plutonic rock  
   b. Sedimentary rock  
   c. Volcanic rock  
   d. Metamorphic rock

32. Zircon mineral is an example of
   a. Isometric system  
   b. Tetragonal system  
   c. Hexagonal system  
   d. Orthorhombic system

33. Ordovician period is known for the origin of
   a. First amphibians  
   b. First land plant fossil  
   c. First fish  
   d. First mammals

34. The weathering of residues of the well exposed limestone left at the surface are called
   a. Lapie  
   b. Terra Rossa  
   c. Sinkholes  
   d. Ovala

35. Frost action of weathering belongs to categories of
   a. Mechanical weathering  
   b. Chemical weathering  
   c. Biological weathering  
   d. Both (b) and (c)

36. S waves can travel through
   a. Solid  
   b. Gas  
   c. Liquid  
   d. All the three

37. Quartzite is an example of
   a. Igneous rock  
   b. Metamorphic rock  
   c. Sedimentary rock  
   d. Plutonic rock

38. Chemical composition of Gypsum is
   a. CaSO₄  
   b. CaSO₄·H₂O  
   c. CaF₂  
   d. CaMg(CO₃)

39. Horizontal displacement between the hanging wall and footwall is known as
   a. Dip  
   b. Hade  
   c. Throw  
   d. Heave

40. Fossil excrements of animals are termed as
   a. Replacement  
   b. Carbonization  
   c. Coprolite  
   d. Mould
41. Most of the wheat varieties are
   a. Quantitative long day plants   b. Short day plants   c. Day neutral   d. None of these

42. 'Vertisol' is related to

43. Transgenic crop having maximum cultivated area in the world is

44. Rice grain is deficient in
   a. Lysine   b. Alanine   c. Glycine   d. Isoleucine

45. Non-edible plant suitable for biodiesel

46. PAR (Photo-synthetically active radiation) is measured in
   a. Photon   b. Watts   c. Einstein   d. Quantum

47. Maximum number of treatment accommodates in RBD without loss of efficiency is
   a. 20   b. 60   c. 40   d. 10

48. Photo-respiration rate is highest in which group of plants?
   a. C3 plants   b. CAM plants   c. C4 plants   d. None of these

49. Aflatoxin contamination generally found in

50. Which crop is also known as white gold?

51. The centre of origin of *Triticum aestivum* is

52. The process of use of microorganism to remove salts from soil is referred as

53. Economic part of Isabgol is
   a. Leaf   b. Seed and husk   c. Seed   d. Husk

54. Which among the following statement is NOT true about the PYRAMID OF ENERGY?
   a. It is upright in shape
   b. Its base is broad
   c. It is inverted in shape
   d. It shows energy content of different trophic levels
55. The evolutionary history of an organism is called
   a. Taxonomy
   b. Phylogeny
   c. Dendrogram
   d. Cladogram

56. Where two ecosystem overlap with each other, the area is called
   a. Habitat
   b. Niche
   c. Ecotone
   d. Ecotype

57. Niche is defined as
   a. Position of species in a community in relation to other species
   b. Place where organism lives
   c. Place where organism lives and perform its duty
   d. Place where a population performs their duties

58. Which of the following is a primary consumer?
   a. Producer
   b. Carnivore
   c. Top carnivore
   d. Herbivore

59. Which of the following is critical for haploidy induction
   a. Induction and proliferation of callus from anther culture
   b. Use of colchicine in the medium
   c. Treatment of donor plants with phytohormones
   d. Presence of optimum levels of auxins and cytokinins in the medium

60. Availability of free energy is maximum in which of the following trophic levels?
   a. Producers
   b. Decomposers
   c. Herbivores
   d. Secondary consumers

61. The evolutionary history of an organism is called
   a. Taxonomy
   b. Phylogeny
   c. Dendrogram
   d. Cladogram

62. Kawashiorker disease is caused due to the deficiency of
   a. Lysine
   b. Unsaturated fatty acids
   c. Vitamin K
   d. Protein
63. Which of the following species shows a high resistance to radiation damage?
   a. *Deinococcus*
   b. *Micrococcus*
   c. *Staphylococcus*
   d. *Planococcus*

64. Monkey puzzle tree is
   a. *Araucaria araucarium*
   b. *Araucaria imbricata*
   c. *Sequoia gigantica*
   d. *Ginkgo biloba*

65. Which one of the following is the confirmatory test for HIV?
   a. ELISA
   b. Western blotting
   c. Southern blotting
   d. Northern blotting

66. “*Omnis cellula e cellula*” means
   a. All cells are originated from pre-existing cells
   b. Cells are functional unit of life
   c. Cells die after a fixed period of time
   d. cells can phagocytose other cells

67. Peptide bond is present in
   a. Carbohydrates
   b. Lipids
   c. Amino acids
   d. Proteins

68. In Shelter wood system, the type of crop is
   a. Even aged
   b. Uneven aged
   c. Two storied
   d. None of these

69. Most suitable silvicultural system to manage chir pine is
   a. Clear felling system
   b. Uniform system
   c. Irregular shelterwood system
   d. Pollard system

70. In clear felling system, the type of crop is
   a. Even aged
   b. Uneven aged
   c. Very even aged
   d. None of these

71. Taungya is practiced under
   a. Clear felling system
   b. Uniform system
   c. Irregular shelter wood system
   d. Pollard system

72. Coppice system is applied for
   a. Short rotation crops
   b. Long rotation crops
   c. Medium rotation crops
   d. None of these

73. Altitudinal range of *Picea smithiana* is
   a. 2500 – 3500 m
   b. 1500 – 2500 m
   c. 1500 – 3000 m
   d. 3000 – 5000 m
74. *Cedrus deodara* sheds its leaves in following season:
   a. Winter  
   b. Rainy  
   c. Autumn  
   d. Summer

75. *Casuarina equisetifolia* distributed across
   a. Coastal regions of India  
   b. Central platen  
   c. Northern plain of India  
   d. North of India

76. Altitudinal range of *Quercus leucotricophora* is
   a. 2300 – 3000 m  
   b. 1500 – 2000 m  
   c. 1000 – 2000 m  
   d. 1800 – 2500 m

77. Altitudinal range of *Abies pindrow* is
   a. 2500 – 3500 m  
   b. 1500 – 2500 m  
   c. 1500 – 3000 m  
   d. 3000 – 5000 m

78. Headquarter of Indian council of Forestry Research and Education (ICFRE) is
   a. New Delhi  
   b. Dehradun  
   c. Lucknow  
   d. Bengaluru

79. Which north eastern state of India has largest forest area?
   a. Arunachal Pradesh  
   b. Meghalaya  
   c. Assam  
   d. Manipur

80. According to recent estimates number of royal Bengal tigers in India is around
   a. 1000  
   b. 2000  
   c. 500  
   d. 4000

81. The Indian Economy is characterized by
   a. Pre-dominance of agriculture  
   b. Pre-dominance of industry  
   c. Low per Capita income  
   d. Massive Unemployment

82. Gross Domestic Products (GDP) is value of
   a. Goods produced in an economy in a year  
   b. Goods and services in an economy in a year  
   c. Final goods produced in an economy in a year  
   d. Final goods and services in an economy in a year
83. Which of the following country has lowest GDP per Capita
   a. China
   b. India
   c. Indonesia
   d. Sri Lanka

84. Eradication of poverty was the main objective in which of the Five Year Plan
   a. IV
   b. V
   c. VI
   d. VII

85. Study of atmospheric phenomena is
   a. Astrology
   b. Metrology
   c. Seismology
   d. Astronomy

86. Temperate grassland of North America is known as
   a. Pampas
   b. Downs
   c. Steppes
   d. Prairies

87. Which water body separates Andaman and Nicobar Islands?
   a. Ten degree channel
   b. Eleven degree Channel
   c. Andaman sea
   d. Bay of Bengal

88. Which state has smallest land area
   a. Goa
   b. Nagaland
   c. Sikkim
   d. Tripura

89. Name the cold desert region of India
   a. Shillong Plateau
   b. Sikkim
   c. Ladakh
   d. Baramulla

90. The famous “Valley of flowers” lies in
   a. Uttarakhand
   b. Himachal Pradesh
   c. Jammu and Kashmir
   d. Kerala
91. Silent Valley is situated in
   a. Kerala
   b. Andaman Islands
   c. Assam
   d. Uttarakhand

92. Which is the leading state in ship breaking industry
   a. Maharashtra
   b. West Bengal
   c. Tamil Nadu
   d. Gujarat

93. Which place is called ‘Silicone Valley’ of India
   a. New Delhi
   b. Chennai
   c. Bangaluru
   d. Hyderabad

94. The longest dam in India is
   a. Bhakra Dam
   b. Nagarjuna Sagar Dam
   c. Hirakund Dam
   d. Kosi Dam

95. English is the official Language of
   a. Nagaland
   b. Tripura
   c. Assam
   d. Manipur

96. Which type of layer extends from an average altitude of 11km to 50km above Earth’s surface
   a. Stratosphere
   b. Troposphere
   c. Mesosphere
   d. Ionosphere

97. Mangal Pandey initiated the revolt of 1857 at
   a. Barrakpore
   b. Meerut
   c. Kanpur
   d. Jhansi

98. Indian National Congress was founded by
   a. Jawahar Lal Nehru
   b. Michal Hume
   c. Allon Octavian Hume
   d. Mahatma Gandhi
99. Who is called ‘Grand Old Man of India’
   a. Dada Bhai Naoroji
   b. Motilal Nehru
   c. Firozshah
   d. None of the above

100. Who built the Sun Temple of Konark
   a. Anantvaram
   b. Narsimha I
   c. Kapilendra
   d. Purushottama

101. Ram can complete a work in 20 days and Vikas can complete the same work in 30 days. How much fraction of work they both can complete in two days?
   a. 1/15
   b. 2/15
   c. 2/12
   d. 1/12

102. What should come in place of ‘X’ in the following question?
   \( \sqrt{X} \times \sqrt{1156} = 340 \)
   a. 10
   b. 100
   c. 75
   d. 50

103. The product of two 2-digit numbers is 1081. If the product of their units digits is 21 and that of tens digits is 8, find the numbers.
   a. 13 and 87
   b. 27 x 43
   c. 11 x 81
   d. 108.1 x 10

104. In a morning walk, three persons step off together. Their steps measure 80 cm, 70 cm and 75 cm, respectively. What is the maximum distance each should walks so that all can cover the same distance in complete steps?
   a. 80 cm
   b. 8400 m
   c. 70 cm
   d. 84 m

105. In a flight of 600 km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200 km/hr and the time of flight increased by 30 minutes. The duration of the flight is
   a. 1 hours
   b. 3 hours
   c. 2 hours
   d. 4 hours

106. The geometric mean of (3, 9, 27) is
   a. 9
   b. 81
   c. 27
   d. 13
   a. 30:60:90                           b. 15:30:135
   c. 180:360:1620                       d. 1:2:9

108. Find the HCF of $\frac{2}{3}$; $\frac{4}{6}$; $\frac{8}{27}$
   a. $\frac{2}{3}$                         b. $\frac{2}{6}$
   c. $\frac{2}{27}$                       d. $\frac{8}{27}$

109. A person's present age is two-fifth of the age of his mother. After 8 years, he will be one-half of the age of his mother. How old is the mother at present
   a. 30                                 b. 25
   c. 35                                 d. 40

110. A sum was put at simple interest at a certain rate for 10 years. Had it been put at 5% higher rate, it would have fetched Rs.600 more. What was the Sum?
   a. 600                                b. 800
   c. 1000                               d. 1200

111. For a series 7, 10, 8, ?, 9, 12, 10, 13 what is the missing number?
   a. 11                                 b. 13
   c. 12                                 d. 14

112. A rectangular park 60 m long and 40 m wide has two concrete crossroads running in the middle of the park and rest of the park has been used as a lawn. If the area of a road is 180 sq. m, then what is the area of the lawn?
   a. 2040 m                              b. 2400 m
   c. 360 m                               d. 200 m

113. Out of following, which one is correct in case of a right-triangle?
   a. Always follows Pythagoras Theorem   b. The sum of any two sides of a triangle is greater than the third side
   c. Sum of the angles of a triangle is 180° d. All are correct

114. A man has Rs 480 in the denominations of one-rupee notes, five rupee notes and ten-rupee notes. The number of notes of each denomination is equal. What is the total number of notes that he has?
   a. 10                                  b. 30
   c. 60                                  d. 480

115. Which fraction is in descending order?
   a. $\frac{9}{11} > \frac{3}{5} > \frac{8}{9} > \frac{4}{7}$
   b. $\frac{8}{9} > \frac{9}{11} > \frac{3}{5} > \frac{4}{7}$
   c. $\frac{9}{11} > \frac{8}{9} > \frac{4}{7} > \frac{3}{5}$
   d. $\frac{8}{11} > \frac{8}{9} > \frac{4}{7} > \frac{3}{5}$
116. Which is the smallest number by which 19404 should be multiplied to make it a perfect square?
   a. 2  
   b. 3  
   c. 7  
   d. 11

117. If \( \frac{a}{b} = \frac{1}{5} \); which of the following is equal to \( \frac{(3a + 2b)}{(3a - 2b)} \)?
   a. \( \frac{13}{5} \)  
   b. \( -\frac{13}{5} \)  
   c. \( -\frac{13}{7} \)  
   d. \( -\frac{7}{13} \)

118. If 7 spiders make 7 webs in 7 days, then 1 spider will make 1 web in how many days?
   a. 7 day  
   b. 1 day  
   c. 5 day  
   d. 3 day

119. A bag contains 50 P, 25 P and 10 P coins in the ratio 5: 9: 4, amounting to Rs. 206. Find the number of coins of each type respectively.
   a. 160, 200, 360  
   b. 200, 360, 160  
   c. 360, 200, 160  
   d. 360, 160, 200

120. Today is Monday, after 61 days, it will be
   a. Monday  
   b. Wednesday  
   c. Saturday  
   d. Tuesday

121. Which of the following is equal to 2% of 22% of 222?
   a. 97.68  
   b. 0.2442  
   c. 0.9768  
   d. 9.768

122. Mode of a series 4, 4, 4, 4, 5, 5, 5, 6, 6, 6, 6, 7, 7, 7, 7, 7, 7, 7
   a. 3  
   b. 4  
   c. 5  
   d. 6

123. If Rajiv reduces the weekly number of hours he works by one-fifth and his current weekly income is Rs 690.00, what is his new weekly income?
   a. Rs. 532  
   b. Rs. 552  
   c. Rs. 572  
   d. Rs. 592

124. In an office, Clerk A can handle 30 case files in one hour. Clerk B can handle 20 case files in the same amount of time. Working together, how many case files can the two clerks handle in 8-hours?
   a. 360  
   b. 400  
   c. 440  
   d. 480
125. Find the sum of the sequence -8, -5, -2, ..., 7.
   a. - 5  b. 5
      c. - 3  d. 3

126. Three of four numbers have a sum of 22. If the average of the four numbers is 8, what is the fourth number?
   a. 8  b. 10
      c. 12  d. 14

127. The deviation from mean for the series 5,5,5,5; containing 5 items is
   a. 5  b. 25
      c. 1  d. 0

128. The measures of two angles of a triangle are 35° and 45°. What is the measure of the third angle of the triangle?
   a. 80°  b. 90°
      c. 100°  d. 110°

129. For the series the missing value will be 10, 18, 28, ?, 54, 70
   a. 38  b. 40
      c. 19  d. 39

130. Simplify: 2a - [3b - {a - (2c - 3b) + 4c - 3(a - b - 2c)}]
   a. - 8c + 3b  b. - 8c - 3b
      c. 8c + 3b  d. 8c - 3b

131. In a row of plants, one plant is twelfth from either end of the row. How many plants are there in the row?
   a. 11  b. 23
      c. 12  d. 24

132. If ‘+’ means x, ‘-’ means ÷, ‘x’ means -, and ‘÷’ means +, then the value of 16 ÷ 64 – 8 x 4 + 2 is equal to
   a. 12  b. 14
      c. 16  d. 24

133. Rashmi walks a distance of 4 meters towards south. Then she turns to the left and walks 3 meters. After this she turns to the right and walks 4 meters. In which direction is she facing now.
   a. North-East  b. Left
      c. Right  d. South
134. The minute hand of watch, when it moves 300° from 11′O clock, is now at…
a. 8 b. 9
c. 12 d. 11

135. In how many maximum number of points can two distinct parallel lines intersect?
a. 1 b. Infinite
c. 0 d. 3

136. Find x, if 27, x, x, 48 are in proportion.
a. 27 b. 3
c. 36 d. 48

137. If the ratio between the length and the perimeter of a rectangle is 2 : 5, then the ratio between the length and breadth of the rectangle is
a. 2 : 3 b. 4 : 1
c. 1 : 4 d. 3 : 2

138. The total cost of flooring a room at Rs 9.50 per m² is Rs 760. If the length of the room is 10 m, what will be the breadth of the room?
a. 80 m b. 80 m²
c. 8 m d. 8 m²

139. The area of a rectangle is 650 m² and one of its sides is 13 m. Find the perimeter of the rectangle.
a. 50 cm b. 126 m²
c. 50 cm² d. 126 m

140. If a : b :: c : d; then (ma + nc) / (mb + nd) is equal to
a. m : n b. na : mb
c. c : d d. md : nc

141. Union cabinet in October 2015 approved opening up of three AIIMS like institutes under Pradhan Mantri Swasthya Suraksha Yojna (PMSSY) in
a. Nagpur, Mangalagiri, Kalyani
b. Pune, Coimbatore, Gandhinagar
c. Guwahati, Haridwar, Surat
d. None of the above

142. The Kerala Govt. ‘s programme to trace, rescue and reunite missing children with their families is known as
a. Operation Valsalya
b. Operation Rescue
c. Operation Smile
d. None of the above
143. The Prime Minister Narendra Modi announced to Celebrate Constitution day to spread awareness of Indian Constitution and his architecture Dr. B. R. Ambedkar every year on
   a. 26 October
   b. 26 November
   c. 26 December
   d. 26 January

144. The Supreme Court stayed the order passed by Rajasthan High Court declaring Santhara custom of embracing voluntary death as illegal. The custom belongs to which religion
   a. Buddhism
   b. Jainism
   c. Hinduism
   d. Islam

145. One Rank One Pension Scheme is applicable to Government employees of category
   a. Physically handicapped
   b. Ex-servicemen
   c. Indian Railways
   d. All the above

146. The Maharashtra Govt. has declared the northern part of Thane Creek as Wildlife Sanctuary. It is visited by which bird every year
   a. Flamingos
   b. Cranes
   c. Ducks
   d. Hornbill

147. National Green Tribunal passed a slew of directions for which place on April 10th 2015 to check air pollution caused by dust from construction sites
   a. Lucknow, UP
   b. M G Road, Bangaluru
   c. Park Street, Kolkata
   d. National Capital Region

148. Which UNESCO World Heritage site in Syria was targeted by ISIS
   a. Arch of Trimp
   b. Temple of Bel
   c. Temple of Baalshamin
   d. All of the above

149. Which typhoon hit the Northern Philippines recently
   a. Phaolin
   b. Nilofer
   c. Koppu
   d. None of the above
150. Which country’s constituents Assembly has approved a new Constitution after seven years of deliberations
   a. Sri Lanka
   b. Bhutan
   c. Nepal
   d. Bangladesh

151. The carbon credits worth $3.56 million was issued to which country for the first time by the UNFCCC
   a. India
   b. Sri Lanka
   c. Nepal
   d. Bangladesh

152. Which country has approved stringent laws to counter terrorism
   a. Egypt
   b. USA
   c. UK
   d. India

153. Availability of internet to 100 bus and railway stations by 2016 and later to 300 stations was announced by
   a. Microsoft
   b. Google
   c. Facebook
   d. Whatsapp

154. New name of mobile phone company ‘Uninor’ is
   a. Telconor
   b. Unitel
   c. Telenor
   d. Nortel

155. *Bharti Airtel’s financial* product company to boost wallet services
   a. M-paisa
   b. I-money
   c. M-Rupee
   d. YTS Solutions

156. The company to launch 4G services in 296 cities in India on 6th August 2015
   a. Airtel
   b. Vodafone
   c. BSNL
   d. Google
157. IndPay mobile app was launched by
   a. Bank of India
   b. Indian Bank
   c. State Bank of India
   d. Union Bank of India

158. Which microfinance company transformed into a bank in 2015
   a. Bandhan
   b. Muthoot
   c. Bajaj Finance
   d. None of the above

159. Which banks services are integrated with Union Government’s website ‘vidyalakshmi.co.in’ related to students education loan
   a. SBI
   b. IDBI
   c. Bank of India
   d. All the above

160. Who has entered partnership with railways IRCTC to launch delivery system in train
   a. Dominos
   b. Pizza Hut
   c. KFC
   d. McDonald’s

161. LIC of India is cleared recently to do business in
   a. China
   b. Nepal
   c. Sri Lanka
   d. Thailand

162. A communication satellite APSTAR-9 has been launched by
   a. China
   b. Russia
   c. UK
   d. Australia

163. World’s highest terrestrial centre Extreme Altitude Research Centre at 17700ft amsl in Laddakh belongs to
   a. CSIR
   b. DRDO
   c. DST
   d. ISRO

164. Zika is a
   a. virus
   b. bacteria
   c. Car
   d. SUV
165. ISRO is going to provide navigational support to Indian Railways through system
   a. GAGAN  
   b. GSAT8  
   c. GSAT10  
   d. BHUVAN

166. Which country launched ATM with face recognition technology recently
   a. Japan  
   b. China  
   c. USA  
   d. UK

167. Who became Britain’s youngest ‘Cyborg’ (part human part machine)
   a. Kevin warvick  
   b. Byron Wake  
   c. Bob Michel  
   d. Robert Brown

168. The ministry of Health and Family Welfare has banned sale of pain killer in multi-dose vial
   a. Ibuprofen  
   b. Nimsulide  
   c. Paracetamol  
   d. Diclofenac

169. What is the name of anti-epilepsy drug whose sale is approved by the US Food and Drug Administration
   a. Aprecia  
   b. ZipDose  
   c. Spritam  
   d. All the above

170. Brezza is a recently launched SUV by
   a. Hundai  
   b. Maruti Suzuki  
   c. Nissan  
   d. Renault

**Directions: 171-175:** Out of the four alternatives, choose the one which best expresses the meaning of the given word

171. REFUTE
   a. To refuse later  
   b. To refuse initially  
   c. To prove to be false or erroneous  
   d. To prove to be true
172. TRIFLE
   a. Something of very little value, importance or significance
   b. A rifle used by tribal
   c. Three files
   d. None of the above

173. FRIVOLOUS
   a. Of great worth
   b. Of little or no worth
   c. Feverish
   d. None of the above

174. AUSTERITY
   a. Australian territory
   b. Severity of manner, life etc
   c. Sensitivity of a document or matter
   d. None of the above

175. TEETOTALER
   a. A person who drinks tea only
   b. A person who earns his livelihood by selling tea
   c. A person who abstains totally from intoxicating drinks
   d. None of the above

Directions: 176-185: In each of the four words given under following four choices, one word is wrongly spelt. Identify the incorrect word

176.
   a. BREATH
   b. BREADTH
   c. BREZE
   d. BRICK

177.
   a. BELIEFE
   b. BELIEVE
   c. BENEATH
   d. BESIEGE

178.
   a. COMPLIMENT
   b. COMPLEMENT
   c. COMPLYMENT
   d. COMPLIANCE
179.  
   a. CANVAS  
   b. CANVASS  
   c. CARACAS  
   d. CANNON  

180.  
   a. FAR  
   b. FAIRE  
   c. FARE  
   d. FAIR  

181.  
   a. BEARE  
   b. BARE  
   c. BORN  
   d. BORNE  

182.  
   a. SIEVE  
   b. SIGH  
   c. SIGHT  
   d. SIGNE  

183.  
   a. CORD  
   b. CHORD  
   c. COURSE  
   d. CORSE  

184.  
   a. HARD  
   b. HOARDE  
   c. HORDE  
   d. HERDE  

185.  
   a. BOOKEY  
   b. BOUQUET  
   c. BUCKET  
   d. BUDGET  

Directions: 186-190: Pick out the most appropriate meaning of the following underlined phrases in each sentence out of four options –  

186. The army left the place bag and baggage.  
   a. Completely  
   b. With all the bags  
   c. Suddenly  
   d. Heavy baggage  

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187. She tried to win the contest by hook or crook.
   a. Honestly
   b. By any means
   c. By hard work
   d. With little effort

188. He was in a fix how to convince the teacher of his innocence.
   a. In a stable position
   b. In a comfortable position
   c. Thinking
   d. In a difficult position

189. After the meeting everything came in black and white.
   a. In writing
   b. In two colours
   c. Design like a Zebra
   d. Correct way

190. I am not at all conversant with the ins and outs of the matter.
   a. Both sides
   b. Details of anything
   c. Gist
   d. Result

Directions: 191-195: Pick out the most appropriate meaning of the following idiomatic expressions out of four options given in each case

191. To move heaven and earth
   a. To make every possible effort
   b. To pray sincerely
   c. To enjoy very nicely
   d. To live in comfortably

192. To nip in the bud
   a. To pluck a flower bud
   b. To destroy at an early stage
   c. To poke a needle to a very soft thing
   d. To destroy a soft thing

193. To give the cold shoulder
   a. To treat nicely
   b. To treat coldly
   c. To treat warmly
   d. None of the above
194. To beat the air
   a. To struggle to win
   b. To struggle in vain
   c. To blow the air
   d. To clean the air

195. To add fuel to the fire
   a. To increase the existing excitement
   b. To increase the existing burden of work
   c. Adding fuel to increase the flames
   d. None of the above

Directions: 196-200: Choose the most suitable word from the alternatives and complete the passage-

In this life there are no ...(196)......without pains. Life indeed ...(197)........dull if there were no difficulties. Games lose their zest if there is no real struggle and if the result is a foregone conclusion. Both winner and loser ...(198).........a game most if it is closely contested to the last. No ...(199).........is a real triumph, unless the foe is worthy of the steel. Whether we ...(200).........it or not, life is one continuous competitive examination.

196.
   a. gains
   b. life
   c. good
   d. profit

197.
   a. should be
   b. would be
   c. could be
   d. will be

198.
   a. enjoys
   b. enjoy
   c. play
   d. fight

199.
   a. game
   b. sports
   c. victory
   d. fight

200.
   a. work
   b. like
   c. hate
   d. fight
DESCRIPTION OF COURSES OFFERED

M.Sc. Forestry

**Programme Objective:** Master in Forestry programme aims to provide opportunity to the students wishing to pursue professional careers in the management and policy of forest resources and to make themselves aware about the problems related to forest across the span of urban to rural environments. The syllabus draws from coursework in the natural and social sciences and focuses on the complex relationships among the science, management and policy of forest resources. The structure of the curriculum is designed to synthesis of knowledge in multiple disciplinary exposures in the biological and social sciences. The goal is to prepare students to manage forest resources for various public and private values within a complex social, political and ecological environment. These professional opportunities can be private or public sector forest management, corporate or consulting, government conservation of forest resources or education. Students are also expected to improve their capacities as leaders and managers through summer internships, professional skills courses and other opportunities.

**Programme structure:** The Programme consists of courses and other requirements worth a total of 90 credits. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week. Each semester consists of 18 to 20 weeks of academic work equivalent to 90 actual teaching days. The programme structure and respective credits are given below as:

<table>
<thead>
<tr>
<th>Programme Structure</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Core courses</td>
<td>54</td>
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<tr>
<td>Foundation courses</td>
<td>5</td>
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<tr>
<td>Elective courses</td>
<td>5</td>
</tr>
<tr>
<td>Synopsis</td>
<td>1</td>
</tr>
<tr>
<td>Master’s thesis</td>
<td>17</td>
</tr>
<tr>
<td>Master thesis seminar</td>
<td>2</td>
</tr>
<tr>
<td>Term paper I</td>
<td>2</td>
</tr>
<tr>
<td>Term paper II</td>
<td>2</td>
</tr>
<tr>
<td>Study tour</td>
<td>2</td>
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<td><strong>Total</strong></td>
<td><strong>90</strong></td>
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</table>
### Allotment of credits to different courses

#### FIRST SEMESTER

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Credit</th>
<th>Theory</th>
<th>Practical</th>
</tr>
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<tbody>
<tr>
<td>Foundation Course</td>
<td></td>
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</tr>
<tr>
<td>FMS 101</td>
<td>Elements of Mathematics and Statistics</td>
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<td>1</td>
<td></td>
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<tr>
<td>FCR 102</td>
<td>Computer Application, Remote Sensing and GIS</td>
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<td>1</td>
<td></td>
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<tr>
<td>FOF 103</td>
<td>Overview of Forestry</td>
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<td>-</td>
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<td>Core course</td>
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<td></td>
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</tr>
<tr>
<td>FBS 111</td>
<td>Elements of Biological Science</td>
<td>1</td>
<td>1</td>
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<tr>
<td>FFF 112</td>
<td>Fundamentals of Forest Ecology</td>
<td>2</td>
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</tr>
<tr>
<td>FSC 113</td>
<td>Silviculture – I</td>
<td>2</td>
<td>1</td>
<td></td>
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<tr>
<td>FGS 114</td>
<td>Basic Geology and Soil science</td>
<td>2</td>
<td>1</td>
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<tr>
<td>FMB 115</td>
<td>Forest Mensuration and Biometry</td>
<td>2</td>
<td>1</td>
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</tr>
<tr>
<td>FHV 116</td>
<td>Forest Health and Vitality</td>
<td>2</td>
<td>1</td>
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</tr>
<tr>
<td>FTP 117</td>
<td>Term Paper I</td>
<td>2</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Total credits in first semester: \(14^a + 8^b + 2^c = 24\)

#### SECOND SEMESTER

<table>
<thead>
<tr>
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<th>Course</th>
<th>Credit</th>
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<tr>
<td>FPL 211</td>
<td>Forest Policy and Law</td>
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<tr>
<td>FLM 212</td>
<td>Landscape Approach to Management</td>
<td>2</td>
<td>1</td>
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</tr>
<tr>
<td>FRU 213</td>
<td>Forest Resource Utilization – I (NTFP)</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>FFE 214</td>
<td>Forest Economics</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course</td>
<td>Credit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------</td>
<td>--------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FFP 215</td>
<td>Forest and People</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRM 216</td>
<td>Natural Resource Management</td>
<td>2</td>
<td></td>
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<tr>
<td>FSC 217</td>
<td>Silviculture–II</td>
<td>2</td>
<td></td>
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<tr>
<td>FSN 218</td>
<td>Seed and Nursery Technology</td>
<td>1</td>
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<tr>
<td>FTP 219</td>
<td>Term Paper II</td>
<td>2</td>
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</table>

**Total credits in first semester:** $15^a+5^b+2^c=22$

### THIRD SEMESTER

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
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<tr>
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<td>Credit</td>
</tr>
<tr>
<td></td>
<td>Theory</td>
<td>Practical</td>
</tr>
<tr>
<td>Core course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRM 311</td>
<td>Resource Survey and Forest Management</td>
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<td>FWD 312</td>
<td>Wildlife and Eco Development</td>
<td>2</td>
</tr>
<tr>
<td>FRU 313</td>
<td>Forest Resource Utilization – II (Wood)</td>
<td>2</td>
</tr>
<tr>
<td>FGT 314</td>
<td>Forest Genetics and Tree Improvement</td>
<td>2</td>
</tr>
<tr>
<td>FFC 315</td>
<td>Forest Certification</td>
<td>2</td>
</tr>
<tr>
<td>FCC 316</td>
<td>Forest, Society and Climate Change</td>
<td>2</td>
</tr>
<tr>
<td>FST 317</td>
<td>Study Tour</td>
<td>2</td>
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<tr>
<td>Elective</td>
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</table>

**Total credits in first semester:** $12^a+5^b+2^d+5^e=24$

### FOURTH SEMESTER

<table>
<thead>
<tr>
<th>Code</th>
<th>Particulars</th>
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</thead>
<tbody>
<tr>
<td>FSY 441</td>
<td>Synopsis</td>
<td>1</td>
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<tr>
<td>FMT 442</td>
<td>Master’s thesis</td>
<td>17</td>
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<tr>
<td>FTS 443</td>
<td>Master thesis seminar</td>
<td>2</td>
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<td>20</td>
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</table>
## LIST OF ELECTIVE COURSE

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Elective Course</th>
<th>Credit</th>
<th>Theory</th>
<th>Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td>FGB 321</td>
<td>Forest Genetics and Biotechnology</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>FRG 322</td>
<td>Remote Sensing and Geographic Information System</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>FWH 323</td>
<td>Wildlife and Habitat Management</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>FSM 324</td>
<td>Sustainable Forest Management</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>FAF 325</td>
<td>Agro forestry</td>
<td>4</td>
<td>1</td>
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</tr>
<tr>
<td>FFP 326</td>
<td>Forest Pathology</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>FFE 327</td>
<td>Forest Entomology</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EIA 328</td>
<td>Environmental Impact Assessment</td>
<td>4</td>
<td>1</td>
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</tr>
<tr>
<td>FPT 329</td>
<td>Plantation Technology</td>
<td>4</td>
<td>1</td>
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<tr>
<td>PTN 330</td>
<td>Plant Taxonomy</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>


One lecture credit comprises of one hour teaching of the course in a week, while one practical credit comprises of two hours of practical/assignment work in a week.

### Descriptions of Course Code

The courses of M. Sc. programme are divided into four series:

- 100-series courses pertain to first semester
- 200-series courses pertain to second semester
- 300-series courses pertain to third semester
- 400-series courses pertain to fourth semester

Credit for Synopsis, Master’s thesis and Master thesis seminar is designated by code no. 441, 442 and 443 respectively.
Course code is formulated as:

- First alphabet shows programme
- Second and third alphabet shows course name
- First digit shows semester number
- Second digit shows course type (0= foundation, 1= core, 2= elective)
- Last digit shows course number

M.Sc. Wood Science & Technology

Programme Objective: The Master in Wood Science and Technology programme aims to provide opportunity to the students wishing to pursue professional careers in science and technology of wood as natural resource and to make themselves aware about the problems related to wood as basic material to manufacture various useful products. The structure of the curriculum is designed to synthesize multi-disciplinary knowledge in the biological and physical science of wood and its industrial application. The syllabus comprises of basics of wood anatomy, chemistry, physics, mechanics as well as processing knowledge and techniques to manufacture solid and composite wood products. The programme is designed to improve the qualitative, quantitative and futuristic aspects of students. Students are also expected to improve their capacities as leaders and managers through study tour, industrial attachment and excursions and other opportunities. Human Resource Management and Marketing and Enterprise Development are also the part of syllabus to build their entrepreneurial skills and aptitude.

Programme structure: The programme consists of courses and other requirements worth a total of 90 credits. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week. Each semester will consist of 18 to 20 weeks of academic work equivalent to 90 actual teaching days. The programme structure and respective credits are given below as:

<table>
<thead>
<tr>
<th>Programme Structure</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
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<tr>
<td>Foundation courses</td>
<td>7</td>
</tr>
<tr>
<td>Elective courses</td>
<td>5</td>
</tr>
<tr>
<td>Master’s thesis</td>
<td>12</td>
</tr>
<tr>
<td>Master thesis seminar</td>
<td>2</td>
</tr>
<tr>
<td>Study tour</td>
<td>2</td>
</tr>
<tr>
<td>Industrial Attachment</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
</tr>
</tbody>
</table>
### Allotment of credits to different courses

#### FIRST SEMESTER

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Credit</th>
<th>Theory</th>
<th>Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Foundation Course</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WOC 101</td>
<td>Orientation Course (Wood Science, Basic Forestry, Basic Botany)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WCA 102</td>
<td>Computer Application</td>
<td></td>
<td>-</td>
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<tr>
<td></td>
<td><strong>Core Course</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>WWC 111</td>
<td>Wood Chemistry</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>WWP 112</td>
<td>Wood Physics - I</td>
<td>2</td>
<td></td>
<td>1</td>
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<tr>
<td>WWP 113</td>
<td>Wood Physics - II</td>
<td>2</td>
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<tr>
<td>WSM 114</td>
<td>Sawmililing and Saw Doctoring</td>
<td>2</td>
<td>1</td>
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<tr>
<td>WWA 115</td>
<td>Wood Anatomy - I</td>
<td>2</td>
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<td>WWA 116</td>
<td>Wood Anatomy - II</td>
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<td>WEM 117</td>
<td>Timber Entomology and Microbiology</td>
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<td></td>
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<td></td>
<td><strong>Total credits in first semester</strong></td>
<td>17$^{a}$ + 6$^{b}$ = 23</td>
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#### SECOND SEMESTER

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<thead>
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<th>Course Code</th>
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<th>Credit</th>
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<th>Practical</th>
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<tbody>
<tr>
<td></td>
<td><strong>Foundation Course</strong></td>
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<tr>
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<td>Statistics and Research Methodology</td>
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<td></td>
<td><strong>Core Course</strong></td>
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<td></td>
</tr>
<tr>
<td>WTM 211</td>
<td>Timber Mechanics -I</td>
<td>2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>WTM 212</td>
<td>Timber Mechanics -II</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course</td>
<td>Credit</td>
<td></td>
<td></td>
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<tr>
<td>-------------</td>
<td>---------------------------------------</td>
<td>--------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WWP 213</td>
<td>Wood Preservation -I</td>
<td>2 1</td>
<td></td>
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<tr>
<td>WAD 214</td>
<td>Composite Wood I - Adhesives</td>
<td>2 1</td>
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<tr>
<td>WPW 215</td>
<td>Composite Wood II - Plywood</td>
<td>2</td>
<td></td>
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<td>WWS 216</td>
<td>Wood Seasoning - I</td>
<td>2 1</td>
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<tr>
<td>WWW217</td>
<td>Wood Working</td>
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<td><strong>Total Credits</strong></td>
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**Total credits in second semester**  \( 15^a + 6^b = 21 \)

### THIRD SEMESTER

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>WWS 311</td>
<td>Wood Seasoning -II</td>
<td>2 1</td>
</tr>
<tr>
<td>WWP 312</td>
<td>Wood Preservation II</td>
<td>2 1</td>
</tr>
<tr>
<td>WWF 313</td>
<td>Wood Finishing</td>
<td>2 1</td>
</tr>
<tr>
<td>WRW 314</td>
<td>Composite Wood III-Reconstituted Wood</td>
<td>2 1</td>
</tr>
<tr>
<td>WLW 315</td>
<td>Composite Wood IV- Laminated Wood</td>
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</tr>
<tr>
<td>WTE 316</td>
<td>Timber Engineering</td>
<td>2 1</td>
</tr>
<tr>
<td>WPD 317</td>
<td>Products Design and Fabrication</td>
<td>2 1</td>
</tr>
<tr>
<td>WST 318</td>
<td>Study Tour</td>
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<tr>
<td>WIA 319</td>
<td>Industrial attachment and Report</td>
<td>3</td>
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<td><strong>Total credits in third semester</strong></td>
<td><strong>14^a + 6^b + 2^c + 3^d = 25</strong></td>
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### FOURTH SEMESTER

<table>
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<th>Course Code</th>
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<tr>
<td></td>
<td><strong>Foundation Course</strong></td>
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<td>WHR 401</td>
<td>Human Resource Management</td>
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<tr>
<td>WME 402</td>
<td>Marketing and Enterprise Development</td>
<td>1</td>
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<tr>
<td></td>
<td><strong>Elective Courses</strong></td>
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</tr>
<tr>
<td>WFC 421</td>
<td>Forest Certification and Nano-technology</td>
<td>5</td>
</tr>
<tr>
<td>WFJ 422</td>
<td>Finger Joints for Efficient Wood Utilization</td>
<td>3</td>
</tr>
<tr>
<td>WVS 423</td>
<td>Vacuum Seasoning Technology</td>
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<tr>
<td>WMT 441</td>
<td>Master’s thesis</td>
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<tr>
<td>WMS 442</td>
<td>Master thesis seminar</td>
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<td><strong>Total credits in fourth semester</strong></td>
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</tr>
</tbody>
</table>

\[ a + 5b + 12f + 2g = 21 \]

- **a-** Theory, **b-** Practical, **c-** Study tour, **d-** Industrial attachment, **e-** Elective paper, **f-** Master thesis report, **g-** seminar. One lecture credit comprises of one hour teaching of the course in a week, while one practical credit comprises of two hours of practical/assignment work in a week.

#### Descriptions of Course Code

The courses of M. Sc. programme are divided into four series:

- 100-series courses pertain to first semester
- 200-series courses pertain to second semester
- 300-series courses pertain to third semester
- 400-series courses pertain to fourth semester
- Credit for Master’s thesis and Master thesis seminar is designated by code no. 441 by 442 respectively.
Course code is formulated as:

- First alphabet shows programme
- Second and third alphabet shows course name
- First digit shows semester number
- Second digit shows course type (0= foundation, 1= core, 2= elective)
- Last digit shows course number

M.Sc. Environment Management

Programme objectives: The programme aims to provide opportunities to the students to make themselves aware about the problems related to environmental concerns and its management. The programme is designed to provide a holistic and integrated approach of learning comprising of classroom lectures, classroom assignments, practical sessions, interactive seminars, field visits, industrial visits, term papers, divisional attachments and master’s thesis writing. The course builds and facilitates understanding of the dynamics of environment especially in the context of ecology, forestry, and climate change. Different types of processes, models, plans and techniques related to environmental processes are described and discussed through class room interaction as well as exposures visits to different ecosystems and institutional/industrial arrangements. The students are expected to get enough exposure for practical solutions to various ecological and environmental problems in the context of today’s world.

Programme structure: The programme consists of courses and other requirements worth a total of 89 credits. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week. Each semester will consist of 18 to 20 weeks of academic work equivalent to 90 actual teaching days. The programme structure and respective credits are given below as:

<table>
<thead>
<tr>
<th>Programme Structure</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core courses</td>
<td>53</td>
</tr>
<tr>
<td>Foundation courses</td>
<td>5</td>
</tr>
<tr>
<td>Elective courses</td>
<td>5</td>
</tr>
<tr>
<td>Synopsis</td>
<td>1</td>
</tr>
<tr>
<td>Master’s thesis</td>
<td>17</td>
</tr>
<tr>
<td>Master thesis seminar</td>
<td>2</td>
</tr>
<tr>
<td>Term paper I</td>
<td>2</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Foundation Course</strong></td>
<td></td>
</tr>
<tr>
<td>ERG 101</td>
<td>Remote Sensing and Geographical Information System</td>
</tr>
<tr>
<td><strong>Core Course</strong></td>
<td></td>
</tr>
<tr>
<td>EFE 111</td>
<td>Fundamentals of Ecology</td>
</tr>
<tr>
<td>EEA 112</td>
<td>Ecosystem Analysis</td>
</tr>
<tr>
<td>EPB 113</td>
<td>Environment Physics and Biogeochemistry</td>
</tr>
<tr>
<td>ECE 114</td>
<td>Conservation Ecology</td>
</tr>
<tr>
<td>EIA 115</td>
<td>Environment Impact Assessment</td>
</tr>
<tr>
<td>ERE 116</td>
<td>Restoration Ecology</td>
</tr>
<tr>
<td>ETP 117</td>
<td>Term Paper I</td>
</tr>
<tr>
<td></td>
<td><strong>Total credits in first semester</strong></td>
</tr>
</tbody>
</table>

**SECOND SEMESTER**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Theory</td>
</tr>
<tr>
<td><strong>Foundation Course</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESC 201</td>
<td>Environment Statistics and Computer Application</td>
<td>2</td>
</tr>
</tbody>
</table>
### Core Course

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFM 211</td>
<td>Forestry for Sustainable Management</td>
<td>3</td>
</tr>
<tr>
<td>EEM 212</td>
<td>Environment Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>EGF 213</td>
<td>Global Climate Change and Forest</td>
<td>3</td>
</tr>
<tr>
<td>EDM 214</td>
<td>Disaster Management</td>
<td>3</td>
</tr>
<tr>
<td>FFE 214</td>
<td>Forest Economics</td>
<td>2</td>
</tr>
<tr>
<td>ETM 215</td>
<td>Term Paper II</td>
<td>2</td>
</tr>
</tbody>
</table>

Total credits in second semester: \(16^a + 6^b + 2^c = 24\)

### THIRD SEMESTER

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS 311</td>
<td>Environment Policy, Law and Sociology</td>
<td>3</td>
</tr>
<tr>
<td>EPM 312</td>
<td>Environment Pollution Management</td>
<td>3</td>
</tr>
<tr>
<td>EFC 313</td>
<td>Forest Certification</td>
<td>2</td>
</tr>
<tr>
<td>EST 314</td>
<td>Study Tour</td>
<td>2</td>
</tr>
</tbody>
</table>

**Elective course 5 Credits**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENM 321</td>
<td>Natural Resource Conservation and Management</td>
<td>4</td>
</tr>
<tr>
<td>EBM 322</td>
<td>Bio Diversity Monitoring and Management</td>
<td>4</td>
</tr>
<tr>
<td>EBC 323</td>
<td>Bio Statistics and Computer Application</td>
<td>4</td>
</tr>
<tr>
<td>ESM 324</td>
<td>Solid Waste Management</td>
<td>4</td>
</tr>
<tr>
<td>EPC 325</td>
<td>Forest, Society and Climate Change</td>
<td>4</td>
</tr>
<tr>
<td>ERG 326</td>
<td>Remote sensing and Geographic Information System- Advance and Application in Environment Management</td>
<td>4</td>
</tr>
</tbody>
</table>
**EIA 328**  | Environment Impact Assessment  | 4  | 1  
**PTN 330**  | Plant Taxonomy  | 2  | 3  

Total credits in first semester  $8^a + 2^b + 5^c + 2^d = 17$

**FOURTH – SEMESTER**

<table>
<thead>
<tr>
<th>Code</th>
<th>Particulars</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESY 441</td>
<td>Synopsis</td>
<td>1</td>
</tr>
<tr>
<td>EMT 442</td>
<td>Master’s thesis</td>
<td>17</td>
</tr>
<tr>
<td>ETS 443</td>
<td>Master thesis seminar</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

*a- Theory, b- Practical, c- Term paper, d- Study tour, e- Elective paper. One lecture credit comprises of one hour teaching of the course in a week, while one practical credit comprises of two hours of practical/assignment work in a week*

**Descriptions of Course Code**

The courses of M. Sc. programme are divided into four series:

- 100-series courses pertain to first semester
- 200-series courses pertain to second semester
- 300-series courses pertain to third semester
- 400-series courses pertain to fourth semester
- Credit for Synopsis, Master’s thesis and Master thesis seminar is designated by code no. 441, 442 and 443 respectively

Course code is formulated as:

- First alphabet shows programme
- Second and third alphabet shows course name
- First digit shows semester number
- Second digit shows course type (0= foundation, 1= core, 2= elective)
- Last digit shows course number
M.Sc. Cellulose & Paper Technology

Programme objectives: The academic programme emphasizes on skills in multidisciplinary and advance education in cellulose and paper sciences. Programme includes courses in modern areas of applied paper science, industrial processing and paper technology. During the university’s educational programme at Masters level, the students receive adequate exposure of theoretical and practical aspects of cellulose and paper technology and gain competence in a distinctive set of skills to lead in paper industry. The course is also ideal for engineers and scientists currently working in the industry who wish to retrain and refresh in a new field. The current demand for pulp and paper experts indicates that this programme will be in high demand in the near future.

Programme structure: The programme consists of courses and other requirements worth a total of 91 credits. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week. Each semester will consist of 18-20 weeks of academic work equivalent to 90 teaching days. The programme structure and respective credits are given below as:

<table>
<thead>
<tr>
<th>Programme Structure</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core courses</td>
<td>77</td>
</tr>
<tr>
<td>Foundation courses</td>
<td>3</td>
</tr>
<tr>
<td>Project work</td>
<td>8</td>
</tr>
<tr>
<td>In Plant training</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
</tr>
</tbody>
</table>

Allotment of credits to different courses

FIRST SEMESTER

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Course Code</th>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Foundation course</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>PP-111</td>
<td>Basic Forestry</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Core Course</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>PP-112</td>
<td>Paper Industry and Fibrous Raw Materials</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>PP-113</td>
<td>Pulping</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>PP-114</td>
<td>Elements of Mechanical and Electrical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>PP-115</td>
<td>Washing of pulp</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>PP-116</td>
<td>Practical</td>
<td>5</td>
</tr>
</tbody>
</table>

Total credits in first semester : 23
SECOND SEMESTER

<table>
<thead>
<tr>
<th>S. No</th>
<th>Course code</th>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>PP-121</td>
<td>Refining, Beating and Chemical Additives</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>PP-122</td>
<td>Paper Machines-I</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>PP-123</td>
<td>Paper Machines-II</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>PP-124</td>
<td>Papernaking Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>PP-125</td>
<td>Screening and Cleaning</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>PP-126</td>
<td>Practical</td>
<td>5</td>
</tr>
</tbody>
</table>

Total Credits in second semester: 22

THIRD SEMESTER

<table>
<thead>
<tr>
<th>S. No</th>
<th>Course code</th>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>PP-211</td>
<td>Chemical Recovery</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>PP-212</td>
<td>Bleaching Technology</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>PP-213</td>
<td>Material and Energy Balance</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>PP-214</td>
<td>Specialty Paper</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>PP-215</td>
<td>Secondary Fibre Technology</td>
<td>4</td>
</tr>
<tr>
<td>6.</td>
<td>PP-216</td>
<td>Practical</td>
<td>5</td>
</tr>
</tbody>
</table>

Total Credits in third semester: 24

FOURTH SEMESTER

<table>
<thead>
<tr>
<th>S. No</th>
<th>Course code</th>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>PP-221</td>
<td>Paper Properties</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>PP-222</td>
<td>Environmental Pollution Control</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>PP-223</td>
<td>Project Work</td>
<td>8</td>
</tr>
<tr>
<td>4.</td>
<td>PP-224</td>
<td>In Plant Training</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>PP-225</td>
<td>Practical</td>
<td>5</td>
</tr>
</tbody>
</table>

Total Credits in fourth semester: 22

FEES AND DEPOSITS

The fees is to be paid by a student to the Registrar, FRI Deemed University, Dehradun through Bank Draft payable at Dehradun only. A marginal upward revision of the fee is under active consideration of the University.

M.Sc. Courses:

i) General Seats:

Tuition fee Rs. 88,000/- payable in four equal installments of Rs.22,000/- each.
ii) **Foreign National Seats:**

Tuition fee 3000 US $ payable in four equal installments of 750 US $ each.

First installment fee will be paid at the time of admission and rest fee at the beginning of each semester.

Fee once paid will not be refunded under any circumstances.

Besides course fee they have to pay students club, sports and magazine, Library, Degree, Electricity/water, Hostel fees etc. as per schedule fixed by the Institute. The student who will be allotted hostel have to pay hostel fees as per schedule.

a) **Caution Money:**

Rs. 3,000/- is payable at the time of admission. The caution money will be refunded on completion of the course after making deductions, if any.

The breakup of fee chargeable from students is as follows:-

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Item</th>
<th>Fee Chargeable (in Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Misc. Fee/Sports / Cultural Fee (at the time of admission)</td>
<td>2000.00</td>
</tr>
<tr>
<td>2</td>
<td>Degree Fee</td>
<td>200.00</td>
</tr>
<tr>
<td>3</td>
<td>Tuition Fee (per sem.)</td>
<td>22,000.00</td>
</tr>
<tr>
<td>4</td>
<td>Semester Exam Fee for M.Sc. courses</td>
<td>500.00</td>
</tr>
<tr>
<td>5</td>
<td>Hostel charges (optional) (per semester)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Single occupancy</td>
<td>(a) 4200.00</td>
</tr>
<tr>
<td></td>
<td>(b) Double occupancy</td>
<td>(b) 3000.00</td>
</tr>
<tr>
<td>6</td>
<td>Electricity, Water &amp; Other General maintenance Fees (per month to be charged from the boarders only)</td>
<td>1200.00 (per semester)</td>
</tr>
<tr>
<td>7</td>
<td>Library Fee/ Teaching aid (per sem.)</td>
<td>1000.00</td>
</tr>
<tr>
<td>8</td>
<td>Caution Money (Refundable)</td>
<td>3000.00</td>
</tr>
<tr>
<td>9</td>
<td>Late Fee</td>
<td>500.00</td>
</tr>
</tbody>
</table>

Fee payable at the time of admission (with double occupancy)   Rs. 32,900.00

Subsequent semester fee (with double occupancy)   Rs. 28,900.00
HOSTEL RULES

Subject the general control of the Academic Council, the following Ordinances and Regulations shall regulate the maintenance of discipline among the students residing in the Hostels. The hostel facility is normally provided all the students subject to availability.

INSTITUTE HOSTELS

1. Residence

1.1 Students may be admitted to the Institute Hostel, according to the criteria laid down (vide Appendix – I) for the purpose and in accordance with the accommodation available for residence.

1.2 The Institute hostels should be totally vacated for a period of one month preferably in June, every year to enable the administration to attend to the maintenance and other associated matters of the hostels. However, if the presence of certain research students is considered essential then they may be accommodated in one hostel.

1.3 Students failing to secure a seat in a hostel are required to make their own arrangement and intimate to the registry address of their residences.

For the purpose of the above Regulation the term “Guardian” shall mean the legal guardian of the student, if one has been appointed or as an alternative a near relative if any, of responsible age provided that the guardian so declared shall sign a declaration of his relationship if any, with the student and shall execute a bond indicating that he shall be responsible for the good behavior of the student.

2. Disciplinary Control

2.1 Every student living in a hostel (city campus) will be subject to the disciplinary control of the Registrar/Warden / Dean or any officer appointed by the Director, as the case may be. The Director shall constitute a Disciplinary Committee which will deal with all matter arising out of indiscipline and misconduct in the hostels.

2.2 An officer appointed by the Director shall with the cooperation of warden deal with all cases of indiscipline of students.

2.3 So long as the students is on the role of the Institute he/she shall be subject to the disciplinary control of the Institute authorities.

3. Rules of Residence

3.1 Students residing in the hostel, shall not absent themselves except under condition prescribed under regulation and shall follow the rules laid down under these regulations.

3.2 (a) A boy boarder is required to return by 9.00 p.m unless he has taken permission of the concerned warden.

(b) A girl boarder is required to return by 7.30 p.m (from September to February) and 8.30 p.m (from March to August) unless she has taken permission from the concerned warden.
3.3 No boarder shall leave the hostel of remain outside Dehra Dun when the Institute is open and course under which he has taken admission is running except with the written permission of the warden. Permission shall be given by the warden only when the student concerned has obtained leave from Course Coordinator.

3.4 Unless the permission of the warden has been received no boarder shall leave hostel except in an emergency. In the later case he shall inform the warden at the earliest and seek his permission.

3.5 Students going out on authorized tours excursion, etc, shall inform the warden in writing, stating that they have been permitted by the Course Coordinator/Dean /Director to go on such tours excursion, etc. for a specific period. The permission must be taken before they leave the hostel.

4. **Extra – Curricular Activities**

4.1 Apart from the official organizations approved by the Institute, students residing in the hostel with the permission of the Director organise Societies and Association for healthy promotion of their academic cultural, athletic and social welfare activities.

4.2 The Societies and Associations for promoting the academic cultural and other activities of the inmates of the hostel shall be subject to the guidance and control of the warden. On the recommendations of the warden the names of such Associations or Societies along-with their constitutions shall be forwarded to the Registrar as soon as possible for getting recognition by the Academic Council / Board of Management as the case may be.

4.3 For any functions in the hostel in respect of the Associations / Societies use of loudspeaker shall not be permitted.

4.4 Students shall not hold any meeting or organise any activity in the hostel without the written permission of the warden.

4.5 In all function and meeting organised in the Institute student shall maintain due decorum. Such student as are found to create disturbance or to disobey any instruction given to them shall be liable to disciplinary action as per Apppendix-2

5 **Accommodation of Guests**

No boarder residing in hostel shall accommodate a guest in his/her room.

6 **Boarder in Women’s Hostel**

6.1 Women students residing in the Women’s hostel are required to return as per time given at 3.2 clause unless specially permitted by the warden.

6.2 Women Students residing in the Women’s hostel shall be allowed to meet the visitors in the visitors room only from 5:00 p.m. to 6:30. p.m.
6.3 No Women student residing in the Women’s hostel shall accommodate guests in her room.

7. **Power of Enquiry from Students**

   Every Officer/Scientist and other members of the staff have the power of demanding from the students their identity card and such other information as may be desired by him/her. Students failing to provide the correct information shall be liable to disciplinary action as per Appendix-2.

8. **Penalty for Violation**

   For any contravention of the Ordinances/Rules relating to discipline misconduct or moral turpitude the guilty students shall be liable to such punishment as is provided for in the rules. Punishment for any omissions or commissions or for breach of discipline or any misconduct shall be awarded in accordance with the rules mentioned in Appendix-2.

1.1 In case of serious misconduct, the name of the students shall be entered in the conduct book maintained with the warden. If the name of the student has been entered thrice in the conduct book for misconduct the student shall be liable to expulsion from the hostel under the order of the Director.

1.2 Students found guilty of misconduct in the Institute are liable to be denied hostel facility.

1.3 For act of indiscipline and or misconduct student may be fined by the warden upto a limit of Rs. 200/-.

9. **Articles Permitted/Prohibited in the room**

9.1 Every boarder shall be provided at least the following articles

   1. Takhat/Cot (one)
   2. Mattress (one)
   3. Table (one)
   4. Chair (one)

9.2 Use of the heater by a boarder is not permitted.

9.3 Students desirous of keeping costly items may do at their own risk.

9.4 Students shall not be permitted to keep even licensed firearms, knives contraband material, etc, in the hostel room under any circumstances whatsoever. A breach of this regulation will lead to the expulsion of the student from the hostel without any enquiry.

9.5 Students shall not be permitted to use any hallucinogenic drug or alcoholic drinks. Even possession of these prohibited articles will render them to severe disciplinary action vide Appendix-2

10. **Invitation to guests for inaugural and other functions**

10.1 Students of the Institute may invite any person from outside the Institute for inaugural and other functions of the Societies, Associations, and Students function etc. after obtaining prior permission of the warden.
11 **Breach of general rules of the Institute**

11.1 Students of the Institution shall abide by the general rules of traffic, health, sanitation, messing extra curricular activities and security of property which may be announced by the Institute from time to time. Any breach on their part will render them liable to such disciplinary action as may be taken by the Institute vide Appendix-2. Wearing of halmet is compulsory in the campus.

12 **Violation of general Laws of the land**

12.1 All cases of indiscipline amounting to violation of the law of the land, shall be reported to the Registrar / Director who may after preliminary enquiry handover the student concerned to the police for instituting case in a Court of Law.

13 **Saving Clause**

13.1 Any question of discipline not covered by these rules and other rules framed by the Academic Council shall be dealt with by the Director.

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Appendix – I

**CATEGORY OF BOARDERS / RESIDENTS IN A INSTITUTE**

HOSTEL AND PERIOD OF THEIR STAY

1. Ph.D. Research Scholars

1.1 Residence facility - 4 years with effect from the date of registration or till submission of thesis, whichever is earlier.

   It may be extended for one year in two installments of 6 months each on recommendation of the Supervisor / Head of the Division. However no extension will be given after the submission of thesis.

2. Other bonafide Students

2.1 Only such students who have joined a regular Post – graduate Diploma, Post – graduate Degree & other courses in the Institute shall be eligible for hostel accommodation. The period of allotment though renewable every year, shall not exceed the period of the course to which a student has been admitted.

2.2 Students, who have been expelled rusticated or are under suspension for various act (s) of indiscipline during the course of their studentship, shall not be considered for allotment of seats in the hostel.

2.3 Unauthorized occupants will be expelled from the hostel by the warden. It is equally the responsibility of the hosteller to see that no guest stays in his room. If they persist in disobeying the orders then they are likely to be subjected to severe disciplinary action including rusticated for a specified period or even expulsion from the Institute.
2.4 Defaulters in payment of fees will be liable for cancellation of their allotment in the hostel (vide appendix-2)

2.5 It shall be necessary for the boarders of the hostel to fulfill the requirement of attendance in the classes as laid down in the regulations. Boarders are liable to loose their hostel seats if they do not fulfill the attendance requirement as stated above (vide appendix -2)

2.6 Not withstanding the period of stay mentioned above at various level, no students of the Institute should be allowed to stay in the hostels of the Institute for a total period exceeding 7 (seven) years. Ordinarily it implies 2 years of post graduate course and maximum of 5 years of Ph.D. Programme but will depend on the duration of the courses run in the Institute.

2.7 No students of the Institute shall have the right to stay in the same room in the next academic session. In the beginning of each academic session fresh allotment of accommodation will be made on production of No Dues Certificate.

### ATTENDANCE RULES

1. A student has to attend 75% of the lectures delivered and 75% of the practical held separately for each course in each semester.

2. The duration of Industrial attachment/dissertation/thesis works/study tour have to be accounted separately for 75% attendance.

3. The attendance of a student shall be counted from the date of his/her admission, while in the case of promoted student, attendance shall be counted from the date on which respective classes begin.

### STUDENTS WELFARE ACTIVITIES

→ The Institute provides basic medical facilities to its students.

→ Hostel accommodation is available in the Institute. However, the admission to the Institute does not entitle a student to hostel accommodation automatically.

→ The facilities for indoor games and common room/Gym are provided to the hostlers.

→ Institute library facilities are available to the students.

→ For hostel accommodation the students have to apply separately after taking admission in the FRI Deemed University.

### UNIFORM

**Boys**

Maroon Blazer with FRI logo on the chest pocket of the Blazer *(In Winters)*

White shirt (Full sleeves)

Tie : Brick Red with Diagonal pair of white strips and FRI Logo

Trouser : Black

Shoes: Black Leather shoes
Girls

Maroon Blazer with FRI logo on the chest pocket of the Blazer (In Winters)
Saree: Cream colour with Red Border of about two inches.
Blouse: Red colour with half sleeves
Shoes: cream colour bellies

ACCIDENTS DURING STUDY PERIOD

The Institute does not accept any liability in case of any injury caused due to any accident during the duration of the course.

DISCIPLINARY ACTION

Non-conformity or infringements of the rules and regulations in force shall render a student liable to disciplinary action which may extend to expulsion of the student from the course and forfeiture of the deposits and fee already paid by him/her.

IMPORTANT DATES

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue of application forms starts on</td>
<td>23rd January, 2017</td>
</tr>
<tr>
<td>Last date for issue of application forms by post</td>
<td>24th March, 2017</td>
</tr>
<tr>
<td>Last date for issue of application forms from Institute’s/ Bank counter at Dehra Dun</td>
<td>31st March, 2017</td>
</tr>
<tr>
<td>Last date for receiving completed application forms</td>
<td>03rd April, 2017</td>
</tr>
<tr>
<td>Date of admission test</td>
<td>14th May, 2017</td>
</tr>
<tr>
<td>Date of 1st counseling</td>
<td>07th July, 2017</td>
</tr>
<tr>
<td>Date of 2nd counseling</td>
<td>10th July, 2017</td>
</tr>
<tr>
<td>Date of starting new session</td>
<td>17th July, 2017</td>
</tr>
</tbody>
</table>

The FRI Deemed University has the right to change these dates, if required. However, the candidates will be informed in case of a change of date.