



# St. Wilfred's College for Girls

(Affiliated to University of Rajasthan)

## Experimental Learning

Experimental learning, also known as experiential learning, is an educational approach that emphasizes hands-on, practical experiences as a means of acquiring knowledge, skills, and understanding. It involves actively engaging learners in experiences that encourage critical thinking, problem-solving, and reflection. The classification of experimental learning can vary depending on the context or framework being used. One common classification is based on the level of structure and guidance provided to learners during the experiential process. Here are three broad categories of experimental learning based on this classification:

**Structured Experimental Learning:** In this category, the learning experiences are carefully designed and structured to achieve specific learning outcomes. The activities, tasks, and environments are predetermined, and learners follow a predefined sequence of steps. Examples of structured experimental learning methods include laboratory experiments, simulations, case studies, and role-playing exercises.

**Semi-Structured Experimental Learning:** This category lies between structured and unstructured learning approaches. Learners have some degree of control and flexibility in shaping their learning experiences. While there may be a general framework or objective, learners have more autonomy in exploring and discovering knowledge. Problem-based learning, field trips, group projects, and inquiry-based learning fall under this category.

**Unstructured Experimental Learning:** This classification refers to learning experiences that are less guided and have a minimal predefined structure. Learners have significant freedom to shape their experiences, explore their interests, and learn through trial and error. Examples include internships, apprenticeships, entrepreneurial ventures, and self-directed projects. The focus is on real-world application and learning from direct experience.

It's important to note that these classifications are not mutually exclusive, and there can be overlap between them. The key aspect of experimental learning is the active engagement of learners in meaningful experiences, which enables them to construct knowledge and develop skills through reflection and application.

Experimental learning are used in our college, listed below-

Department	Experimental Activities Performed
BOTANY	Cell structure from Onion, Hydrilla and Spirogyra
BOTANY	Plastid for pigment distribution in lycopersicon, cassia and capsicum
BOTANY	Electron microphotographs of Eukaryotic cells for various cell organelles
BOTANY	Electron microphotographs Virus, Bacteria and Eukaryotic cell of comparative study of cellular organization.
BOTANY	Different stages of Mitosis and Mitosis in root tip cells and flower bud respectively of Onion.



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<b>BOTANY</b>	Solve genetic problem based upon mendal's law if inheritance: Monohybrid cross, Dihybrid, Back cross and Test cross.
<b>BOTANY</b>	Permanent slide/ Photographs of different stages of Meiosis and Mitosis, Sex chromosome, Polytene Chromosomes, Salivary Glands.
<b>BOTANY</b>	Emusculation, Bagging and Tagging Techniques, Cross Pollination Techniques
<b>BOTANY</b>	Bacteria using curd or any other suitable material, "Gram staining" of Bacteria
<b>BOTANY</b>	Mycoplasma, TMV, Pox Virus, Bacteriophage (Photographs/ 3-D Models).
<b>BOTANY</b>	Symptoms of plants disease- Downy Mildew of Bajra, Green ear of Bajra, Powdery mildew, Mosaic of Bhindi
<b>BOTANY</b>	Specimen, permanent slides and by making suitable temporary slides Albugo-white rust, Schlerospora- downy mildew, green ear, Claviceps- Ergot, Ustilago-Loose smut of wheat, covered smut of barley, Puccinia- Black rust of Wheat, Agaricus, Peziza and Alternaria- Early blight of potato
<b>BOTANY</b>	Culture techniques of fungi and bacteria.
<b>BOTANY</b>	Media preparation, Potato Dextrose Agar, Nutrient Agar.
<b>BOTANY</b>	Visit local gardens/ Field study of plants in farmers field, agricultural station
<b>BOTANY</b>	Classwork material by making temporary slides and study of permanent slides of Oscillatoria, Nostoc, Volvox, Chara, Vaucheria, Ectocarpus, Polysiphonia
<b>BOTANY</b>	External morphology and preparation of suitable section of vegetative and reproductive part of Riccia, Marchentia, Anthoceros and Funaria.
<b>BOTANY</b>	Lichens.
<b>BOTANY</b>	Elementry knowledge of principles and uses of various instruments in Molecular biology and Biotechnology- Laminar Air Flow, Centrifuge, autoclave, Incubator, Spectrophotometer, ph meter, Gel electrophoresis unit.
<b>BOTANY</b>	Media preparation
<b>BOTANY</b>	Aseptic culture techniques
<b>BOTANY</b>	Explant culture Shoot tip, Nodal segment.
<b>BOTANY</b>	Gel electrosis techniques
<b>BOTANY</b>	Separate chloroplast method by solvent method.
<b>BOTANY</b>	Separate chloroplast pigment using paper Chromatography.
<b>BOTANY</b>	Separate amino acids in a mixture by paper Chromatography
<b>BOTANY</b>	Demonstrate the test of protein in the unknown sample.
<b>BOTANY</b>	Demonstrate the phenomenon of osmosis by use of Potato osmometer.
<b>BOTANY</b>	Demonstrate rate of Transpiration by use of potometers.
<b>BOTANY</b>	R.Q. by Ganong's Respirometer.
<b>BOTANY</b>	Measurement of growth using Auxanometer
<b>BOTANY</b>	External morphology, anatomy of vegetative and reproductive parts of



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	Psilotum, Selaginella, Equisetum and marsillea.
<b>BOTANY</b>	External morphology, anatomy of vegetative and reproductive parts of Cycas, Pinus and Ephedra.
<b>BOTANY</b>	Fossils and slides of Fossils
<b>BOTANY</b>	Any commonly occurring Dicotyledons plant to understand the Body plan 7 Modul type of growth
<b>BOTANY</b>	Life forms exhibited by flowering plant (by visit to a forest and garden).
<b>BOTANY</b>	Monopodial and Sympodial types of branching in monocot and dicot plants
<b>BOTANY</b>	Anatomy of primary and secondary growth in monocot and dicot using hand out sections of Sunflower, Maize, Cucurbita stem and roots.
<b>BOTANY</b>	Anomalous secondary growth in stem; Salvadora, Bignonia, Bougainvillia, Bauhinia, Nyctanthus, leptadenia, Dracena.
<b>BOTANY</b>	Examination of Seed (monocot and dicot) Structure, Seed viability Test.
<b>BOTANY</b>	Specimen study of medication of plant parts for vegetative reproduction.
<b>BOTANY</b>	Frequency and Density, Abundance of plant species of campus vegetation by Quadrate method.
<b>BOTANY</b>	Variation in Soil Moisture in relation to depth.
<b>BOTANY</b>	The Water Holding Capacity of the soil.
<b>BOTANY</b>	Dissolve Oxygen content in polluted and unpolluted water.
<b>BOTANY</b>	Find out ph indicator of soil sample by universal indicator method.
<b>BOTANY</b>	Find out transparency of a water body by Sachhi Disk.
<b>BOTANY</b>	Morphology (external and internal) of hydrophytes (Hydrilla stem, Typha leaf and Nymphaea/ Eichhornia petiole) and Xerophytes (Calotropis, Capparis and casuarina stem , Nerium leaf) with special reference to Adaptation.
<b>BOTANY</b>	Following specimen with special reference to- Botany of the economically important part Processing if any involved Specimen of Cereals, Pulses, Spices, Beverages, Beans, Sugar, Oil seed (mustard and groundnut) Starch grain in Potato and Pea. Histochemical test Cellulose, Lignin, Starch, Fat.
<b>BOTANY</b>	Submit 5 specimen of locally importance of Medicinal plant.
<b>BOTANY</b>	Study of families- <ul style="list-style-type: none"> <li>• Ranunculaceae- Renunculus, Delphinium</li> <li>• Fabaceae- Pisum sativum, Cassia, Acacia.</li> <li>• Apiaceae- Coriandrum.</li> <li>• Convolvulaceae- Ipomea, Jacquomontia.</li> <li>• Apocynaceae- Catharanthus, Thevetia.</li> <li>• Asclepiadaceae- Calotropis.</li> <li>• Lamiaceae- Ocimum, Salvia.</li> <li>• Euphorbiaceae- Euphorbia pulcherrima, Ricinus.</li> <li>• Acanthaceae- Adhatoda.</li> <li>• Asteraceae- Helianthus.</li> <li>• Rubiaceae- Hamelia.</li> <li>• Poaceae- Triticum.</li> </ul>
<b>BOTANY</b>	Types of Inflorescence and Fruits
<b>BOTANY</b>	Embyology- T.S of Anther, to study the wall layers of Pollen sac with Pollen Grains. Study the various type of Ovule, draw the diagrams.



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	Study the various types of Placentation. Study the Germination of Pollen Grains in situ and observe the path of pollen tube. Study the various stage of Embryo (Raphanus fruit)
<b>BOTANY</b>	To analyse the Ligated sample by Agrose Gel Electrophoresis.
<b>BOTANY</b>	Analyse Protein Purity by SDS-PAGE Profile
<b>BOTANY</b>	Isolation of DNA and preparation of "cot" curve.
<b>BOTANY</b>	Restriction digestion of plant DNA, its separation by Agrose Electrophoresis and visualization by Ethidium Bromide Staining.
<b>BOTANY</b>	Perform Sandwich Dot ELISA for antigen
<b>BOTANY</b>	General Cytological Techniques- I.
<b>BOTANY</b>	General Cytological Techniques- II
<b>BOTANY</b>	Isolate the Crude DNA from <i>Allium cepa</i> .
<b>BOTANY</b>	Study the various stages of Mitosis in Onion Root Tip isolate the Crude DNA from <i>Allium cepa</i> .
<b>BOTANY</b>	Lampbrush Chromosome.
<b>BOTANY</b>	Polytene Chromosome
<b>BOTANY</b>	Disorders- Edward's Syndrome Patau's Syndrome Down's Syndrome Klinefelter's Syndrome Turner's Syndrome Super Males Super Females
<b>BOTANY</b>	Mitotic index in given root tip cells of Onion
<b>BOTANY</b>	Morphological study of respective members of Algae, Fungi, Bacteria, Bryophyte and Pteridophytes.
<b>BOTANY</b>	<b>Algae-</b> Microcystis, Hydrodictyon, Ulva, Cosmarium, Chara and Drapranaldiposis.
<b>BOTANY</b>	<b>Fungi-</b> Pilobolus, Mucor, Albugo, Morchella, Melampora, Polyporus, Dreshlera, Phoma, Aspergillus and colleotrichum
<b>BOTANY</b>	<b>Bryophytes-</b> Polytrichum, Anthoceros, Marchentia
<b>BOTANY</b>	<b>Pteridophytes-</b> Psilotum, Lycopodium, Selaginella, Equisetum, Ophioglossum, Isoetes and Gleichenia.
<b>BOTANY</b>	Symptomology of some diseased specimens- White rust, Downy Mildew, Rust, Powdery Mildew, Smut, Red Rot of Sugarcane, Citrus Canker, TMV, Little Leaf of Brinjal, Mango Malformation.
<b>BOTANY</b>	Gram Staining of Bacteria.
<b>BOTANY</b>	Identificaion of Fungal Culture- Rhizopus, Mucor, Aspergillus, Fusarium, Phoma and colleotrichum Sterilization methods, Preparation of media and stains.
<b>BOTANY</b>	<b>Gymnosperm-</b> Comarative study of the anatomy of vegetative and reproductive parts of Cycas, Ginkgo, Cedrus, Abies, Araucaria, Ephedra and Gnetum.
<b>BOTANY</b>	Important Fossil Gymnosperms from prepared slides and specimen.
<b>BOTANY</b>	<b>Angiosperms-</b> Description of a specimen from representative, locally available families.
<b>BOTANY</b>	Ranunculaceae (ii) Fabaceae (iii) Apiaceae (iv) Rubiaceae (v) Asteraceae



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	(vi)asclepiadaceae (vi)Apocynaceae (viii)Convolvulaceae (ix) Solanaceae (x) Euphorbiaceae (xi) Labiatae (xii) Chenopodiaceae (xiii) Amaranthaceae (xiv) Cucurbitaceae (xv) Tiliaceae
<b>BOTANY</b>	Description of various species of genus , location of key characters and preparation of key at generic level.
<b>BOTANY</b>	Field trip within and around the campus, compilation of field notes and preparation of Herbarium Sheets of such plants Wild or Cultivated as are abundant
<b>BOTANY</b>	Training in using Floras and Herbaria for identification of specimens described in the class.
<b>BOTANY</b>	Demonstration of the utility of the Secondary Metabolites in the taxonomy of some appropriate genera
<b>BOTANY</b>	Permeability of living tissues using different concentration of organic solvent.
<b>BOTANY</b>	The effect of temperature on permeability of Plasma Membrane.
<b>BOTANY</b>	Demonstrate the activity of Peroxidase in plant material.
<b>BOTANY</b>	Determine osmotic potential of cell by Plasmolytic method
<b>BOTANY</b>	Measure the rate of Transpiration by using Farmer's potometer.
<b>BOTANY</b>	Measure the rate of Transpiration by using Ganong's potometer.
<b>BOTANY</b>	Determine RQ value of following Respiratory Substrate using Ganong's Respirometer.
<b>BOTANY</b>	Measure and compare rate of respiration of various plant parts by volume methods by Pettinkoff's tube.
<b>BOTANY</b>	Extract free Amino Acid from germinating seeds by using Chromatography and RF Value.
<b>BOTANY</b>	Separate Amino Acid in a mixture by paper strip chromatography
<b>BOTANY</b>	Separate the leaf pigment by paper strip chromatography.
<b>BOTANY</b>	Separate the chlorophyll pigment by using thin layer chromatography.
<b>BOTANY</b>	Carbohydrate (Reducing sugar) Carbohydrate (non-reducing sugar)
<b>BOTANY</b>	Color test for lipid.
<b>BOTANY</b>	Test the presence of cellulose..
<b>BOTANY</b>	Test presence of latex.
<b>BOTANY</b>	Test the presence of Hemi-cellulose.
<b>BOTANY</b>	Presence of Phenol
<b>BOTANY</b>	Determine the action of Catalase.
<b>BOTANY</b>	Test the presence of cutin
<b>BOTANY</b>	Basic requirement of microbiological laboratory.
<b>BOTANY</b>	Basic preparation of various culture media.
<b>BOTANY</b>	Techniques for pure culture of microorganism.
<b>BOTANY</b>	Isolation of antibiotic resistant colonies by antibiotic disc methods gradient plate and replicate plating technique.
<b>BOTANY</b>	Identification of Bacterial and fungal culture
<b>BOTANY</b>	Green ear disease of bajra
<b>BOTANY</b>	Ergot of bajra .
<b>BOTANY</b>	White Rust of Crucifers.
<b>BOTANY</b>	Black stem rust of Wheat.
<b>BOTANY</b>	Paddy blast disease.
<b>BOTANY</b>	Citrus Canker.



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BOTANY	Bacterial blight of Rice.
BOTANY	Rust wart of Sugarcane
BOTANY	Loose smut of Wheat.
BOTANY	Root –Knot of Vegetables
BOTANY	Pollen viability in the given flower.
BOTANY	The slides showing T.S. of Anther.
BOTANY	Pollen grains of some common plants
BOTANY	Determine rate of carbon dioxide evolution from different soils using Soda Lime or Alkali absorption method
BOTANY	Determine percent of Organic Carbon and Organic matter in the soils of crop and Grassland and Forest.
BOTANY	Determine the Water holding Capacity of soils collected from different location.
BOTANY	Determine Soil Moisture Content Porosity and Bulk Density of soils collected from varying depths at different locations.
BOTANY	Determine Gross and Net Phytoplankton productivity by light and dark bottle method
BOTANY	Determine minimum size and number of Quardates required for reliable estimate of biomass in Grassland.
BOTANY	The L.s. Of shoot tip for Cytohistological
BOTANY	Various types of ovules
BOTANY	The pollen grains of some Dicotyledonous plants
BOTANY	Different type of stomata in Monocot and Dicot leaves.
BOTANY	The pollen grains of some plants belonging Monocotyledons.
BOTANY	Hanging drop methods of pollen germination.
BOTANY	The development stages of stometa
BOTANY	Pollen vibility by histochemical test in Laboratory.
BOTANY	Endospore.
BOTANY	Pollen vibility by histochemical test in Laboratory
BOTANY	Section cutting dicot root ( Tinospora).
BOTANY	Monocot embryo.
BOTANY	Dicot stem ( Sunflower ).
BOTANY	Monocot root (Maize).
BOTANY	Monocot stem (Maize).
BOTANY	Leaf anatomy (Neerium , Ficus, Triticum, Zea mays).
BOTANY	<b>Food Crops:</b> Wheat, Rice, Maize, Chickpea, Potato, Sugarcane, Sweet potato, Morphology, Anatomy and Microchemical test for stored food material.
BOTANY	<b>Forage/ Fodder Crops-</b> Sorghum, Bajra, Gram, Clove, Guar Bean
BOTANY	<b>Textile Fibers:</b> Cotton, Jute, Cannabis, Linen, Sunn hemp.
BOTANY	<b>Cordage fibers:</b> Coir.
BOTANY	<b>Fibre for stuffing:</b> Silk, Cotton.
BOTANY	Morphology, Anatomy, Microscopic study of whole fibres using appropriate staining procedures
BOTANY	<b>Medicinal and Aromatic Plants:</b> Papaver somniferum, Withania somnifera, Allium sativum, Adhatoda ceylanica, Aloe barbadens..
BOTANY	<b>Vegetable Oils-</b> Mustard, Ground nut, Sunflower, Castor. Morphology, Microscopic structure of oil yielding tisses, test of oil and iodine number Gum, Resin, Tenins and Dye- Perform simple test for Gum or Resin. Prepare a water extract of Vegetable tanins( Acacia Terminalia, tea) and dyes (turmeric, indigo,



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	Butea monosperma, Lawsonia inermis) and perform tests to understand their chemical nature.
<b>BOTANY</b>	<b>Field Survey-</b> A survey of a part of the town or city should be carried out by the entire class in batch. Individual students will select one avenue road and locate the tree planted on a graph paper.
<b>BOTANY</b>	<b>Scientific Survey-</b> The student should be taken to National park and century
<b>BOTANY</b>	Elementary knowledge of principles and uses of various instruments in Biotechnology- Laminar Air Flow, Centrifuge, autoclave, Incubator, Spectrophotometer, ph meter, Gel electrophoresis unit
<b>BOTANY</b>	Aseptic culture techniques.
<b>BOTANY</b>	Explant culture Shoot tip, Nodal segment.
<b>BOTANY</b>	Gel electrophoresis techniques.
<b>BOTANY</b>	Media preparation.
<b>BOTANY</b>	Organogenesis and Somatic Embryogenesis using appropriate Explant and preparation of Artificial Seeds.
<b>BOTANY</b>	Demonstration of androgenesis in Datura
<b>BOTANY</b>	Salinity of soil sample.
<b>BOTANY</b>	Find out Stomatal index of xerophyte (Calotropis, Nerium and Zizyphus)
<b>BOTANY</b>	To study ecological adaptation of Halophytes.
<b>BOTANY</b>	Seed viability by T.T.C method.
<b>BOTANY</b>	To study spread of root system of a perennial species in the soil
<b>BOTANY</b>	To estimate ph, EC and Sacchi Disk transparency for polluted and unpolluted water bodies.
<b>BOTANY</b>	To estimate chemical oxygen demand of polluted water sample.
<b>BOTANY</b>	To estimate Biological oxygen demand of polluted water sample.
<b>BOTANY</b>	To estimate chemical oxygen demand of polluted water sample.
<b>BOTANY</b>	To estimate inorganic phosphorus content in water sample collected from polluted and unpolluted water bodies.
<b>BOTANY</b>	To estimate total hardness, calcium and magnesium content in water sample collected from polluted and unpolluted water bodies.
<b>BOTANY</b>	To estimate chloride content in water sample collected from polluted and unpolluted water bodies
<b>BOTANY</b>	To estimate alkalinity in water sample collected from polluted and unpolluted water bodies
<b>CHEMISTRY</b>	Separation and identification of 6 radicals ( 3 cations and 3 anions ) in the given inorganic mixture.[anion-Cl <sup>-</sup> ,NO <sub>3</sub> <sup>-</sup> ,SO <sub>4</sub> <sup>-2</sup> & cation-Fe <sup>+3</sup> ,Mn <sup>+2</sup> ,Ca <sup>+2</sup> ]
<b>CHEMISTRY</b>	Separation and identification of 6 radicals ( 3 cations and 3 anions ) in the given inorganic mixture [anion-CO <sub>3</sub> <sup>-2</sup> ,Br <sup>-</sup> ,SO <sub>4</sub> <sup>-2</sup> & Cation-Zn <sup>+2</sup> ,Ba <sup>+2</sup> ,Mg <sup>+2</sup> ]
<b>CHEMISTRY</b>	Separation and identification of 6 radicals ( 3 cations and 3 anions ) in the given inorganic mixture. [anion-CH <sub>3</sub> COO <sup>-</sup> ,Cl <sup>-</sup> ,SO <sub>4</sub> <sup>-2</sup> & cation-Cu <sup>+2</sup> ,Al <sup>+3</sup> ,Mg <sup>+2</sup> ]
<b>CHEMISTRY</b>	Separation and identification of 6 radicals (3 cations and 3 anions) in the given Inorganic mixture. [anion-NO <sub>2</sub> <sup>-</sup> ,Br <sup>-</sup> ,CO <sub>3</sub> <sup>-2</sup> & cation-Cd <sup>+2</sup> ,Sr <sup>+2</sup> ,Mg <sup>+2</sup> ]
<b>CHEMISTRY</b>	Determination of melting point of given organic compound.
<b>CHEMISTRY</b>	Purify and crystallize the given organic compound by sublimation method.
<b>CHEMISTRY</b>	Determine the boiling point of the given organic compound.
<b>CHEMISTRY</b>	Carboxylic group ,carbonyl group,Alcoholic group,Nitro group,Aldehydic group,



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	Hydrocarbon, Carbohydrate, Amido group, Amino group, Ester group, Ether group.
<b>CHEMISTRY</b>	To determine the viscosity of pure liquid at room temperature by using Ostwald viscometer.
<b>CHEMISTRY</b>	To determine the surface tension of pure liquid at room temperature by using stalagmometer
<b>CHEMISTRY</b>	Estimation of hardness of water by EDTA using Eriochrom black-T indicator.
<b>CHEMISTRY</b>	To find the amount of copper in the impure sample of copper sulphate using sodium thiosulphate (Hypo).
<b>CHEMISTRY</b>	Estimation of Nickel as Nickel dimethylglyoxime gravimetrically
<b>CHEMISTRY</b>	Identification of organic compound through the functional group analysis, determination of melting point, boiling point and preparation of suitable derivatives.
<b>CHEMISTRY</b>	Oxalic acid, Resorcinol, Alpha naphthol, Beta Naphthol, Benzophenone, Acetone, Urea, Aniline, Nitro benzene, Acetamide, Glucose, Benzamide, Naphthalene, Thin layer chromatography, Separation of green leaf pigments using spinach leaves.
<b>CHEMISTRY</b>	Determination of transition temperature of Manganese chloride tetrahydrate by thermometric method.
<b>CHEMISTRY</b>	Determination of critical solution temperature of two partially miscible liquids and to determine the concentration of that solute. (Phenol-Water system)
<b>CHEMISTRY</b>	Separation and identification of organic compound By using Sodium bicarbonate as solvent:- (Anthracene and benzoic acid)
<b>CHEMISTRY</b>	Preparation of cis-potassium diaqua dioxalato chromate (III) ion.
<b>CHEMISTRY</b>	Preparation of sodium trioxalato ferrate (III) Ion.
<b>CHEMISTRY</b>	Separation and identification of organic compound By using Sodium Hydroxide as solvent (Anthracene and b-Naphthol)
<b>CHEMISTRY</b>	Separation and identification of organic compound By using Water as solvent:- (Alpha naphthol and Oxalic acid)
<b>CHEMISTRY</b>	Separation and identification of organic compound by using Water as solvent (Benzophenone and urea)
<b>CHEMISTRY</b>	Preparation of p-nitroacetanilide from acetanilide.
<b>CHEMISTRY</b>	Preparation of iodoform from ethanol and acetone.
<b>CHEMISTRY</b>	Verify the Beer-Lambert law for potassium permanganate and determine the concentration of unknown given solution of $\text{KMnO}_4$ using spectrophotometer.
<b>CHEMISTRY</b>	Determine the strength of given strong acid (HCl) conductometrically by using standard strong alkali solution (NaOH) by using conductivity meter.
<b>CHEMISTRY</b>	Determine the strength of given strong acid (HCl) potentiometrically using standard strong alkali solution (NaOH) by pH metre.
<b>CHEMISTRY</b>	To prepare Tetra amine CU(II) sulphate $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4 \cdot \text{H}_2\text{O}$
<b>CHEMISTRY</b>	To prepare Bis- Dimethyl glyoxime Nickel $[\text{Ni}(\text{DMG})_2]$
<b>CHEMISTRY</b>	To prepare trans -potassium trioxalato Chromate(III). $\text{K}_3[\text{Cr}(\text{C}_2\text{O}_4)_3] \cdot 3\text{H}_2\text{O}$
<b>CHEMISTRY</b>	Preparation of sodium trioxalato feric(III).
<b>CHEMISTRY</b>	Preparation of Cis-Potassium diaqua dioxalato chromate(III) Ion $\text{K}_3[\text{Cr}(\text{C}_2\text{O}_4)_2(\text{H}_2\text{O})_2]$ .
<b>CHEMISTRY</b>	To identify the 4 anion and 4 cation including rare Earth Elements [anion- $\text{CO}_3^{2-}$ , $\text{CH}_3\text{COO}^-$ , $\text{Cl}^-$ , $\text{NO}_3^{2-}$ & cation- $\text{NH}_4^+$ , $\text{Pb}^{+2}$ , $\text{Ni}^{+2}$ , $\text{Cd}^{+2}$ ]
<b>CHEMISTRY</b>	To determine the 4 anionic and 4 cationic radicals from given mixture. [anionic-



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PHYSICS	The variation of charge and current in a RC circuits with different time constant using a D. C. Source (charging and discharging characteristic).
PHYSICS	Behavior of R-C circuit with varying resistance and capacitance using AC mains as a power source and also to determine the impedance and phase relations.
PHYSICS	The voltage and current behavior of an L-R circuit with an alternating current (A. C.) Power source and also determine impedance, phase relation and power factor.
PHYSICS	The forward and reverse bias characteristics of a semiconductor junction diode and to determine its forward & reverse bias resistances (static and dynamic).
PHYSICS	To determine the specific resistance of material and determine difference between two small resistance using Carry-Foster's Bridge.
PHYSICS	To convert Galvanometer into Ammeter of given range (1A).
PHYSICS	To convert Galvanometer into Voltmeter of given range (1V).
PHYSICS	Plot the forward and reverse bias characteristics of a Zener diode and to determine forward and reverse resistance (static and dynamic) also show the breakdown characteristics.
PHYSICS	The Random Decay phenomena and determine the decay constant using the statistical board.
PHYSICS	Using Compound Pendulum study the variation of time period with amplitude in large angle oscillations.
PHYSICS	The excitation of normal modes and measure frequency splitting using two coupled oscillators.
PHYSICS	The frequency of energy transfer as a function of coupling strength using coupled oscillators.
PHYSICS	Normal modes of a coupled pendulum system. Study of oscillations in mixed modes and find the period of energy exchange between the two oscillators.
PHYSICS	Determine Youngs Modulus by bending of beam
PHYSICS	To ensure Curie temperature of Monal alloy using Curie temperature kit.
PHYSICS	Determine the modulus of rigidity ( $\eta$ ) of material of wire using Maxwell's needle method.
PHYSICS	The specific-rotation of sugar solution by polarimeter.
PHYSICS	Verify the laws of series and parallel combination of resistances in an electrical circuit
PHYSICS	Using Michelson's interferometer find out the wavelength of given monochromatic source (Sodium Light).
PHYSICS	Determine the dispersive power of a prism by spectrometer.
PHYSICS	Determine the wave-length of sodium light using transmission grating.
PHYSICS	Study and verify Thevenin's Theorem.
PHYSICS	Study and verify different theorems of Boolean Algebra.
PHYSICS	Study the operation and characteristics of OR, AND, NOT, NOR, NAND, X-OR, X-NOR Logic gates.
PHYSICS	The full wave rectifier (power supply) using two diodes and application of



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	L and $\pi$ section filters.
<b>PHYSICS</b>	The half wave rectifier using single diode and application of L and $\pi$ section filters.
<b>PHYSICS</b>	Input and output characteristics of a given PNP\NPN transistor in common emitter mode.
<b>PHYSICS</b>	Study input and output characteristics a given of PNP\NPN transistor in common base mode.
<b>PHYSICS</b>	Determine the band gap of a Semiconductor P-N junction diode.
<b>PHYSICS</b>	To design & study of single stage transistor audio amplifier (variation of gain with frequency).
<b>PHYSICS</b>	To determine the capacitance and dielectric constant of a liquid and gang condenser using De-Sauty bridge.
<b>PHYSICS</b>	To determine the h-parameters of a given PNP/NPN transistor.
<b>PHYSICS</b>	Determination of power factor ( $\cos \theta$ ) of a given coil using CRO.
<b>PHYSICS</b>	Determination of velocity of sound in air by standing wave method using speaker, microwave & CRO.
<b>PHYSICS</b>	Measurement of inductance of a coil by Andeson's bridge.
<b>PHYSICS</b>	To determine the Plank's Constant using Solar Cell.
<b>PHYSICS</b>	Study of the temperature dependence of resistance of a semiconductor and determine band gap using Four Probe method.
<b>PHYSICS</b>	To study the variations of count rate with applied voltage and thereby determine the <i>plature</i> , operating voltage and slope of <i>plature</i> .
<b>PHYSICS</b>	Study of characteristics of a G. M. Counter, verify inverse square law for $\beta$ particles in air and calculate the gradient of the slope.
<b>PHYSICS</b>	Study of $\beta$ absorption in Al foils, calculate linear attenuation coefficient using G. M. counter.
<b>PHYSICS</b>	Determination of Plank's constant using Light Emitting Diode (LED).
<b>PHYSICS</b>	To study behavior of L-R circuit using alternative current (A. C.) source and hence to determine impedance of the circuit, phase relation, power factor of the circuit.
<b>PHYSICS</b>	To study the operation and characteristics of BCD to 7-segment decoder.
<b>PHYSICS</b>	Study of LC transmission line at fixed frequency.
<b>PHYSICS</b>	Study of LC transmission line at Variable frequency.
<b>PHYSICS</b>	To study the frequency response characteristics of series resonance circuit (L-C-R), prove relation between frequency, inductance and capacitance.
<b>PHYSICS</b>	To study and plot the forward and reverse bias characteristics of a Zener diode and to determine forward and reverse resistance also show the breakdown characteristics.
<b>PHYSICS</b>	To study and plot the forward and reverse bias characteristics of a semiconductor/junction diode and determine forward and reverse bias resistances.
<b>PHYSICS</b>	To design Zener regulated power supply and study the regulation with various loads.
<b>PHYSICS</b>	To study the characteristics of Field Effect Transistor (FET) and design/study of finite gain & operational constants.



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PHYSICS	To study the frequency response of single stage transistor amplifier.
PHYSICS	To study the operation of OR, AND, NOT, NOR, NAND, X-OR and X-NOR logic gates.
PHYSICS	To study the characteristics of operational amplifier (Op-amp) as Inverting amplifier, Non-inverting amplifier.
PHYSICS	Obtained differential amplifier (subtractor) and summing amplifier using operational amplifier.
PHYSICS	To design and study of single stage transistor amplifier and determine its voltage gain, cut-off frequency and frequency response (variation of gain with frequency).
PHYSICS	To design and study the frequency response of two stage R-C coupled transistor amplifier & determine its input, output impedance and voltage gain.
PHYSICS	To study the transistor bias stability hence obtained effect of temperature on leakage current variation and stability of amplifier.
PHYSICS	To design and study the operation of astable, monostable and bistable multivibrator with different values of RC (time-constant).
PHYSICS	To Study the characteristics of FET, use it to design relaxation oscillator hence measure its frequency, mutual conductance, amplification factor and operational constants.
PHYSICS	To study the characteristics of operational amplifier (OP-Amp) as Inverting amplifier and Non-inverting amplifier.
PHYSICS	Obtained buffer amplifier (voltage follower \ unit gain amplifier), Differential amplifier (subtractor), Summing amplifier, Differentiator and Integrator using operation amplifier.
PHYSICS	To design and study the percentage regulation and variation on ripple-factor for full wave rectifier, shunt capacitor filters, L and $\pi$ filters.
PHYSICS	To design and study of various pass filters (Low pass, High pass, Band pass, Band stop filters) calculate the frequency and compare with experimental values.
PHYSICS	To study the percentage regulation and variation on ripple-factor for half wave rectifier, shunt capacitor filters, L and $\pi$ filters.
PHYSICS	To study the frequency response of non-inverting AC operational amplifier and high input impedance of inverting amplifier & non-inverting amplifier.
PHYSICS	To study the clamping and clipping of sine-wave and square-wave using diode circuit.
PHYSICS	To study the characteristics of Unipolar junction transistor (UJT), use it to design relaxation oscillator and measure its frequency.
PHYSICS	To determine the Plank's constant using Solar cell.
PHYSICS	To study the regulated power supply (voltage stabilization) using Zener diode.
PHYSICS	To design the conversion of analog voltage to digital signal and digital signal to analog voltage hence compare the theoretical and experimental values.
PHYSICS	To Study the Michelson Interferometer.
PHYSICS	To Determination of the variation of refractive index of the material of the Prism with wave-length and to verify Cauchy's dispersion formula
PHYSICS	To study the DC-gate control characteristics and anode current characteristics of silicon control rectifier (SCR)



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PHYSICS	To study J-K flip-flop and master slave J-K flip-flop hence verify their truth table.
PHYSICS	To study digital signal addition and subtraction using 4-bit full adder and subtract.
PHYSICS	To study D flip-flop and T flip-flop hence verify their truth table.
PHYSICS	To study the operation and characteristics of BCD to 7-segment decoder
PHYSICS	To study the operation of decade counter using IC-7490 and binary to decimal decoder/driver using IC-7490
PHYSICS	To study the absorption of particles using Aluminum (Al) foils and determine linear attenuation coefficient, mass attenuation coefficient and half thickness.
PHYSICS	To study the characteristics of GM counter, study the statistical nature of radioactive decay and calculate mean variance and standard deviation decay.
PHYSICS	To study and verify inverse square law for $\beta$ - particles in air.
PHYSICS	To illustrate that if no of measurements are quite high, the Poisson distribution in nuclear decay phenomena fellows closely normal and Gaussian distribution.
PHYSICS	To study the variations of count rate with applied voltage and there by determine the operating voltage, plateau and slope of plateau.
PHYSICS	To study the mode characteristics of reflex klystron and determine mode number, transit time, electronic tuning range (E.T.R.) & electronic tuning sensitivity (E.T.S.).
PHYSICS	To study the frequency characteristics of reflex klystron hence determine its frequency and compare with theoretical value.
PHYSICS	To determine the voltage standing wave ratio using basic technique of microwave measurement, also compute VSWR.
PHYSICS	To study the attenuation characteristics of variable attenuator using microwave bench.
PHYSICS	To study the simulated L-C-R transmission line (audio frequency) and to find out the value of frequency & impedance ( $Z_0$ ) from graph.
PHYSICS	To study the variation of resistivity with temperature of a given semi conductor material and obtain its band gap using Four Probe method.
PHYSICS	To study the Hall effect in a given semi conductor material and determine its Hall coefficient, carrier density and Mobility.
PHYSICS	To study of the dispersion relation for the mono-atomic lattice. Determination of cut off frequency of the mono-atomic lattice.
PHYSICS	To study of the dispersion relation for the di-atomic lattice, acoustical and optical mode, energy gap.
PHYSICS	Study of heat capacity of solids.
PHYSICS	Determination of the variation of refractive index of the material of the Prism with wave-length and to verify Cauchy's dispersion formula.
PHYSICS	To study the operation and characteristics of 1:16 multiplexer and 16:1 demultiplexer hence verify their truth table.
PHYSICS	To demonstrate the use of 555 timing IC to design astable, monostable and



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	bistable multivibrators and voltage to frequency converter.
<b>ZOOLOGY</b>	Optical Microscope: Dissecting and compound microscopes
<b>ZOOLOGY</b>	microscopic slide preparations: Narcotization; fixing and Preservation; washing; staining; destaining; dehydration; clearing and mounting.
<b>ZOOLOGY</b>	Collection of animals from their natural habitat during field trips such as Amoeba, Paramecium, Euglena, Daphnia, Cyclops, etc.
<b>ZOOLOGY</b>	Culture of Paramecium in the laboratory and study of its structure, life-Processes and behavior in live state.
<b>ZOOLOGY</b>	Protozoa: Amoeba, Euglena Trypanosoma, Giardia, Entamoeba. Elphidium (Polystomella), Foraminiferous shells, Monocystis, Plasmodium, Paramecium, leishmania, Paramecium showing binary fission and conjugation, Opalina, Nyctotherus, Balantidium, Vorticella.
<b>ZOOLOGY</b>	Porifera: Leucosolenia, Euplectella, Spongilla, T. S. Sycon, Spicules, Spongin fibers, Gemmules. Coelenterata :Millepora, Physalia, Verella, Aurelia, Alcyonium, Gorgonia, Pennatula, Sea anemone, Stone corals, Obelia colony and medusa.
<b>ZOOLOGY</b>	Ctenophora: Any Ctenophore
<b>ZOOLOGY</b>	Platyhelminthes: Taenia, Planaria Fasciola (WM), T. S. body of Fasciola, Miracidium, Sporocyst, Redia and Cercaria Larvae of Fasciola, Scolex, T. S. mature proglottid of Taenia, gravid Proglottid, Cysticercus larva.
<b>ZOOLOGY</b>	Aschelminthes : Ascaris, Wuchereria, Dracunculus
<b>ZOOLOGY</b>	Annelida: Neries, Heteroneries, Arenicola, Aphrodite, Chaetopterus, Tubifix, Glossiphonia, Pontobdella, Polygordius.
<b>ZOOLOGY</b>	Earthworm: External features, general viscera, alimentary canal, reproductive system and nervous system.
<b>ZOOLOGY</b>	Leech: External features, alimentary canal, reproductive and nervous system.
<b>ZOOLOGY</b>	Study of the Following Through Permanent Slide Preparation: Paramecium, Euglena, Foraminiferous shells, Sponge spicules, Spongin fibres, Gemmule, Hydra Obelia colony and Medusa: Parapodium of Nereis and Heteronereis.
<b>ZOOLOGY</b>	Squash preparation for the study of mitosis in onion root tip, permanent slides of mitosis (all stages).
<b>ZOOLOGY</b>	Squash preparation for the study of meiosis in grasshopper or cockroach testes, permanent slice of meiosis (all stages).
<b>ZOOLOGY</b>	Study of giant chromosomes in salivary glands of Chironomous or Drosophila larva.
<b>ZOOLOGY</b>	Study of cell permeability using mammalian R.B.C.
<b>ZOOLOGY</b>	Study of Drosophila: <ol style="list-style-type: none"> <li>1. Life cycle and an idea about its culture</li> <li>2. Identification of male and female</li> <li>3. Identification of wild and mutants (yellow body, ebony, vestigial wing and white eye)</li> <li>4. Study of permanent prepared slides: Sex comb and salivary gland chromosomes.</li> </ol>



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<b>ZOOLOGY</b>	Numerical problems based on monohybrid and dihybrid cross
<b>ZOOLOGY</b>	Identification of blood groups (A, B, AB, O & Rh factor)
<b>ZOOLOGY</b>	Study of development of frog/toad with the help of Charts/Slides/Models Eggs, cleavage, blastula, gastrula, neurula, tail-bud, hatching, mature tadpole Larvae, metamorphic stages, toadlet/froglet
<b>ZOOLOGY</b>	Histological slides: Cleavage, blastula, gastrula, neurula and tail-bud stage.
<b>ZOOLOGY</b>	Study of development of chick with the help of whole Mounts/Charts/Slides/Models a. 18 hrs, 21 hrs, 24 hrs, 33 hrs, 48 hrs, 72 hrs and 96 hrs of incubation. b. Primitive streak stage in living embryo, if possible, after removal of the blastoderm from the egg. c. Study of the embryo at various stages of incubation in vivo by making a window in the egg-shell may also be demonstrated.  Study of various foetal membranes in a 10-12 day old chick embryo.
<b>ZOOLOGY</b>	Study of Museum Specimens: Onychophora- Peripatus, Arthropoda - Limulus, Spider, Scorpion, Centipede, Millipede, Lepas, Balanus, Squilla, Eupagurus, Crab, Mantis, Honey-bee, (queen, king, worker) Locust, Silkworm Moth, Beetle, White grub. Mollusca -Chiton, Aplysia, Cypraea, Mytilus, Pearl Oyster, Denialium, Loligo, Nautilus. Echinodermata- Pentaceros, Cucumaria, Antendon. Echinus, Ophiothrix, Hemichordata - Balanoglossus
<b>ZOOLOGY</b>	Study of Microscopic Slides: Arthropoda V.S. of integument (cuticle): Pediculus, Bedbug, Termite and its castes, Cyclops, Daphnia, crustacean larvae (Nauplius, Metanauplius, Zoea, Mysis, Megalopa, Phyllosoma), statocyst of prawn. Mollusca V.S. of shell, T.S. gill of Pila, T.S of gill of Unio, Glochidium larva. Echinodermata- Larval forms
<b>ZOOLOGY</b>	Anatomy: Prawn/Squilla External features, appendages, alimentary canal and nervous system; Hastate Plate Pila External features, pallial organs and nervous system; osphradium, radula.
<b>ZOOLOGY</b>	Study of the Following through Permanent Slide Preparation: (i) Study of different cell types -Blood smears (Wrights or Leishman stain). (ii) Osphradium, gill lamella and radula of pila. (iii) Statocyst and Hastate plate of Prawn/Squilla
<b>ZOOLOGY</b>	Microbiology Immunology and Biotechnology:



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	<p>1. Preparation and use of culture media for microbes.</p> <p>2. Study of microbes in food materials like curd, etc (Gram +ve &amp; Gram -ve bacteria, Aspergillus, Mucor, Rhizopus, Penicillium, Alternaria and Fusarium).</p> <p>3. Educational tour to any Microbiology laboratory/ Dairy/ Food processing factory/ Distillery. Collection of material may also be encouraged wherever possible. Candidates are required to submit a detailed report of the visit.</p> <p>4. Antigen-antibody reactions-precipitation, agglutination.</p>
<b>ZOOLOGY</b>	<p>Animal Physiology:</p> <ol style="list-style-type: none"> <li>Counting of red and white blood cells in the given blood sample.</li> <li>Estimation of hemoglobin in the given blood sample.</li> <li>Estimation of haematocrit value (PCV) in the given blood sample.</li> <li>Demonstration of enzyme activity (catalase) in liver.</li> <li>Study of salivary digestion of starch and the effect of heat and alcohol on salivary Digestion of starch.</li> <li>Study of histological structure of major endocrine glands of mammals.</li> </ol>
<b>ZOOLOGY</b>	<p>Biochemistry:</p> <ol style="list-style-type: none"> <li>Detection of protein, carbohydrate and lipid in the animal tissue/food samples.</li> <li>Identification of different kinds of mona-, di- and poly-saccharide in the given Food samples.</li> <li>Circular Paper chromatography of dyes/amino acids.</li> </ol>
<b>ZOOLOGY</b>	<p>Anatomy:</p> <p>Any edible fish (Wallago, Labeo): External features, general viscera, afferent and efferent branchial blood vessels, eye muscles and their innervations, brain, cranial nerves and internal ear.</p>
<b>ZOOLOGY</b>	<p>Study of the following through Permanent Slide preparations: Striped muscle fibers; Smooth muscle fibers, scales of edible fish, hair of man, blood film of any vertebrate.</p>
<b>ZOOLOGY</b>	<p>Study of Microscopic Slides: Whole mounts of oral hood, velum and pharyngeal wall of Amphioxus; T. S. of Amphioxus through various regions; tadpole larva of Ascidia, whole mounts of Salpa, Doliolum and Oikopleura, V. S. of skin of fish, T. S. body of fish through various regions, V. S. of skin of bird, V. S. mammalian skin, T. S. mammalian liver, kidney, stomach, intestine, bone, spinal cord, lung, duodenum, pancreas, testis and ovary.</p>
<b>ZOOLOGY</b>	<p>Study of Museum Specimens: Ascidia, Ciona, Botryllus, Ammocoete larva, Petromyzon, Myxine or Bdellostoma, Zygaena (Sphyrna), Torpedo, Chimaera, Acipenser, Amia or Lepidosteus, Labeo, Clarias, Anguilla, Hippocampus, Exocoetus, Echeneis, any flat-fish, Protopterus, Ichthyophis or any blind-worm, Proteus, Ambystoma, Axolotl, Siren. Alytes, Hyla, Testudo, Chelone, and Fresh Water Tortoise, Sphenodon, Hemidactylus</p>

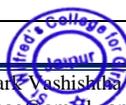




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	Phrynosoma, Draco, Chameleon; Eryx, Hydrophis, Naja, Viper, Crocodilus, Alligator, Archaeopteryx, any Running Bird, Pavo cristatus, Choriotis nigriceps, Ornithorhynchus, Tachyglossus, Didelphys, Macropus, Bat, Loris, Scaly anteater.
<b>ZOOLOGY</b>	Osteology: A comparative study of articulated and disarticulated bones of skull, vertebrae, limb bones and girdles of any amphibian, reptile, bird and mammal with the help of models/charts/artificial skeleton/bones.
<b>ZOOLOGY</b>	Environmental Biology: Analysis of Environment: 1. Soil pH 2. Water analysis: pH, alkalinity, acidity, dissolved O <sub>2</sub> and free CO <sub>2</sub> , Salinity (Chloride). 3. Qualitative estimation of zoo-plankton in given sample of water.
<b>ZOOLOGY</b>	Ethology: 1. Study of any stored insect pest (food preference and response to light) 2. Antennal grooming in cockroach. 3. Chemical communication: Ants/earthworm.
<b>ZOOLOGY</b>	Biostatistics: 1. Construction of frequency table, bar diagram, line diagram, histogram, frequency Polygon and pie chart. 2. Exercises on mean, median and mode (direct, short-cut and step-deviation Methods). 3. Standard deviation and standard error.
<b>ZOOLOGY</b>	Biosystematics and Taxonomy: 1. Identification, Classification and study of the animals from major invertebrate Group (Protozoa to Hemichordate including minor phyla) using museum Specimens, microscopic slides, models or charts or photographs. 2. Problems based on Shannon weiner index, Dominance index. Estimation of Population density of given sample by Mark recognition recapture method. Determination of population density by quadrat method.
<b>ZOOLOGY</b>	Anatomy: a. Major: 1. Leech: Reproductive, excretory, nervous and haemocoelomic systems 2. Crab: Nervous system. 3. Scorpion: Nervous and reproductive systems. 4. Mollusca: General anatomy and Nervous systems of Patella, Lamellic 5. Mytilus, Sepia and Aplysia. b. Minor: 6. C.S. of arm of Starfish. 7. General anatomy of Holothurians. 8. Aristotle's lantern of Sea urchin.
<b>ZOOLOGY</b>	Museum Specimens: Identification, classification and distinguishing features of important representatives from various groups (Protozoa to Hemichordata).



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<b>ZOOLOGY</b>	Study of Permanent Preparations (Protozoa to Hemichordata): Amoeba, Entamoeba, Polystomella, Actinophryx, Euglena, Noctiluca, Volvox colony, Trypanosoma, Giardia, Opalina, Nyciotherus, Balantidium, Vorticella, Monocystis, Plasmodium, Sycon T.S. and L.S., Gemmule, Obelia colony, Obelia medusa, Aurelia tentaculocytes, T.S. Fasciola hepatica section through various regions of the body, Hirundinaria body sections through various regions, Daphnia, Cypris, Cyclops, T.S. Peripatus. Larva: Aurelia-planula, Redia, Cercaria, Metacercaria, Onchosphere, Cysticercus, Trochophore, Nauplius, Zoea, Mysis, Megalopa Phyllosoma, Veliger, Glochidium, Bipinnaria, Ophiopluteus, Echinopluteus, Auricularia, Tomaria.
<b>ZOOLOGY</b>	.Biological Chemistry: I.Verification of Beer-Lambert's Law. II. Quantitative estimation of the following in various tissues: a) Carbohydrates: Glycogen, glucose. b) Proteins: Total proteins – Lowry et al method c) Lipids: Phospholipids and cholesterol. d) Nucleic acid: DNA and RNA. Enzymes: Acid and alkaline phosphatases
<b>ZOOLOGY</b>	VI. Physiology: (i) Study of the following with the help of Computer Assisted Learning (CAL) (please see E-pharm programme). A. The effect of K, Ca acetylcholine and epinephrine on the isolated heart of frog and conclude your data with the graphic representation Computer Assisted Learning (CAL) be included. B. The effect of various doses of acetylcholine and Nor-epinephrine on blood pressure, heart rate and respiratory rate of the rabbit. C. The effects of Atropine, Epinephrine, Ephedrine and Escrine on Rabbit's Eyes. Other such exercises can be framed from the E-Pharm software. (ii) Determination of blood pressure, pulse rate, heart beat and respiration rate. (iii) Photometric determination of hemoglobin in blood sample. (iv) Determine of MCV, MCH, MCHC and colour index of the given sample of blood. (v) Demonstration of the following in blood: Clotting time, erythrocyte Sedimentation rate, haemolysis and crenation. (vi) Determination of the urea in urine/blood. (vii) Determination of the glucose in urine. (viii) Tests of digestive enzymes in different parts of the alimentary canal.
<b>ZOOLOGY</b>	Cell & Molecular Biology & Biotechnology: Squash and smear preparations of testis of cockroach and grasshopper using aceto-orecin, Fuelgen and Giemsa stains.



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	<p>Study of mitosis in onion root tip.          Study of giant chromosomes in the salivary gland of Chironomus or Drosophila Larva.          Vital and supravital staining (with Neutral Red and Janus Green B) of cells of the Testis of any insect or mammal to study the mitochondria.          Chromosome study in cells of the testis of an insect / mammal / cells of the bone marrow of a mammal.          Paper chromatography: Unidimensional chromatography, using amino acids from purified samples and biological materials (Ascending and Descending).          Electrophoresis: Paper/Horizontal/Vertical-Proteins/DNA/RNA.          Study of prepared microscopic slides, including those showing various cell Types, mitosis, meiosis and giant chromosomes.          Note: It is compulsory to submit prepared slides from each exercise for examination.</p>
<b>ZOOLOGY</b>	<p>Population Genetics:          Numerical problem based on Hardy Weimberg's law, calculation of allelic frequencies, inbreeding genotypic frequencies and estimation of beritability,          Problems based on syllabus</p>
<b>ZOOLOGY</b>	<p>Biostatistics:          Preparation of frequency diagrams/bardiagrams/histogram/Pie charts. Tables And Graphs/line          Exercises on Arithmetic mean, Harmonic mean Geometric mean, Median, Mode (Direct, short-cut and step-deviation).          Calculation of standard deviation, variance and standard error of mean.          Calculation of probability and significance between means using Students t-test And Chi-square test.          Plotting the slope of a lineon a graph; calculations of the slope of a line, coefficient correlation and regression.</p>
<b>ZOOLOGY</b>	<p>Anatomy          (a) Major          Cranial nerves of Wallago attu.          (ii) Cervical nerves of Rat.          (iii) Reproductive organs of Rat.          (b) Minor          (i) Accessory respiratory organs of Heteropneustes fossilis.          (ii) Labrinth organs of Anabas testudens.</p>
<b>ZOOLOGY</b>	<p>Lower Chordates          Salpa: asexual and sexual stages, Doliolum-oozoid, Botrylus, Herdmania, Amphioxus.          Pisces          Petromyzon, Myxine, Rhinobatus, Pristis, Trygon, Chimaera, Polydon,</p>



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	<p>Acipenser, Amia, Lepidosteus, Protopterus, Lepidosiren, Neoceratodus, Notopterus, Exocoetus, Echineis, Pleuronectes, Mestacembelus, Diodon, Tetradon, Ostracion, Lophis, Syngnathus, Hippocampus, Anguilla, Labeo, Ophiocephalus.</p> <p>Amphibian Ichthyophis, Necturus, Proteus, Ambystoma, Axolotal, Salamander, Siren, Alytes, Pipa, Bufo, Hyla, Rhacophorus, Rana.</p> <p>Reptilian Testudo, Chelone, Sphenodon, Calotes, Hemidactylus, Phrynosoma, Draco, Varanus, Chameleon, Cobra, Hydrophis, Rattle snake, Viper, Pit, Viper, Krait, Eryx, Gavialis.</p> <p>Aves Archaeopteryx Tailor Bird, Indian Koel, Jungle fowl, Peacock, Columba, Parrot, Wood Pecker, Owl, Flamingo, Great Indian Bustard.</p> <p>Mammals Ornithorhynchus, Echidna, Marcropus, Hedgehog, Manis, Loris, But, Mongoose, Hystrix, Otter.</p>
<b>ZOOLOGY</b>	<p>Lower Chordates Herdmania spicules, Herdmania tadpole larva, Amphioxus- T.S. passing through oral hood, pharynx, Testes and ovary, intestine and caudal regions. Ammocoete larva (whole mount).</p> <p>Pisces Placoid scale, cycloid scale, ctenoid scale.</p> <p>Amphibia V.S. skin of frog. T.S. passing through stomach, Duodenum, intestine, liver, pancreas, lung, kidney, testis, Ovary, spinal cord, bone.</p> <p>Reptilia V.S. skin of lizard.</p> <p>Aves V.S. skin of bird, contour feather, down feather.</p> <p>Mammals V.S. skin of mammal. T. S. passing through stomach, intestine, liver, pancreas, kidney, testes, ovary, thyroid gland, adrenal gland, lung, bone and spinal cords L.S./T.S. of pituitary gland, T. S. of simple cuboidal epithelium, simple columnar epithelium, simple squamous epithelium, adipose tissue and reticular tissues, Blood smear-identification of various cell types.</p>
<b>ZOOLOGY</b>	<p>Comparative Osteology (Models/Charts/Diagrams): Comparative account of axial and appendicular skeletons of Frog, Varanus, Fowl and Rabbit (both articulated and disarticulated with the help of models, artificial skeleton and bones).</p>
<b>ZOOLOGY</b>	<p>Tools and Techniques (i) Operations of various types of microscopes. (ii) Use of Phase-contrast microscope. (iii) Use of Fluorescence microscope and demonstration of nucleic acid by</p>



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	<p>acridine Orange or ethidium bromide.</p> <p>(iv) Preparation of tissue for TEM.</p> <p>(v) Tissue homogenization and fractionation by differential centrifugation for isolation of mitochondria, nucleic acids and cytosol and use of marker enzymes For assessment of the purity of the components.</p> <p>(vi) Demonstration of GLC, atomic absorption spectrophotometer, CASA etc.</p> <p>(vii) Standardisation of oculometer and measurements of tubular diameter cell heights. Nuclear diameters, etc.</p>
<b>ZOOLOGY</b>	<p>Environment Biology</p> <p>(i) Analysis of pond stagnant water for: pH, Acidity, Alkalinity, Dissolved oxygen, CO, Salinity, Phosphates, COD and BOD.</p> <p>(ii) Map (World/India/Rajasthan) Estuaries,oceans. To localize biodiversity, Major rivers,</p> <p>(iii)Collection, isolation and identification of Planktons.(Phyto- and Zoo-planktons).</p>
<b>ZOOLOGY</b>	<p>Ethology</p> <p>(i) Study of the food preference in Tribolium or any other grain/pulse pest).</p> <p>(ii) Study of communication in Earthworm by Pheromones.</p> <p>(iii) Effect of toxicants on movement of Fish.</p> <p>(iv) Study Learning by Trial and Error in Rat using Hebb- William Maze.</p> <p>(v) Imprinting study using Chick.</p> <p>(vi) Listing of all the animals and recording of behaviour in Zoo Sanctuary/National Park.</p>
<b>ZOOLOGY</b>	<p>Development Biology</p> <p>(i) Frog: Egg, Cleavage (2-, 4-, &amp; 8-celled), Morula, Blastula(including Yolk Plug stage) and neurala stages (Slides as well as preserved materials)</p> <p>(ii) Chick: 16 hrs, 21hrs, 24 hrs, 28hrs, 33hrs, 38 hrs, 48hrs, 70hrs and 96 hrs.</p> <p>(iii) Chick development: Appearance of eyes, hair, beak and limbs.</p> <p>(iv) Window making: To study development of chick and blastoderm mounting.</p>
<b>ZOOLOGY</b>	<p>Visit to at least 3 biomes of India for the detail study: Student should submit the report on the study covering major fauna, flora and geography.</p>
<b>ZOOLOGY</b>	<p>Determination of population density</p>
<b>ZOOLOGY</b>	<p>Collection of flora (herbarium) &amp; fauna (insect).</p>
<b>ZOOLOGY</b>	<p>Visit to some of the few following natural habitats and wildlife sanctuaries desert, mountain range, wetland, coastal habitat, forest wildlife sanctuaries of India and especially Rajasthan. (students are required to submit the joint report on the field visits Undertaken by them).</p>
<b>ZOOLOGY</b>	<p>Identification of mammalian species using hair imprinting, electrophoresis to identify the species of wildlife, collection of molts of birds.</p>



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ZOOLOGY	Determination of population density of small mammals using transect method.
ZOOLOGY	Collection and identification of insect fauna of wildlife habitats
ZOOLOGY	Collection of fecal matter samples of herbivore from wildlife habitat to study the Parasitic load.
ZOOLOGY	Determination of home range of birds/mammals
ZOOLOGY	Study of herd structure of herbivore population
ZOOLOGY	Study of hierarchy in monkey population
ZOOLOGY	Water analysis for fresh and waste water for physicochemical properties and planktons.
ZOOLOGY	Air quality monitoring.
ZOOLOGY	Bioassay of polluted water using microbes or any other higher animal (fish).
ZOOLOGY	Pesticide residue analysis using GC and TLC techniques
ZOOLOGY	Water pollution detection (microbial).
ZOOLOGY	Trips to natural habitat and manmade habitats to study the human impact on Environment. Project work
ZOOLOGY	Electrophoretic analysis of proteins.
ZOOLOGY	Enumeration and isolation of soil microorganisms agar plate technique, bacteria, fungi And protozoa
ZOOLOGY	Bacterial examination of water for portability, microorganism, E-coli, staphylococci Faccalis as indicators of pollution. MPN index- IMVIC test-Endo agar.
ZOOLOGY	Testing of water/soil/sweage for physicochemical parameters including COD and BOD.
ZOOLOGY	Field trip to ponds/coastal/other treatment (water or industrial water) plants. Report to be submitted.
MATHS	Plotting the graphs of the following functions- $ax$ , $\sqrt{ax+b}$ , $(ax+b)$ , $x^{1/n}$ , $e^{ax+b}$ , $\log(ax+b)$ , $\sin(ax+b)$ , $\cos(ax+b)$ , $ \sin(ax+b) $ , $ \cos(ax+b) $ observe and discuss the effects of change in the real constant $a$ , $b$ and $c$ on the graphs
MATHS	Graphs of hyperbolic functions and inverse trigonometric functions.
MATHS	Plotting and analyzing the graphs of polynomials and their derivatives.
MATHS	Complex numbers, operations like addition, subtraction, multiplication, division, modules and inbuilt functions conj, imag, imult, isreal, real.
MATHS	Matrix Operations: Addition, Multiplication, Inverse, Transpose, Determinant, Rank and inbuilt functions eye, ones, zeros, solving the system of linear equations.
MATHS	Solution of linear programming problems by using inbuilt functions of scilab.
MATHS	Printing $n$ terms of Fibonacci sequence .
MATHS	Finding $n!$ $\sum n$ , $\sum n^2$ etc
MATHS	Defining a function and finding sym of $n$ terms of a series\ Sequence



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	whose general term is given.
<b>MATHS</b>	Printing pascal's triangle
<b>MATHS</b>	Finding gcd and lcm of two numbers by Euclid's algorithm.
<b>MATHS</b>	Checking prime \ composite number .
<b>MATHS</b>	Finding number of primes less than $n, n \in \mathbb{Z}$ .
<b>MATHS</b>	Finding mean , standard deviation and npr, ncr for different n and r.
<b>MATHS</b>	Numerical integration using trapezoidal
<b>MATHS</b>	Numerical integration using simpson's 1/3 Rule.
<b>MATHS</b>	Numerical integration using simpson's 3/8 Rule.
<b>MATHS</b>	Numerical integration using waddle Rule.
<b>MATHS</b>	Solution of algebraic and transcendental equation by Bisection method.
<b>MATHS</b>	Solution of algebraic and transcendental equation By Regula – falsi methods
<b>MATHS</b>	Solution of algebraic and transcendental equation By Newton- Raphson method.
<b>MATHS</b>	Solutions of Initial value problem by Euler's method.
<b>MATHS</b>	Solutions of Initial value problem by Runga method (third and fourth order method)
<b>MATHS</b>	Matrix operations: Addition
<b>MATHS</b>	Matrix operations: Subtraction
<b>MATHS</b>	Matrix operations: Multiplication Matrix operations: Rank of a matrix
<b>MATHS</b>	Matrix operations: Inverse of a matrix
<b>MATHS</b>	Solution of linear algebraic equation by Gauss eliminational method.
<b>MATHS</b>	Solution of linear algebraic equation by matrix method.
<b>MATHS</b>	Solution of linear algebraic equation by Gauss Jordan method.
<b>PSYCHOLOGY</b>	Measurement of Attitude
<b>PSYCHOLOGY</b>	Measurement of Emotions by Facial Expression (Experiment)
<b>PSYCHOLOGY</b>	Measurement of Leadership
<b>PSYCHOLOGY</b>	Measurement of Aggression
<b>PSYCHOLOGY</b>	Measurement of Social Support
<b>PSYCHOLOGY</b>	Measurement of Altruism
<b>PSYCHOLOGY</b>	Measurement of Intelligence (Performance test)
<b>PSYCHOLOGY</b>	Experiment on Human Maze Learning
<b>PSYCHOLOGY</b>	Experiment on Memory (Meaningful & Non-sense syllables through memory drum)
<b>PSYCHOLOGY</b>	Assessment of State & Trait Anxiety
<b>PSYCHOLOGY</b>	Measurement of Coping Styles
<b>PSYCHOLOGY</b>	Measurement of Depression
<b>PSYCHOLOGY</b>	Measurement of Family Pathology
<b>PSYCHOLOGY</b>	Eight State questionnaire
<b>PSYCHOLOGY</b>	Assessment of Mental Health
<b>PSYCHOLOGY</b>	Word Association Test
<b>PSYCHOLOGY</b>	Neuropsychological Assessment
<b>PSYCHOLOGY</b>	Stress: Measurement and analysis of Group Data (Mean and Median)



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<b>PSYCHOLOGY</b>	Stress: Measurement and analysis of Group Data (t-test)
<b>PSYCHOLOGY</b>	Measurement of Intelligence (SPM)
<b>PSYCHOLOGY</b>	Personality Assessment through HSPQ
<b>PSYCHOLOGY</b>	Measurement of Subjective Well-being
<b>PSYCHOLOGY</b>	Measurement of Forgiveness
<b>PSYCHOLOGY</b>	Measurement of Emotional Intelligence
<b>PSYCHOLOGY</b>	Measurement of Resilience
<b>PSYCHOLOGY</b>	Measurement of Level of Aspiration
<b>PSYCHOLOGY</b>	Measurement of Level of Aspiration
<b>PSYCHOLOGY</b>	Incidental vs Intentional learning
<b>PSYCHOLOGY</b>	Problem Solving
<b>PSYCHOLOGY</b>	Experiment on Short Term Memory
<b>PSYCHOLOGY</b>	Zeigarnik Effect
<b>PSYCHOLOGY</b>	Semantic Differential Scale
<b>PSYCHOLOGY</b>	Need Hierarchy by Ranking method
<b>PSYCHOLOGY</b>	Set in Thinking
<b>PSYCHOLOGY</b>	Effect of knowledge of result on performance
<b>PSYCHOLOGY</b>	Verbal learning – Intraserial
<b>PSYCHOLOGY</b>	Psychophysical experiments on RL and DL
<b>PSYCHOLOGY</b>	Study of Home Environment
<b>PSYCHOLOGY</b>	Social Perception
<b>PSYCHOLOGY</b>	Leadership
<b>PSYCHOLOGY</b>	Attribution Style
<b>PSYCHOLOGY</b>	Educational Aspiration
<b>PSYCHOLOGY</b>	Assessment of Mental Health
<b>PSYCHOLOGY</b>	16 PF
<b>PSYCHOLOGY</b>	Eyeseneck Personality Questionnaire
<b>PSYCHOLOGY</b>	Crisis Intervention
<b>PSYCHOLOGY</b>	Rorschach Test
<b>GEOGRAPHY</b>	Definition of Scales and Types:- a. Plain Scale b. Comparative Scale c. Diagonal Scale
<b>GEOGRAPHY</b>	Graphs:- a. Climatograph b. Hythergraph c. Wind Diagram
<b>GEOGRAPHY</b>	Weather Maps. a. Wind Symbols b. Cloud Symbols c. Forms of Metrological Apressed by International d. Metrological organization e. Symbols of cloud types f. Wheather Instruments



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<b>GEOGRAPHY</b>	Methods of Representation of Relief Hachore, Hill shading (vertical illumination, Oblique illumination) Benchmark, Spot height, Contours, farm lines, drawing of cross section (i) Conical hills (ii) Plateau (iii) Types of Slopes- Valleys, cliff, concave slope, convex slope, uniform slope, non uniform slope, terraced slope, undulating slope.
<b>GEOGRAPHY</b>	Profiles- Serial profile, Superimposed profile, Projected profile, Composite profile
<b>GEOGRAPHY</b>	Surveying- Meaning, Classification, Chain and type surveying
<b>GEOGRAPHY</b>	Sample bar diagram
<b>GEOGRAPHY</b>	Multiple bar diagram
<b>GEOGRAPHY</b>	Compound bar diagram
<b>GEOGRAPHY</b>	Duo Dixtonal bar diagram
<b>GEOGRAPHY</b>	Age & Sex wise population of Rajasthan
<b>GEOGRAPHY</b>	Divided rectangle diagram
<b>GEOGRAPHY</b>	Square block diagram
<b>GEOGRAPHY</b>	Unit square block diagram
<b>GEOGRAPHY</b>	Unit square diagram
<b>GEOGRAPHY</b>	Wheel diagram
<b>GEOGRAPHY</b>	Ring diagram
<b>GEOGRAPHY</b>	Spherical diagram
<b>GEOGRAPHY</b>	DOT map
<b>GEOGRAPHY</b>	Choropleth
<b>GEOGRAPHY</b>	Traffic Flow
<b>GEOGRAPHY</b>	Pictorial methods
<b>GEOGRAPHY</b>	Isotherm
<b>GEOGRAPHY</b>	Isohyte
<b>GEOGRAPHY</b>	Isobar
<b>GEOGRAPHY</b>	Chromatic map
<b>GEOGRAPHY</b>	Bar diagram
<b>GEOGRAPHY</b>	Prismatic compass
<b>GEOGRAPHY</b>	Conventional signs
<b>GEOGRAPHY</b>	Topographical sheets
<b>GEOGRAPHY</b>	Mean, mode, median
<b>GEOGRAPHY</b>	Standard deviation
<b>GEOGRAPHY</b>	Quartile deviation
<b>GEOGRAPHY</b>	Classification of projections according to the method of construction.
<b>GEOGRAPHY</b>	Type of zenithal projection.
<b>GEOGRAPHY</b>	One standard parallel conical projection.
<b>GEOGRAPHY</b>	Bonnie's Projection.
<b>GEOGRAPHY</b>	Polyconic projection.
<b>GEOGRAPHY</b>	Cylindrical equidistant projection.
<b>GEOGRAPHY</b>	Cylindrical equal area projection.



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GEOGRAPHY	Mercator's or cylindrical orthomorphic projection.
GEOGRAPHY	Gall's stereographic projection.
GEOGRAPHY	Polar zenithal equidistant projection.
GEOGRAPHY	Gnomonic polar zenithal projection.
GEOGRAPHY	Stereographic polar zenithal projection.
GEOGRAPHY	Orthographic polar zenithal projection.
GEOGRAPHY	Spherical diagram.
GEOGRAPHY	Cube diagram.
GEOGRAPHY	Block pile diagram
GEOGRAPHY	Plane table survey
GEOGRAPHY	Indian clinometer
GEOGRAPHY	Types of Projections
GEOGRAPHY	Sample conical projection with one standard parallel
GEOGRAPHY	Conical projection with two standard parallel
GEOGRAPHY	Mercator's projection
GEOGRAPHY	Polar zenithal equidistant projection
GEOGRAPHY	Gall's projection
GEOGRAPHY	Cylindrical equal area projection
GEOGRAPHY	Polar zenithal equal area projection
GEOGRAPHY	Type of Zenithal projection
GEOGRAPHY	Enlargement and reduction of map
GEOGRAPHY	Tenary Diagram
GEOGRAPHY	Climograph of Kolkata
GEOGRAPHY	Climograph of jodhpur
GEOGRAPHY	Hythergraph of meerut
GEOGRAPHY	Poly linear graph
GEOGRAPHY	Histogram
GEOGRAPHY	Isopleth map
GEOGRAPHY	Cloropleth map
GEOGRAPHY	Chromatic map
GEOGRAPHY	Choroschematic map
GEOGRAPHY	Isobar
GEOGRAPHY	Isohytes
GEOGRAPHY	Isotherm
GEOGRAPHY	Mean, mode, median
GEOGRAPHY	Simple pyramid diagram
GEOGRAPHY	Compound pyramid diagram
GEOGRAPHY	Superimposed pyramid diagram
GEOGRAPHY	Scope of cartography
GEOGRAPHY	Water budget of district Ghaziabad
GEOGRAPHY	Folded rock beds
GEOGRAPHY	Faulted rock beds
GEOGRAPHY	Ring diagram
GEOGRAPHY	Mechanical method of lettering



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<b>GEOGRAPHY</b>	History of cartography
<b>GEOGRAPHY</b>	Village survey report
<b>GEOGRAPHY</b>	Method of representation of relief
<b>GEOGRAPHY</b>	Hachure method and morphological method
<b>GEOGRAPHY</b>	Contours
<b>GEOGRAPHY</b>	Contour inspection method
<b>GEOGRAPHY</b>	Cross section method and similar triangle
<b>GEOGRAPHY</b>	Gradient method
<b>GEOGRAPHY</b>	Profiles
<b>GEOGRAPHY</b>	Serial profile
<b>GEOGRAPHY</b>	Superimposed, projected & Composite profile
<b>GEOGRAPHY</b>	Method of drawing profile
<b>GEOGRAPHY</b>	Conventional method.
<b>GEOGRAPHY</b>	Square block diagram
<b>GEOGRAPHY</b>	One point perspective Block diagram
<b>GEOGRAPHY</b>	Two point perspective Block diagram
<b>GEOGRAPHY</b>	One & Two point perspective Block diagram
<b>GEOGRAPHY</b>	Multiple section method of Block Diagram
<b>GEOGRAPHY</b>	Sketch Block diagrams
<b>GEOGRAPHY</b>	Aerial photography
<b>GEOGRAPHY</b>	Classification aerial photography
<b>GEOGRAPHY</b>	Principal point fiducial marks & Overlap
<b>GEOGRAPHY</b>	Lens stereoscope & mirror stereoscope
<b>GEOGRAPHY</b>	Ergograph
<b>GEOGRAPHY</b>	Hypsometric Curves
<b>GEOGRAPHY</b>	Altimetric frequency graph
<b>GEOGRAPHY</b>	Dumpy level
<b>GEOGRAPHY</b>	Theodolite
<b>GEOGRAPHY</b>	Theodolite
<b>GEOGRAPHY</b>	Plane table, tripod stand, Alidade
<b>GEOGRAPHY</b>	Plumbing fork, plumb-bob, spirit level, ranging rod
<b>GEOGRAPHY</b>	Indian Clinometer
<b>GEOGRAPHY</b>	Method of using Indian Clinometer
<b>GEOGRAPHY</b>	Topographical maps series of India & adjacent countries
<b>GEOGRAPHY</b>	Topographical sheets
<b>GEOGRAPHY</b>	Method of average slope determination
<b>GEOGRAPHY</b>	Grid
<b>GEOGRAPHY</b>	No. of Contour of crossing per capita
<b>GEOGRAPHY</b>	Average number of counter crossing per kilometer
<b>GEOGRAPHY</b>	Degree
<b>GEOGRAPHY</b>	Average Slope
<b>GEOGRAPHY</b>	Toposheet
<b>HOME SCIENCE</b>	Project work on money management: • How to open various accounts in the bank



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	<ul style="list-style-type: none"><li>Filling up of slips/forms of bank and post office<ol style="list-style-type: none"><li>Application for draft</li><li>Cheques</li><li>Withdrawal slip</li><li>Money order form</li><li>Application the housing loan</li></ol></li></ul>
<b>HOME SCIENCE</b>	Floor decoration: Alpana, Rangoli & Mandana
<b>HOME SCIENCE</b>	Flower arrangement fresh and dry arrangements.
<b>HOME SCIENCE</b>	Table setting
<b>HOME SCIENCE</b>	Best out of waste (one article)
<b>HOME SCIENCE</b>	Cleaning of wood, stone, tiles, metal & glass
<b>HOME SCIENCE</b>	House plans: <ul style="list-style-type: none"><li>For various income groups (LIG, MIG, HIG)<ol style="list-style-type: none"><li>Drawing of architectural symbols of house plan</li><li>Architectural symbols of electricity plan</li><li>Furniture symbols</li></ol></li></ul>
<b>HOME SCIENCE</b>	<ul style="list-style-type: none"><li>Rooms (making any one paper model)<ol style="list-style-type: none"><li>Drawing Room</li><li>Dining cum leaving room</li><li>Children study room</li><li>Bed room</li><li>Pooja room</li></ol></li></ul>
<b>HOME SCIENCE</b>	<ul style="list-style-type: none"><li>Kitchen planning (making any one paper model)<ol style="list-style-type: none"><li>One wall</li><li>Two wall</li><li>L shape</li><li>U shape</li></ol></li></ul>
<b>HOME SCIENCE</b>	Preparation of beverages- Tea (Hot & Iced) , Coffee (Hot & Cold), Chaach, Lassi, Milk Shakes, Fruit Punch (Using Squashes & Fresh Fruits), Lamonade, Jaljeera, Amla Shake, Aam Pana, Mocktails (Any Two) , Mirinda Shake.
<b>HOME SCIENCE</b>	Cereal cookery- Chapaati, puri, (Plain, Missi), Parantha (Stuffed, Plain), Rice, Cheela, Bhatura, Idli, Muthia Mathri (Namak Para, Shakkar Para), Chowmein, Pizza, Sandwiches (Open Toasted & Vegetable), Cake, Biscuit, Nan Khatai.
<b>HOME SCIENCE</b>	Legumes and Pulses- Daal (plain & fried), rajma, chole, daal makhni, kadhi mangodi, dahivada, dalpakodi, besan pakodi, sprout chaat, dal halwa, Dhokla, muthin, Kadhi.
<b>HOME SCIENCE</b>	Vegetables-Dry Vegetables (for eg aalu gobi, methi aalu, arbi, bhindi), stuffed vegetables (bhindi, capsicum), vegetables with gravy (dahi makhni)



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	malai kofta, gatta, dum aalu, kadhai panner, shahi paneer), baked vegetables, soups (clear & cream), salads & salad dressings (mayonnaise, lemon, vinegar).
HOME SCIENCE	Milk & Milk products - Paneer, khoa, curd, shrikhand, kheer, rabri, fruit custard, raita, fruit cream,
HOME SCIENCE	Kheer, Custard, Stews-apple & pear.
HOME SCIENCE	Savory food preparation- dosa, uttapam, mixed veg cutlets, hara bhara, kabab, burger, samosa, kofta,
HOME SCIENCE	kachori, vada, pav bhaji, sago khichri, bhelpuri.
HOME SCIENCE	Sweets- Jalebi, sandesh, laddu, coconut barfi, gujiya.
HOME SCIENCE	Meal Planning for Exchange list. Adult man/ woman. Pregnant woman. Lactating woman. Packed lunch for school going child. Elderly.
HOME SCIENCE	Anthropometric measurement of children from birth to 6 years. Plotting and interpretation of data as per WHO norms.
HOME SCIENCE	Interviewing mothers of young infants regarding breast feeding schedules, supplementary foods and weaning practices.
HOME SCIENCE	Organizing and conducting play and creative activities of children in a nursery school.
HOME SCIENCE	Preparation and conduction of various activities to enhance overall development of children: physical, motor, language, cognitive, social and emotional.
HOME SCIENCE	Focus group discussion with adolescents to understand their aspirations, educational and career choices.
HOME SCIENCE	Market survey of story books and toys for children. Assessment of the above in terms of quality, cost, durability, safety, attractiveness and developmental appropriateness.
HOME SCIENCE	Preparation of a brief questionnaire to identify the problems faced by adults and aging people in communities. Report the information as individual case profile.
HOME SCIENCE	Preparation of a scrap book on relevant issues of human development.
HOME SCIENCE	Textiles Make a Scrap book of the following Fiber samples <ul style="list-style-type: none"><li>• Cotton fiber from (Muslin, 2x2 Rubia, 2x1 poplin, Khadi)</li><li>• Silk fiber from -(Georgette, Chiffon, Crepe, Tussar, Mulberry.)</li></ul>

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Where the mind is without fear! Where the head is held high!



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	<ul style="list-style-type: none"> <li>• Wool fiber from - Felt (wool)</li> <li>• Jute fibre from Gunny Bags &amp; Ropes</li> <li>• Nylon fibre from Plastic Cord</li> <li>• Polyester fibre from Sewing Thread</li> <li>• Rayon fibre from Artificial Silk Dupatta</li> </ul>
<b>HOME SCIENCE</b>	Yarn: Ply, textured and metallic yarn
<b>HOME SCIENCE</b>	Fabric Samples: Woven, Knitted and Non woven - Felt (wool)
<b>HOME SCIENCE</b>	Collection of care labels washing, ironing, dry-cleaning, bleaching
<b>HOME SCIENCE</b>	Fiber symbols (cotton, wool, silk)
<b>HOME SCIENCE</b>	Technical textiles : Bandages & Scotch Brite
<b>HOME SCIENCE</b>	Clothing
<b>HOME SCIENCE</b>	Clothing techniques (sample of each) <ul style="list-style-type: none"> <li>• Simple stitches-hemming and tacking</li> <li>• Seam-plain, French and run and fell</li> <li>• Dart-straight and curve</li> <li>• Tucks-Pin tucks</li> <li>• Pleat-knife, box</li> <li>• Gathers-simple gathers</li> <li>• Finishing of curve-piping and facing</li> <li>• Placket opening - continuous wrap &amp; two piece placket</li> </ul>
<b>HOME SCIENCE</b>	<ul style="list-style-type: none"> <li>• Garment construction "A" line frock with any sleeve and Collar</li> <li>• Embroider the frock using few basic stitches</li> </ul>
<b>HOME SCIENCE</b>	Tie & dye prepare two sample through any 2 techniques
<b>HOME SCIENCE</b>	Product design-construction of any one product <ul style="list-style-type: none"> <li>• Two cushion covers</li> <li>• Shoulder Bag with any fastener</li> <li>• Pouch with zip</li> </ul>
<b>HOME SCIENCE</b>	Use of Pregnancy kits <ol style="list-style-type: none"> <li>Safe Days</li> <li>Menstrual Hygiene</li> <li>Hygienic use &amp; disposal of Sanitary pads</li> </ol>
<b>HOME SCIENCE</b>	Breastfeeding-Techniques & Posture
<b>HOME SCIENCE</b>	Preparation of Complementary foods <ol style="list-style-type: none"> <li>Premixes.</li> <li>Guidelines for consistency for quality, preparing frequency, density &amp; variety premixes.</li> </ol>



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	<ul style="list-style-type: none"><li>iii. Homemade recipes.</li><li>iv. Adaptation from family pot C.</li></ul>
<b>HOME SCIENCE</b>	Use of Mother & Child Protection Card <ul style="list-style-type: none"><li>i. Registration &amp; personal details</li><li>ii. Antenatal care</li><li>iii. Danger signs of pregnancy</li><li>iv. Diet during pregnancy</li><li>v. Planning of low cost nutritious recipe for pregnant mother</li><li>vi. Internal care</li><li>vii. Post antenatal care</li><li>viii. Checkups planning of low cost nutrition's recipes for lactating mother</li><li>ix. Danger signs of new born</li><li>x. New born care</li><li>xi. Immunization</li><li>xii. Growth monitoring- Demonstration of weighting &amp; measurement of child</li><li>xiii. Guidelines for child care</li></ul>
<b>HOME SCIENCE</b>	Management of Diarrhea <ul style="list-style-type: none"><li>i. Skin pinch test for identifying dehydration</li><li>ii. Feeding schedule</li><li>iii. Preparation of oral rehydration solution</li></ul>
<b>HOME SCIENCE</b>	Management of fever <ul style="list-style-type: none"><li>i. Use of thermometer</li><li>ii. When to refer</li><li>iii. How to bring down fever (home based care)</li></ul>
<b>HOME SCIENCE</b>	First aid & home nursing <ul style="list-style-type: none"><li>• First Aid during<ul style="list-style-type: none"><li>i. Burns &amp; Scalds</li><li>ii. Cuts &amp; wounds (Tetanus Toxoid vaccine)</li><li>iii. Sprains &amp; fractures</li><li>iv. Unconsciousness</li><li>v. Electric shock</li><li>vi. Animal bite - dog, monkey, snake (importance of vaccine)</li><li>vii. Poisons</li><li>viii. Heat stroke</li></ul></li></ul>
<b>HOME SCIENCE</b>	<ul style="list-style-type: none"><li>• Care in infectious disease<ul style="list-style-type: none"><li>i. Isolation</li><li>ii. Prevention of infection through fomites</li><li>iii. Ventilation &amp; Disinfection</li><li>iv. Baby weighing scale, ARIT inner &amp; thermometer, first aid box</li><li>v. Materials to be provided from nearest Aanganwadi /Subcentre</li></ul></li></ul>
<b>HOME SCIENCE</b>	Step of Event Management
<b>HOME</b>	Making a paper plan



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<b>SCIENCE</b>	<ul style="list-style-type: none"><li>• Guest List</li><li>• Making/Drafting/Finalizing/Invitation Card</li><li>• Infrastructure</li></ul>
<b>HOME SCIENCE</b>	i. Tents
<b>HOME SCIENCE</b>	ii. Furniture and Furnishing for areas: <ul style="list-style-type: none"><li>• Reception,</li><li>• DJs/Music, o Games,</li><li>• Food serving (Based on numbers of persons and types of events)</li></ul>
<b>HOME SCIENCE</b>	i. Decoration (Theme etc)
<b>HOME SCIENCE</b>	ii. Planning of Games
<b>HOME SCIENCE</b>	iii. Transportation and communication
<b>HOME SCIENCE</b>	iv. DJ's/Music
<b>HOME SCIENCE</b>	v. Planning and Management of Food <ul style="list-style-type: none"><li>• Welcome Drink</li><li>• Welcome Snacks</li><li>• Main Course</li><li>• Desert</li><li>• Mouth Fresheners</li></ul>
<b>HOME SCIENCE</b>	vi. Return Gifts
<b>HOME SCIENCE</b>	Budget under different heads (Market survey can be done) <ul style="list-style-type: none"><li>• Food</li><li>• Decoration</li><li>• Invitation</li><li>• Gifts</li><li>• Transportation and communication</li><li>• Games</li><li>• Infrastructure tents, furniture, furnishing, etc.</li><li>• DJ &amp; Music</li><li>• Time schedule for major activities</li><li>• Implementation of various activities</li></ul>
<b>HOME SCIENCE</b>	Food Preservation- <ol style="list-style-type: none"><li>1. Theory of Preservation: Need, importance, principles of food spoilage, principle of food preservation, various methods of food preservation</li></ol>
<b>HOME SCIENCE</b>	2. Development of skills in preparation of:
<b>HOME</b>	<ul style="list-style-type: none"><li>• Dried fruits and vegetables</li></ul>



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<b>SCIENCE</b>	a. Sun drying (Curry leaves, mint, methi, coriander, cauliflower, amla, kair-sangri, guar-fali, amchur, onion, peas, kachri, red chillis)
<b>HOME SCIENCE</b>	<ul style="list-style-type: none"><li>• Papad &amp; Magodi</li></ul>
<b>HOME SCIENCE</b>	<ul style="list-style-type: none"><li>• Juices<ol style="list-style-type: none"><li>i. Aloe Vera</li><li>ii. Squashes</li><li>iii. Lemon</li><li>iv. Orange</li><li>v. Pineapple</li></ol></li></ul>
<b>HOME SCIENCE</b>	<ul style="list-style-type: none"><li>• Syrups<ol style="list-style-type: none"><li>i. Rose</li><li>ii. Khas</li><li>iii. Chandan</li><li>iv. Jellies</li><li>v. Karonda</li></ol></li></ul>
<b>HOME SCIENCE</b>	<ul style="list-style-type: none"><li>• Jam<ol style="list-style-type: none"><li>i. Apple</li><li>ii. Mixed fruit</li><li>iii. Preserve (Murabba)</li><li>iv. Carrot</li><li>v. Amla</li><li>vi. Ketchup sauce and chutney</li><li>vii. Tomato Ketchup</li><li>viii. Garlic Chutney</li><li>ix. Tomato Chutney</li><li>x. Imli Chutney</li></ol></li></ul>
<b>HOME SCIENCE</b>	<ul style="list-style-type: none"><li>• Canning and bottling<ol style="list-style-type: none"><li>i. Green pea</li><li>ii. Apple</li><li>iii. Cauliflower</li><li>iv. Frozen vegetables<ul style="list-style-type: none"><li>• Peas</li><li>• Carrots</li><li>• Cauliflower</li><li>• Mango Pulp</li></ul></li></ol></li></ul>
<b>HOME SCIENCE</b>	<ul style="list-style-type: none"><li>• Pastes &amp; Purees<ol style="list-style-type: none"><li>i. Onion</li><li>ii. Garlic</li><li>iii. Ginger</li><li>iv. Tomato Puree</li></ol></li></ul>
<b>HOME SCIENCE</b>	<ul style="list-style-type: none"><li>• Pickles<ol style="list-style-type: none"><li>i. Mango</li><li>ii. Mix Vegetable</li></ol></li></ul>



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	<ul style="list-style-type: none"><li>iii. Kair</li><li>iv. Lasoda</li><li>v. Chilli</li><li>vi. Lemon</li></ul>
<b>HOME SCIENCE</b>	Requirement to start a small scale unit <ul style="list-style-type: none"><li>i. Equipments</li><li>ii. Finance</li></ul> *Loan Options
<b>HOME SCIENCE</b>	Extension Activity Management <ul style="list-style-type: none"><li>1. Theoretical Understanding of Process of Program / Extension Activity management</li></ul>
<b>HOME SCIENCE</b>	2. Organize following Extension Activities from the Area of Home science: <ul style="list-style-type: none"><li>• Workshop/Seminar</li><li>• Fair</li><li>• Exhibition</li><li>• Rally</li></ul>
<b>HOME SCIENCE</b>	Could be taken up in rural/urban/slum community in a group on the basis of following steps- <ul style="list-style-type: none"><li>• Identification of the activity-Natural, duration, number of participants etc</li><li>• Plan of the activity-Selection of venue , resource management and deligation of responsibility</li><li>• Scheduling of the activity</li><li>• Publicity of the activity</li><li>• Organising the activity</li><li>• Overall supervision</li><li>• Report Writing</li></ul>



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