**Guidelines for Practicals**

* There are some academic subjects in which there is a practical component both at Secondary as well as Sr. Secondary level. Similarly, in all Vocational subjects, there is a practical component. The AIs have to conduct practical examinations after holding practical classes for all learners. The Principal/Head of the School will be responsible for this task at his/her centre. A Coordinator may be appointed for this purpose. Practical examination comprises of 20 marks each. Timings can be decided by the A.I on their own.
* The learners should be allowed to use all labs for conducting practicals for practice as well as for the examination. AIs will be entitled to claim Rs. 100/- (Rupees One Hundred only) per student per subject towards expenses.
* The practical record books maintained by the learners for all their practical subjects may be examined at the time of practical examination.
* The date sheet for the Practical Examination and list of practicals (subject-wise) are attached. Please ensure the availability of all materials/equipment/apparatus required for each practical subject.
* Please ensure the examinations are conducted smoothly and free of unfair means. All COVID related safety protocols and instructions issued by the Central/State Government have to be strictly followed to ensure safety for all.
* Two drafts have been enclosed with the said guidelines. One is in word format and another one is in Excel.
* After the examination, the word document should be duly filled in along with the name, registration number, marks and signature of the student, its print out needs to be taken on the letter head of the school and it should be sent to us in pdf format duly signed and stamped by the authorized signatory/Principal of the school.
* The excel format shall contain the details of students appeared in particular practical examination along with their marks.
* Both the files need to be sent to [contact@bosse.ac.in](mailto:contact@bosse.ac.in) by 30th of April, 2022.
* There will be only 1 email from 1 A.I pertaining the files.
* Students will have to show their I CARD at the concerned centre.

**DATE SHEET FOR PRACTICAL EXAMINATION (SECONDARY & SENIOR SECONDARY)**

| **DATE** | **LEVEL** | **SUBJECT** |
| --- | --- | --- |
| 18th April, 2022 | Secondary | Home Science / Psychology |
| 19th April, 2022 | Secondary | Science |
| 20th April, 2022 | Senior Secondary | Geography |
| 21st April, 2022 | Senior Secondary | Physics / Psychology |
| 22nd April, 2022 | Senior Secondary | Biology / P.E & Yoga |
| 23rd April, 2022 | Senior Secondary | Computer Science /Environmental Science |
| 24th April, 2022 | Senior Secondary | Home Science |
| 25th April, 2022 | Senior Secondary | Chemistry |
| 26th April, 2022 | Secondary | Secondary Vocational subjects |
| 27th April, 2022 | Senior Secondary | Senior Secondary Vocational subjects |

**LIST OF PRACTICALS**

**CLASS – Secondary SUBJECT – Science & Technology**

| **Practical No** | **Practicals** |
| --- | --- |
| Practical 1 | To find the Average Speed of an Individual, as One Walks/Runs, To and Fro between Two Points. |
| Practical 2 | To observe and Compare the Pressure Exerted by a Solid Iron Cuboid Placed on Fine Sand/Wheat Flour while Resting on its three different Faces and Calculate the Pressure Exerted in the three different Cases. |
| Practical 3 | To determine the Melting Point of Ice. |
| Practical 4 | To assemble a Household Circuit Comprising Two Bulbs (3 Volt 30 each), Two Turn On-Off Switches, a Fuse and Two Dry Cells as Source of Power. |
| Practical 5 | Separation of Mixtures. |
| Practical 6 | To differentiate between a Chemical and Physical Change in a Given Process. |
| Practical 7 | To test the Acidic/Basic Nature of a Solution with the help of pH Paper. |
| Practical 8 | To find the pH of Fruit/Vegetables Juices with the help of pH Paper. |
| Practical 9 | To show that CO2 is given out during Respiration. |
| Practical 10 | To observe organisms from given pictures or Specimens or in the Surroundings (e.g., Crop Field, a Garden, or A Nearby Pond), classify them as Producers and Consumers, and Construct Their Food Chains and Indicate their Trophic Levels. |

**CLASS – Secondary SUBJECT – Home Science**

| **Practical No** | **Practicals** |
| --- | --- |
| Practical 1 | To identify fabrics through visual inspection |
| Practical 2 | To record and study the weekly spending plan of your family. |
| Practical 3 | To make a time plan for a homemaker with two school going kids, for a typical evening from 4 to 8 O’clock. |
| Practical 4 | To prepare a label for a product with the following quality marks. |
| Practical 5 | To observe the items eaten, from the given menu. To classify each item into an appropriate food group. To suggest, items to be included in the food group not covered in the meal. |
| Practical 6 | To adjust the given meal for a family keeping in mind the sex, age and activity of the family members. |
| Practical 7 | To identify the given fabrics by touching and feeling the texture. |
| Practical 8 | To make a graphic illustration or sample of plain weave by using strips of Paper. |
| Practical 9 | To write the appropriate procedure in the column provided in the given table to remove the following stains. |
| Practical 10 | To observe the communication skills of four children in the following age groups. |

**CLASS – Senior Secondary SUBJECT – Biology**

| **Practical No** | **Practicals** |
| --- | --- |
| Practical 1 | **Some Common Instruments:**  There are some instruments, which you will use frequently while working in the laboratory. One of these is the compound microscope.   1. Compound Microscope Know your microscope 2. A simple hand lenses |
| Practical 2 | **Preparing Stained Glycerine Mounts**  a) Epidermal peel of onion  b) Epidermal peel of leaf to observe stomata |
| Practical 3 | To study the special adaptive features in some plants and animals. |
| Practical 4 | To study the physical properties of different soil samples. |
| Practical 5 | To demonstrate osmosis by using a potato Osmometer. |
| Practical 6 | To study the t.s. of dicot and monocot stems and roots from permanent slides. |
| Practical 7 | To study the structure and function of different parts of flowers (Petunia and China rose). |
| Practical 8 | **Study of Animal Specimens’ Classification**  To identify the Characteristic features of   * Sponge * Earthworm * Butterfly * Apple snail * Starfish * Cartilaginous fish (Dogfish, Scoliodon) * Bony fish (Rohu) * Toad * House lizard * Pigeon and Bat. |
| Practical 9 | Study the structure and germination in gram and bean seeds. |
| Practical 10 | To make a Herbarium. |

**CLASS – Senior Secondary SUBJECT – Physics**

| **Practical No** | **Practicals** |
| --- | --- |
| Practical 1 | To determine the internal diameter and depth of a cylindrical container (like tin can, calorimeter) using vernier calipers and find its capacity. Verify the result using a graduated cylinder. |
| Practical 2 | To find the time period of a simple pendulum for small amplitudes and draw the graph of length of the pendulum against the square of the time period. Use the graph to find the length of the second’s pendulum. |
| Practical 3 | To study Newton's law of cooling by plotting a graph between cooling time and temperature, difference between calorimeter and surroundings. |
| Practical 4 | To compare the frequencies of two tuning forks by finding first and second resonance positions in a resonance tube. |
| Practical 5 | To find the value of v for different values of u in case of a concave mirror and find its focal length (f) by plotting a graph between 1/u and 1/v. |
| Practical 6 | To draw a graph between the angle of incidence (i) and angle of deviation (D) for a glass prism and to determine the refractive index of the glass of the prism using this graph. |
| Practical 7 | To verify the law of combination (series and parallel) of resistances using ammeter – voltmeter method and coils of known resistances. |
| Practical 8 | To draw the characteristic curve of a forward biased pn junction diode and to determine the static and dynamic resistance of the diode. |
| Practical 9 | To draw the characteristics of a npn transistor in common emitter mode. From the characteristics, find out  (i) the current gain (β) of the transistor and  (ii) the voltage gain AV with a load resistance of 1k Ω. |
| Practical 10 | To draw the lines of force due to a bar magnet keep  (i) N-pole pointing to north  (ii) N-pole pointing to South. Locate the neutral points. To study the structure and function of different parts of flowers (Petunia and China rose). |

**CLASS – Senior Secondary SUBJECT – Chemistry**

| **Practical No** | **Practicals** |
| --- | --- |
| Practical 1 | **Basic Laboratory Techniques**  (i) Acquaintance with chemistry laboratory and basic laboratory techniques (cutting, bending of glass tube and boring of cork, sealing, filtration, distillation, crystallisation, cleaning of glass apparatus)  (ii) Measurement of volume and density. |
| Practical 2 | **Purification of compounds**   1. Crystallisation (NaCl, Benzoic acid) 2. Distillation of Ethane |
| Practical 3 | **Experiment related to pH change**  Determination of pH of following substances by using a universal indicator solution or pH papers:   1. Acids (CH3COOH, HCl) and bases (NaOH, NH4OH) of different dilutions 2. Study of pH change by common-ion effect in case of weak acids and weak bases by above method (specific examples of CH3COOH and CH3COONa; and NH4OH and NH4Cl may be taken). |
| Practical 4 | **Surface Chemistry**  Preparation of lyophilic and lyophobic sol.  Lyophilic sol - starch.  Lyophobic sol - ferric hydroxide. |
| Practical 5 | **Electrochemistry**  Variation of cell potential in Zn/Zn2+|| Cu2+/Cu with change in concentration of electrolytes (CuSO4 or ZnSO4) at room temperature. |
| Practical 6 | **Thermochemistry**  Any one of the following experiments  (i) To determine the enthalpy of solution of copper sulphate or potassium nitrate  (ii) To determine the enthalpy of neutralization of strong acid (HCl) with strong base (NaOH) |
| Practical 7 | **Preparation of Inorganic Compounds**   1. Preparation of double salt of ferrous ammonium sulphate or potash alum. |
| Practical 8 | **Chromatography**  (i) Separation of coloured substances by paper chromatography, and comparison of their Rf values for a mixture of red and blue ink or a black ink.  OR  (ii) Separation of coloured substances by paper chromatography, and comparison of their Rf values for juice of a flower or grass. |
| Practical 9 | **Volumetric Analysis (Quantitative analysis)**  (i) Preparation of solution of oxalic acid and ferrous ammonium sulphate of known molarity by weighing (non-evaluative). Use of chemical balance to be demonstrated.  (ii) A study of acid-base titration (single titration only)   1. To find out the Molarity of a given NaOH solution by titrating against the standard solution of oxalic acid. Both the solutions to be provided   (iii) A study of redox titrations (single titration only)  (a) To find out the Molarity and strength of a given potassium permanganate solution by titrating against M/50 Mohr’s salt (Ferrous ammonium sulphate) solution. Both the solutions to be provided. |
| Practical 10 | **Tests for the functional groups present in organic compounds**  Test of functional groups present in given unknown organic compounds   1. Test of unsaturation 2. Test for Carboxylic, phenolic, aldehydic and ketonic groups. |

**CLASS – Senior Secondary SUBJECT – Computer Science**

| **Practical No** | **Practicals** |
| --- | --- |
| Practical 1 | Create your e-mail account on Gmail/Yahoo mail/Hotmail. |
| Practical 2 | XYZ enterprises, a pharmaceutical company, is heading for its annual general body meeting. You have been assigned the work to create a document using Open Office Writer highlighting the important achievements of your company. Also form a spreadsheet in Calc showing the item wise sales in each month. The spread sheet should also show the average sales figures and the total annual sales. Finally, form a 3 minutes presentation using Impress highlighting your company, its objective, estimated sales target and the achieved sales in the last financial year.  (Note : You may assume the sales figures) |
| Practical 3 | Write a C++ program to accept a number. Using conditional operator print whether the number is even or odd. |
| Practical 4 | Write a C++ program (using while loop) to display all the multiples of 5 from 100 to 50. |
| Practical 5 | Create a learner table using SQL commands in the following format. |
| Practical 6 | Add a new column in the existing table using SQL command. |
| Practical 7 | Perform DML commands UPDATE and DELETE on the following table. |
| Practical 8 | Create an HTML document which will display the ordered list of practicals mentioned in this manual. |
| Practical 9 | Create an HTML document which will display the ordered list of practicals mentioned in this manual. |
| Practical 10 | Create a web page that contains the following table. |

**CLASS – Senior Secondary SUBJECT – Geography**

| **Practical No** | **Practicals** |
| --- | --- |
| Practical 1 | **Map and Its Elements:** Construction of a simple scale |
| Practical 2 | **Map and Its Elements:** Construction of graticule of any of the following Map Projections: Cylindrical Equal-Area, Simple Conical with one standard parallel and Mercator’s Projection (provide table from the manual). |
| Practical 3 | **Map Interpretation:** Interpretation of topographical map |
| Practical 4 | **Map Interpretation:** Interpretation of Weather map |
| Practical 5 | **Statistical Diagrams:** Construction of Line graph/Bar diagram/Star diagram |
| Practical 6 | **Statistical Diagrams:** Construction of pie diagram/Distribution Maps |

**CLASS – Senior Secondary SUBJECT – Home Science**

| **Practical No** | **Practicals** |
| --- | --- |
| Practical 1 | To prepare a label depicting each of the following marks of standardisation:  (i) ISI  (ii) FPO  (iii) Agmark. |
| Practical 2 | To fill in various forms at a bank:  (i) cheque  (ii) pay in slip  (iii) withdrawal form |
| Practical 3 | To study the resource pattern of various family members at your home. |
| Practical 4 | To list habits of members of your family and neighbors which degrade the environment and suggest Ways to conserve it. |
| Practical 5 | To identify this discriminations against a girl child (if any ) your family and find justifications for the same. |
| Practical 6 | To identify a child with special needs and study the family’s effort in his/her achieving independence. |
| Practical 7 | To develop a questionnaire to study a family’s efforts in helping an adolescent achieve developmental tasks. |
| Practical 8 | To identify various types of fibres using:  (i) burning test  (ii) visual inspection. |
| Practical 9 | To study the nutritional intake and its effect on the nutritional status of afamily by maintaining a food diary. |
| Practical 10 | To develop a plan to set up a laundry unit to provide door to door service in  (i) rural area  (ii) area with government flats  (iii) posh society. |

**CLASS - Senior Secondary SUBJECT - Psychology**

| **S.No.** | **PRACTICALS** |
| --- | --- |
|  | **Raven`s progressive Matrices**  To measure the eductive component of “ g” as defined in Spearman’s Two Factor theory using Raven’s Standard Progressive Matrices. |
|  | **David’s Battery of Differential Abilities**  To assess various aptitudes of my subject using David’s Battery of Differential Abilities. |
|  | **Maudsley Personality Inventory**  To assess personality of my subject on two dimensions using Maudsley Personality Inventory. |
|  | **Self Concept Questionnaire**  To assess the level of self concept of my subject using Dr. Saraswat’s Self Concept Questionnaire. |
|  | **Social Learning Theory and Social Cognitive Theory**  The famous Bobo Doll Experiment (Bandura) answers many questions in understanding patterns of human behaviour.   * Difference between Social Learning Theory and Social Cognitive Theory. * Applications of Social Learning Theory. * Based on the theory and its application, do you think violence is contagious? |

**CLASS - Secondary SUBJECT - Psychology**

| **S. No** | **PRACTICALS** |
| --- | --- |
|  | To administer and interpret any one psychological test. |
|  | To administer, score, interpret & write a report on any 2 psychological tests. |
|  | **To draft a Case Profile**  The case profile will include developmental history of the subject using both qualitative and quantitative methods. Qualitative methods include observation, interview etc. The main objective of preparing a case profile is to understand the individual in totality. The students may prepare a case profile of an individual who has excelled in areas like sports, academics, music etc. or having special needs like learning disability, autism or those with interpersonal social problems i.e. poor body image, obesity, temper tantrums, substance abuse, not getting along with peers, withdrawn etc They may be encouraged to find out the background information and developmental history of the individual. |
|  | To draft a questionnaire for an elder person to find out about:   * the process of ageing; * Family profile (parents, siblings, education, etc.); * Thoughts on ageing, and have they changed over the years; * Has the elder person been able to promote one’s wellness? * View on healthcare and coping with physical and psychological challenges; * Any specific stereotypes towards old age. |

**CLASS - Senior Secondary SUBJECT - Physical Education**

| **S. No** | **PRACTICALS** |
| --- | --- |
|  | Measurement of Health related Fitness Tests (Sr. Secondary) |
|  | Measurement of Physical and Motor Fitness Test |
|  | Skills of any Team/ Individual Game 5 |
|  | Yoga: Sukshma Vyayama, Asana (Surya Namaskar, Forward Bending, Backward Bending, Inverted Poses, Twisting, Balancing, Standing) Shatkarma ( Jal Neti, Kunjal, Kapal-bhati, Tratak), Pranayam Mudra Bandh, Meditation Record File & Viva |

**CLASS - Senior Secondary SUBJECT - Environmental Science**

| **S. No** | **PRACTICALS** |
| --- | --- |
|  | Study of a simple ecosystem (Suggested habitats: pond, river, estuarine, grassland, forest and desert) and description of the biotic and abiotic components of the ecosystem. |
|  | Choose five common species of Trees / plants from your NEIGHBORHOOD and list their common names. Describe each plant in terms of its height and leaves. |
|  | Describe the environmental problem of your locality and suggest a remedy. |
|  | To study the quality of a sample of water collected or provided |
|  | To segregate domestic waste into bio-degradable and non-biodegradable component. |
|  | To make a herbarium sheet. |
|  | To set up an aquarium. |
|  | To study the biodiversity of birds and insects in your locality |
|  | To prepare a list of plants and animals which are used for making meals at home on any one day and to comment on the habit and habitat of each. |
|  | To make an audit of the electrical energy consumption by various household appliances |

**CLASS: - Secondary SUBJECTS: All Vocational**

The Vocational Subjects opted by students in Secondary are as follows: -

Carpentry, Solar Energy Technician, BioGas Technician, Laundry Services, Bakery and Confectionery,Welding Technology, Data Entry Operations, Painting & Drawing.

Students can perform practical in any two topics of their own choice as instructed by their centre.

**CLASS: - Senior Secondary SUBJECTS: All Vocational**

The Vocational Subjects opted by Students in Senior Secondary are as follows: -

Secretarial Practice, Plant Protection, Furniture and Cabinet Making, Electro Plating, House Keeping, Food Processing, Hotel Front Office Operation, Soil and Fertilizer Management, Preservation of Fruits and Vegetables, Data Entry Operations, Painting & Drawing, Early Childhood Care and Education, Library and Information Science, Mass Communication

\*Students can perform practical in any two topics of their own choice or as instructed by their Centre.