

Biology (56)

Std. XI and XII

Introduction

Higher secondary is the most crucial stage of education because at this juncture specialized disciplines of science are introduced. The present syllabus reinforces the concepts introduced in lower classes. Recently, the science of biology has undergone a paradigm shift that has transformed it from a collection of loosely related facts into a modern applied science.

Living organisms exhibit extremely complex functional system. Organisms seldom occur as isolated individuals. They are organized into populations and biological communities. Organisms, communities, ecosystems and environment constitute unique set of natural resources of great importance.

Knowledge of biology helps us to understand a common thread which holds all these components together. Understanding of biology will help in the sustainable development of the environment and will also ensure the existence of earth with all its amazing diversity.

This syllabus is designed to prepare students for various examinations conducted at state and national level. Hence it has been prepared in accordance with the guidelines shown in the final version of common core syllabi of COBSE, Delhi. Accordingly some additional topics from state Board syllabus have been deleted whereas the lacking topics have been added. The entire unit “Ecology and Environment” has now been added under Botany and Zoology sections.

Objectives

The prescribed syllabus is expected to

- Promote the inherent skill of observation.
- Assist to understand the underlying principles of biological sciences and thereby develop scientific attitude towards biological phenomena.
- Help students to understand the functioning of organisms.
- Make students aware of issues of global importance.
- Guide students to perform easy experiments for better understanding of biological principles and to develop experimental skills required in practical work.
- Create awareness about the contribution of biology to human welfare.

Std. – XI

Section I - Botany

Unit 1 Diversity in Living World:

Chapter 1- Diversity in organisms :

1. Diversity in living organisms-Brief idea.
2. Systematic and binomial system of nomenclature - meaning of the terms taxonomy, systematics, classification and nomenclature, Need of classification.

Three domains of life, Concept of species.

Taxonomic hierarchy with examples.
Binomial nomenclature explanation, significance and examples.



- Classification of living organisms (five Kingdom classification) – Major groups and principles of classification for each Kingdom with examples.
- Lichens - Meaning, characters, examples and importance.
- Viruses and viroids - Definitions, characters, types with examples, Economic importance and list of viral diseases.

Chapter 2 - Kingdom Plantae :

- Salient features of major plant groups - Algae, Bryophyta, Pteridophyta, Gymnosperms and Angiosperms (Dicotyledons and Monocotyledons). Three to five salient features and two examples of each category.
- Botanical gardens and herbaria - Meaning, importance and list of gardens and herbaria in India.

Unit 2 Structure and function of cell :

Chapter 3 - Biochemistry of cell :

- Basic chemical constituents of living bodies.
- Structure and function of carbohydrates, proteins, lipids and nucleic acids in brief.
- Enzymes - Definition, **Types**, general properties, **Enzyme action** and factors affecting enzyme activity in brief.

Chapter 4 Cell Division :

- Cell cycle
- Mitosis
- Meiosis

Unit 3 Structural organization in plants

Chapter 5 - Morphology of Plants :

- Morphology, anatomy and functions of different parts - Root, stem, leaf, inflorescence, flower, fruit and seed. **(To be dealt along with the relevant practicals of the practical syllabus)**
- Plant tissues.

Unit 4 Plant Physiology

Chapter 6 - Plant Water Relations and Mineral Nutrition :

- Movement of water, food, nutrients and gases - Absorption of water and minerals, **Apoplast and Symplast Pathways**. Active and passive absorption in brief.

2. Guttation

Ascent of sap, **root pressure concept** and cohesion - tension theory.

Translocation of sugars **through phloem** brief account.

Transpiration – structure of stomata, mechanism of **opening and closing of stomata, Role of K⁺ ions**

- Role of water and minerals - macronutrients and micronutrients and their role. **Mineral deficiency symptoms, Mineral toxicity, Elementary idea of Hydroponics, Nitrogen Metabolism (nitrogen cycle, biological nitrogen fixation)**

Chapter 7 - Plant Growth and Development: Seed dormancy

Germination - Hypogeal, epigeal and viviparous.

Definition and characteristics of growth.

Phases of growth, **Conditions of growth, Differentiation, de- differentiation, redifferentiation**

Sequence of developmental process in a plant cell

Growth regulators - auxins, gibberellins, cytokinines, ethylene and abscissic acid (role in brief) Photoperiodism, **Photomorphogenesis including brief account of Phytochromes (Elementary idea)**

Vernalization.



Std. - XI

Section II – Zoology

Unit 1 Diversity in Living World

Chapter 8 - Kingdom Animalia

- Salient features of major phyla under kingdom Animalia. Classification of following phyla with three to five salient features and two examples of each category: Porifera, Coelenterata, Ctenophora, Platyhelminthes, Nematelminthes, Annelida, Arthropoda, Mollusca, Echinodermata and Hemichordata. Classification of phylum Chordata upto class level with three to five salient features and two examples of each category: Urochordata, Cephalochordata, Cyclostomata, Chondrichthyes, Osteichthyes, Amphibia, Reptilia, Aves and Mammalia.
- Zoological parks and Museums - General idea with list.

Unit 2 Structure and function of cell

Chapter 9 - Organization of Cell

- Cell theory - brief account
- Prokaryotic and eukaryotic cell - structure and examples.
- Plant cell and animal cell.
- Nuclear organization - Nucleus, nucleolus and nucleoplasm.
- Cell wall and cell membrane - (fluid mosaic model).
- Cell organelles: Plastids, Mitochondria, Golgi complex, Lysosomes, Endoplasmic reticulum, Vacuoles, Ribosome and Centrioles (**ultrstructure and functions**). Microbodies, cytoskeleton, cilia and flagella.

Unit 3 Structural organization in Animals:

Chapter 10- Study of Animal Tissues :

1. Animal tissues - types

- Epithelial tissues - simple epithelium (squamous, cuboidal, columnar, Ciliated, glandular). - compound epithelium (stratified).
- Connective tissue - (Areolar, Adipose, Tendons, Ligaments, Cartilage and Bone).
- Muscular tissue - (Smooth, striated and cardiac).
- Nervous tissue (Neurons, glial cells and types of neurons).

Chapter 11- Study of Animal Type

- Morphology, anatomy and functions of digestive, **circulatory, respiratory, nervous, and reproductive** systems of cockroach (**Brief account only**)

Unit 4 Human Physiology

Chapter 12- Human Nutrition

- Digestive system in brief
- Physiology of digestion, **gastrointestinal hormones, Peristalsis. Calorific value of proteins, carbohydrates and fats**
- Absorption, assimilation **and egestion**
- Nutritional and digestive disorders – PEM, indigestion, constipation, Jaundice, **vomiting and diarrhoea**

Chapter 13- Human Respiration

Respiratory organs in animals (Recall only)

- Respiratory system in brief
- Breathing- inspiration and expiration.
- Exchange of gases, transport of CO₂ and O₂ and tissue respiration.

Regulation of Respiration, Respiratory volumes.



- iv) Respiratory disorders- Asthma, **Emphysema** and occupational lung diseases.

Chapter 14 - Human skeleton and Locomotion:

Brief account of human skeleton:

A] Axial Skeleton

B] Appendicular Skeleton

(Details to be dealt with the relevant practical)

Types of joints - synarthroses, amphiarthroses, and diarthroses.

Types of diarthroses - ball and socket, hinge, condyloid, pivot, saddle and gliding joints.

Types of Movement- Ciliary, Flagellar, Muscular

Mechanism of muscle movement: **Contractile proteins and Muscle contraction.** Skeletal and muscular disorders – **Myasthenia gravis**, Osteoporosis, arthritis, muscular dystrophy tetany and **gout**.

Std. XI - Biology Practicals Syllabus

(A) List of experiments:

1. Study of parts of compound microscope.
2. **Preparation of T. S. of dicot (sunflower) and monocot roots and stem** to study different plant tissues.
3. Study and describe three locally available flowering plants from the families- Solanaceae, Fabaceae and Liliaceae with respect to types of root-(tap and adventitious), stem (herbaceous and woody), leaf (arrangement, shape, venation, simple and compound) and floral characters.

4. Study of plasmolysis in epidermal peels.
5. Study of osmosis by Potato osmometer
6. Study of structure and distribution of stomata in upper and lower surface of leaf.
7. To test the presence of sugar, starch, proteins and fats from suitable plant and animal materials.
8. To study the digestion of starch by salivary amylase under different conditions of temperature and pH.

(B) Study/ Observation of the following (Spotting):

1. Study of specimens and identification with reasons:
Bacteria, Amoeba, Oscillatoria, Spirogyra, Rhizopus, yeast, Agaricus, Usnea, Riccia, Funaria, Nephrolepis, Cycas, sunflower and maize.
2. Comparative study of rates of transpiration in upper and lower surface of leaf.
3. Study of different modifications of root (fusiform root, parasitic root, epiphytic root and pneumatophores).
4. Study of different modifications of stem (stem tuber, runner, and tendril).
5. Study of different modifications of leaf (leaflet and stipular tendril), leaf Spines, phyllode).
- 6.. Study of imbibition of seeds/raisins.
7. Study and identification of different types of inflorescence.
8. **Study of tissues and diversity in shapes and sizes of plant and animal cells- palisade cells, guard cells, parenchyma, collenchyma, sclerenchyma, xylem, phloem, squamous epithelium, muscle fibres, mammalian blood smear, through temporary or permanent slides.**



9. Observation and comments on experimental set up on:
 - a) Phototropism
 - b) Suction due to transpiration.
 - c) Apical bud removal
10. Study of specimens and their identification with reasons – *Sycon*, *Hydra*, Pleurobrachia, Liverfluke, *Ascaris*, Leech, Earthworm, **Prawn, Silkworm, Honey bee**, Snail, Star-fish, *Balanoglossus*, Shark, Rohu, Frog, Lizard, Pigeon and Rat.
11. Study of human skeleton (except skull, hand bones and foot bones) and **different types of joints (synovial, cartilaginous and fibrous joints with one suitable example)**.
12. Study of external morphology of earthworm, cockroach and frog through models.
13. **Study of mitosis** in onion root tips and animal cells (**grasshopper**) from permanent slides.

Std. - XII Biology

Section I – BOTANY

Unit 1: Genetics and Evolution :

Chapter 1 - Genetic Basis of Inheritance:

Mendelian inheritance. Deviations from Mendelian ratio (gene interaction-incomplete dominance, co-dominance, multiple alleles **and Inheritance of blood groups**), **Pleiotropy, Elementary idea of polygenic inheritance.**

Chapter 2 - Gene: its nature, expression and regulation:

Modern concept of gene in brief-cistron, muton and recon. **DNA as genetic**

material, structure of DNA as given by Watson and Crick's model, **DNA Packaging**, semi conservative replication of eukaryotic DNA.

RNA: General structure, types and functions.

Protein Synthesis; central dogma, Transcription; Translation-Genetic Code, Gene Expression and Gene Regulation (The *Lac* operon as a typical model of gene regulation).

Unit 2: Biotechnology and its application:

Chapter 3 - Biotechnology: Process and Application :

Genetic engineering (Recombinant DNA technology):

Transposons, Plasmids, Bacteriophages; Producing Restriction Fragments, Preparing and cloning a DNA Library, Gene Amplification (PCR).

Application of Biotechnology in Agriculture – BT crops

Biosafety Issues (Biopiracy and patents)

Unit 3: Biology and Human Welfare :

Chapter 4 - Enhancement in Food Production

Plant Breeding

Tissue Culture: Concept of Cellular Totipotency,

Requirements of Tissue Culture (in brief), Callus Culture, Suspension Culture.

Single Cell Protein. **Biofortification.**

Chapter 5 - Microbes in Human Welfare:

Microbes in Household food processing.

Microbes in Industrial Production.

Microbes in Sewage Treatment.

Microbes in Biogas (energy) Production.

Microbes as Biocontrol Agents.

Microbes as Biofertilizers.



Unit 4: Plant Physiology :**Chapter 6 - Photosynthesis**

Autotrophic nutrition

Site of Photosynthesis

Photosynthetic Pigments and their role.

Light-Dependent Reactions (Cyclic and non-cyclic photophosphorylation)

Light-Independent Reactions (C3 and C4 Pathways)

Chemiosmotic hypothesis, Photorespiration, Factors affecting Photosynthesis.

Law of limiting factors.

Chapter 7 - Respiration

ATP as currency of Energy

Mechanism of Aerobic (Glycolysis, **TCA Cycle and Electron Transport System**) and Anaerobic Respiration. **Fermentation**

Exchange of gases

Amphibolic pathway. Respiratory quotient of Nutrients.

Significance of Respiration.

Unit 5: Reproduction in Organisms :**Chapter 8 - Reproduction in Plants**

Modes of Reproduction (Asexual and Sexual).

Asexual reproduction; uniparental modes-vegetative propagation, micropropagation

Sexual Reproduction: **structure of flower**

Development of male gametophyte,

Structure of anatropous ovule.

Development of female Gametophyte.

Pollination: Types and Agencies.

Outbreeding devices; pollen-pistil interaction.

Double Fertilization: Process and Significance.

Post-fertilization changes (development of endosperm and embryo, development of seed and formation of fruit)

Special modes-apomixis, parthenocarpy, polyembryony. Significance of seed and fruit formation.

Unit 6: Ecology and Environment**Chapter 9: Organisms and Environment -I : Habitat and Niche**

Ecosystems: Patterns, components, productivity and decomposition, energy flow; pyramids of number, biomass, energy; nutrient cycling (carbon and phosphorous).

Ecological succession, Ecological services-carbon fixation, pollination, oxygen release. Environmental issues: agrochemicals and their effects, solid waste management, Green house effect and global warming, ozone depletion, deforestation, case studies (any two).

Std. - XII Biology**Section II - ZOOLOGY****Unit 1: Genetics and Evolution :****Chapter 10 - Origin and the Evolution of Life :**

Origin of Life: Early Earth, Spontaneous, assembly of organic compounds,

Evolution: Darwin's contribution, Modern Synthetic Theory of evolution, Biological Evidences, **Mechanism of evolution;**

Gene flow and genetic drift;Hardy-Weinberg principle; Adaptive radiation.

Origin and Evolution of Human being.

Chapter 11 - Chromosomal Basis of Inheritance

The Chromosomal Theory.

Chromosomes.

Linkage and Crossing Over.

Sex-linked Inheritance (Haemophilia and colour blindness).



Sex Determination in Human being, **birds, honey bee.** **Mendelian disorders in humans-Thalassemia. Chromosomal disorders in human: Down's syndrome, Turner's syndrome and Klinefelter's syndrome.**

Unit 2: Biotechnology and its application:
Chapter 12- Genetic Engineering and Genomics

DNA Finger Printing.

Genomics and Human Genome Project.

Biotechnological Applications in Health: Human insulin and vaccine production, Gene Therapy. **Transgenic animals.**

Unit 3: Biology and Human Welfare

Chapter 13- Human Health and Diseases

Concepts of Immunology: Immunity Types, **Vaccines,**

Structure of Antibody, Antigen-Antibody Complex, Antigens on blood cells.

Pathogens and Parasites (Amoebiasis, Malaria, Filariasis, Ascariasis, Typhoid, Pneumonia, Common cold and ring worm).

Adolescence, drug and alcohol abuse.

Cancer and AIDS.

Chapter 14- Animal Husbandry

Management of Farms and Farm Animals.

Dairy.

Poultry.

Animal Breeding.

Bee-Keeping.

Fisheries.

Sericulture

Lac culture

Unit 4: Human Physiology :

Chapter 15- Circulation

Blood composition and coagulation, **Blood groups.**

Structure and pumping action of Heart.

Blood Vessels.

Pulmonary and Systemic Circulation.

Heart beat and Pulse. Rhythmicity of Heart beat. **Cardiac output, Regulation of cardiac activity.**

Blood related disorders: Hypertension, coronary artery disease, angina pectoris, and heart failure.

ECG, Lymphatic System (Brief idea): **Composition of lymph and its functions.**

Chapter 16- Excretion and osmoregulation

Modes of excretion-Ammonotelism, ureotelism, uricotelism.

Excretory System.

Composition and formation of urine.

Role of Kidney in Osmoregulation.

Regulation of kidney function: renin-angiotensin, atrial natriuretic factor, ADH and Diabetes insipidus, role of other organs in excretion.

Disorders; Kidney failure, Dialysis, Kidney stone (renal calculi). Transplantation.

Uraemia, nephritis.

Chapter 17- Control and Co-ordination

Nervous System

Structure and functions of brain and

Spinal cord, brief idea about PNS and ANS.

Transmission of nerve impulse.

Reflex action.

Sensory receptors (eye and ear), **Sensory perception, general idea of other sense organs.**

Endocrine System

Endocrine glands

Hormones and their functions

Mechanism of hormone action.

Hormones as messengers and regulators.

Hormonal imbalance and diseases:



Common disorders (Dwarfism, Acromegaly, cretinism, goiter, exophthalmic goiter, Diabetes mellitus, Addison's disease)

Unit 5: Reproduction in Organisms :

Chapter 18- Human Reproduction

Reproductive system in male and female.

Histology of testis and ovary.

Reproductive cycle.

Production of gametes, fertilization, implantation.

Embryo development up to three germinal layers.

Pregnancy, placenta, parturition and **lactation** (Elementary idea).

Reproductive health-birth control,

Contraception and sexually transmitted diseases. **MTP, Amniocentesis; Infertility and assisted reproductive technologies- IVF, ZIFT, GIFT (elementary idea for general awareness).**

Unit 6: Ecology and Environment :

Chapter 19-Organisms and

Environment-II :

Population and ecological adaptations: population interactions-mutualism, competition, predation, parasitism, population attributes- growth, birth rate and death rate, age distribution.

Biodiversity and its conservation- Biodiversity- concept, patterns, importance, loss. Threats to and need for biodiversity conservation, Hotspots, endangered organisms, extinction, red data book, biosphere reserves, national parks and sanctuaries. Environmental issues: air pollution and its control, water pollution and its control and radioactive waste management. (Case studies any two)

Std. XII

(Upgraded) Biology Practicals

Experiments

1. Dissect the given flower and display different whorls. Dissect anther and ovary to show number of chambers.
2. Study pollen germination on a slide.
3. Collect and study soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity of soil. Correlate with the kinds of plants found in them.
4. Study of plant population density and **frequency** by quadrat method.
5. Prepare a temporary mount of onion root tip to study mitosis.
6. Separation of plant pigments by paper chromatography.
- 7 A) To study the rate of respiration in flower buds/leaf tissue and germinating seeds.
B) Demonstration of anaerobic respiration.
8. Study the presence of suspended particulate matter in air at the two widely different Sites.
9. Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organisms.
10. To test the presence of urea and sugar in urine.
11. To test the presence of albumin and bile salts in urine.

Study/observation of the following (Spotting):

- 1 Study of flowers adapted to pollination by different agencies (wind, insect)



2. Study of pollen germination on stigma through a permanent slide.
3. To Study Mendelian inheritance using seeds of different colour/size of any plant.
4. Exercise on controlled pollination - Emasculation, tagging and bagging.
5. Study meiosis in onion bud cell or grass hopper testis through permanent slides.
6. Study of plants found in xerophytic and aquatic conditions with respect to their morphological adaptations.(Two plants each)
7. Study and identify stages of gamete development, i.e. T.S. of testis and T.S. ovary through permanent slides (from any mammal).
8. Study of V.S. of blastula through permanent slide.
9. To study prepared pedigree charts of genetic traits such as rolling of tongue, Blood groups, widow's peak, colour blindness.
10. To identify common disease causing organisms like *Plasmodium*, *Entamoeba*, *Ascaris* and ring worm through permanent slides or specimens. Comment on symptoms of diseases that they cause.
11. Study of animals found in xeric (desert) and aquatic conditions with respect to their morphological adaptations. (Two animals each)



Drawing (57)

Std. XI

Introduction

The syllabus provides the study of the objectives of man-made and Natural objects. Drawing with different mediums to be handled in this field.

An opportunity is offered to the students to handle a variety of tools and mediums.

To inform them to know more about the applications and limitations while using these tools and materials. Students have to search for novel tools and mediums as well as traditional materials and mediums.

So as to get beautiful and attractive results through their efforts.

Objective

To enable the students to

1. Make aware of various mediums.
2. Practice and handle various materials with expertise.
3. Study various elements in the nature and their shapes, colours, textures their formation and growth through observations.

Choice of Subjects

1. Each of the subject is considered for 100 marks.
2. Students will have to choose only one Theory paper - History of Art & Appreciation (60)
3. Students will have to choose only one practical paper from - Drawing (57), Design & Colour (58), Pictorial Composition (59). But they must choose - Theory paper - History of Art & Appreciation (60) with this practical paper.

1 . Sketching

- 1.1 Mediums of sketching
 - 1.1.1 Pencil Sketching
 - 1.1.2 Pen Sketching
 - 1.1.3 Sketch pen
 - 1.1.4 Colour- Brush
 - 1.1.5 Instrumental Sketching

2. Sketching of Natural Objects

- 2.1 Sketching of natural objects

3. Sketching of man-made objects

- 3.1 Sketching of man-made objects
- 3.2 Geometrical solid objects
- 3.3 Solid pottery

4. Land Scaping

- 4.1 Nature Sketching
- 4.2 Various Mediums
- 4.3 Sketching and Drawing in Nature's Spot.
- 4.4 Land Landscape

5. Object drawing

- 5.1 Sketching of objects of varied medium
- 5.2 Arrangements of objects in group
- 5.3 Realistic drawing

6. Calligraphy and lettering

- 6.1 Devnagari, Roman Script
- 6.2 Cut nips, brush etc,
- 6.3 Instruments, Letters, Arrangement

Objectives

To enable the students to

1. Lead the study and practice of various materials and mediums towards perfection.
2. Seek pleasure/enjoy the self made creation through various medium and materials.
3. Acquire skills of rendering through the creation of self made art work.



4. Facilitate and motivate the learning of Art for art sake art for life sake and art as a profession.

1. Sketching

- 1.1 Mediums of Sketching
- 1.2 Micro Sketching
- 1.3 Natural Objects
- 1.4 Manmade Objects
- 1.5 Form, shape shade-light, Tone, texture

2. Perspective and Sketching

- 2.1 Perspective
- 2.2 Drawing of incident
- 2.3 Indoor Sketching
- 2.4 Outdoor Sketching
- 2.5 Architect Sketching

3. Memory Drawing

- 3.1 Memory Drawing
- 3.2 Sketching and Colouring
- 3.3 Imaginary Drawing

4. Proportion

- 4.1 Object & Object Group
- 4.2 Human Figures
- 4.3 Architect

5. Still life

- 5.1 Object Drawing
- 5.2 Still life
- 5.3 Object Group Arrangement

Std.XII

Introduction

The syllabus provides the study of the objectives of Man-made and Natural objects Drawing with different mediums to be handled in this field.

An opportunity is offered to the students to handle a variety of tools and mediums.

To inform them to know more about the applications and limitations while using

these tools and materials. Students have to search for novel tools and mediums as well as traditional materials and mediums.

So as to get beautiful and attractive results through their efforts.

It is necessary to acquaint the students with the tools, techniques, understanding, observation and practice while performing Drawing and Painting.

Objective :

To enable the students to –

1. Lead the study and practice of various materials and mediums towards perfection.
2. Seek pleasure/enjoy the self made creation through various medium and materials.
3. Acquire skills of rendering though the creation of self made art work.
4. Facilitate and motivate the learning of Art for art sake art for life sake and art as a profession.

Choice of Subjects

1. Each of the subject is considered for 100 marks.
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1. Sketching

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- 1.2 Micro Sketching
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- 1.4 Manmade Objects
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2. Perspective and Sketching

- 2.1 Perspective
- 2.2 Drawing of incident
- 2.3 Indoor Sketching
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- 2.5 Architect Sketching

3. Memory Drawing

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- 4.1 Object & Object Group
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5. Still life

- 5.1 Object Drawing
- 5.2 Still life
- 5.3 Object Group Arrangement



Design and Colour (58)

Std. XI

Introduction

Art education is an important step in the process of learning. The syllabus provides the study objectives of 'Design and Colour' and different colour mediums to be handled with the techniques, understanding in this field. Similarly this syllabus will help students to develop imagination and creative skills. As well as the basic objective of this study and practice is to enrich a student with multi dimensional knowledge about art.

Create awareness about the elements in the nature, to study the artistic beauty and to creat such beauty, studding elements of design, observation of colours, studying colours, colour theory, colour wheel, colour schemes, their tonal values, tints and hues and cromas creating awareness about the beauty and reality about the colours and colour schemes.

Objectives

To enable the students to

1. To make available an opportunity to students to observe various natural objects shapes, colours, textures and designs etc.
2. To motivate students to make beautiful and artistic self creations by using various objects, colours etc.
3. To make available an opportunity to students.
4. To develop skill of using various materials.
5. To help students studying of basic principles and various colours and colour gradations in desing.

Choice of Subjects

1. Each of the subject is considered for 100 marks.
2. Students will have to choose only one Theory paper - History of Art & Appreciation (60)
3. Students will have to choose only one practical paper from - Drawing (57), Design & Colour (58), Pictorial Composition (59). But they must choose - Theory paper - History of Art & Appreciation (60) with this practical paper.

1. Fundamentals of Art

- 1.1 Line
- 1.2 Shape
- 1.3 Colour
- 1.4 Tone
- 1.5 Texture

2. Design

- 2.1 Definition of Design
- 2.2 Composition
- 2.3 Type of Composition
 - Structural Design
 - Decorative Design
- 2.4 Type of Decorative Design
 - Natural form Design
 - Decorative form Design
 - Geometrical form Design
 - Abstract form Design
- 2.5 Principals of Design
 1. Repetition
 2. Variety
 3. Contrast
 4. Radiation
 5. Rhythm
 6. Balance



7. Gradation 8. Dominance & Subordination 9. Proportion
10. Transition 11. Harmony
12. Unity

3. Colour & Colour Theory

- 3.1 Definition of Colour
3.2 Colour Knowledge
3.3 Artist's Colour Theory
3.4 Characteristics of Colour
3.5 Hue
3.6 Value
3.7 Symbolic Meanings of Colours
3.8 Colour Mixtures

Practical work

No. of Practicals

1. Fundamentals of art

- 5- To study and practical assignments of the following –
1. Line
 2. Shape
 3. Colour
 4. Tone
 5. Texture

2. Design

- 1 - Creating a design based on Structural Design
- 1 - Creating a design based on Decorative Design
(Providing detailed information about Decorative Design and creating designs using natural elements such as leaves, flowers, creepers, birds, butterfly, clouds, fishes, animals etc.)
- 2 - Natural form designs
- 3 - Decorative form designs
- 2 - Geometrical form designs
- 2 - Abstract form designs
- 2 - Basic Principles of design

(To study the basic principles of design and practical assignments.)

3. Colour & Colour Theory

Creating designs based on colour and colour theory.

- 2 - 1 – Hue, and 1 – Colour Value
8 - Colour Mixtures –
1. Primary colours
 2. Secondary colours
 3. Tertiary colours
 4. Quarternary colours
 5. Advancing colours
 6. Relising colours
 7. Neutral colours
 8. High key & Low key
1. Use ¼ Imperial (28 cm. x 38 cm.) size drawing paper sheet for practical/assignment work.
1. While working on these assignments – Transparent and opaque colours, Oil pestles, Crayons and other available colours could separately or in combinations as a mixed media to achieve excellent results.

Std.XII

Introduction :

Art Education is an important step in the process of learning. The syllabus provides the study objectives of 'Design and Colour' and different colour mediums to be handled with the techniques, understanding in this field. Similarly this syllabus will help students to develop imagination and creative skills. As well as the basic objective of this study and practice is to enrich a student with multi dimensional knowledge about art.



Create awareness about the elements in the nature, to study the artistic beauty and to create such beauty, studying elements of design, observation of colours, studying colours, colour theory, colour wheel, colour schemes, their tonal values, tints, hues and Chromas and creating awareness about the beauty and reality about the colours and colour schemes.

Objectives

The purpose of introducing practical exercises in 'Design and Colour' is to enable the students

1. To sharpen their observation skills through study of common objects and various natural, decorative, geometrical and abstract forms.
2. To develop an understanding of Design and Composition with the help of elements and the basic principles of Design/Composition.
3. To create the forms and the colour schemes in imagination with an ability to express them effectively in design.
4. To develop skill of using the various colour mediums effectively.
5. To express the different feelings and moods of life and nature in lines, forms, colours, tone and textures.

Choice of Subjects

1. Each of the subject is considered for 100 marks.
2. Students will have to choose only one Theory paper - History of Art & Appreciation (60)
3. Students will have to choose only one practical paper from - Drawing (57), Design & Colour (58), Pictorial Composition (59). But they must choose -

Theory paper - History of Art & Appreciation (60) with this practical paper.

1. No. of Practicals

1. Composition

1.1 Organisation

1.2 Composition

- Realistic Composition
- Decorative Composition
- Abstract Composition

1.3 Principals of Design

1. Repetition
2. Variety
3. Contrast
4. Radiation
5. Rhythm
6. Balance
7. Gradation
8. Dominance & Subordination
9. Proportion
10. Transition
11. Harmony
12. Unity

1.4 Samples of Decorative Designs

2. Painter's Mediums

2.1 Type of difference Mediums

2.2 Characteristics of Mediums

3. Colour Harmony

3.1 Colour Harmony

- Achromatic Harmony
- Chromatic Harmony
 - (a) Monochromatic Harmony
 - (b) Multichromatic Harmony

3.2 Multichromatic Harmony

- Analogous or Related Colour Harmony
- Contrast or Complementary Colour Harmony
- Warm Colour Harmony



- Cool Colour Harmony
- Triad Colour Harmony

Practical Work

1. Composition

Creating compositions : arranging different elements of design in combination with basic principles of design in given space using different shapes.

- 2 - Realistic compositions
- 2 - Decorative compositions
- 2 - Abstract compositions
- 6 - To study and practical assignments of the following various basic principles of design.

- 1) Repetition & Variety
- 2) Contrast & Radiation
- 3) Rhythm & Balance
- 4) Gradation, Dominance & Subordination
- 5) Proportion & Transition
- 6) Harmony & unity.

2. Painter's Mediums

2 - To study and practice of various Colour Mediums and its characteristics i.e.

Pencil, Black & Coloured Inks, Charcoal, Pastles, Crayons, Water colour (Transparent or Opaque), Oil colour etc.

3. Colour Harmony

Creating designs based on Multichromatic Harmony

- 2 - Analogous or Related colour harmony
- 2 - Contrast or Complementary colour harmony
- 2 - Warm colour harmony
- 2 - Cool colour harmony
- 2 - Triad colour harmony

Total 24 practicals

1. Use 1/4 Imperial (28 cm.x38 cm.) size drawing paper sheet for practical/ assignment work.
2. While working on these assignments – Transparent and opaque colours, Oil plates, Crayons and other available colours could separately or in combinations as a mix media to achieve excellent results.



Pictorial Composition (59)

Std. XI

Introduction

New educational policy has given emphasis on study of Fine Arts and allied subjects in the curriculum for Std. XI students. This will enhance their overall personality.

Due to the introduction of various subjects in fine arts: the intellectual, physical, aesthetical development of student could be ensured. So also keen observation, concentration abilities would be on the rise. It is very likely that the study of subjects in fine arts may either create an artist or an ardent art lover and admirer. The study of subjects in Fine Arts would help for stress management so as to be at ease in day-to-day life.

Study of pictorial composition with the study of other subjects in fine arts will enhance the vision for beauty of an art student. One's daily life provides for the subjects for composition. Student's keen observation can teach him to appreciate the beauty of man-made and natural objects. This aesthetical experiences can enrich his emotions and feelings for life. We can create beautiful things out of scrap and throw-away materials, just by sticking and pasting. Through the study of such compositions one can seek a very creative beautiful experience. Similarly this syllabus will facilitate students, to study various styles in Indian miniature art. Ajanta style of paintings and other decorative styles of paintings which are the treasures of Indian culture. Various observations through this study, shall develop the abilities for creating shapes and making different arrangements of elements with neatness and tidiness. This will give boost to

one's thinking process for creation of beauty in variety of ways.

Objective

Everyone has 'Art ability' in born. We can develop these abilities with the consistency of encouragement. Amongst the various objectives few important are following –

1. To encourage those students who have aptitude of Art & relevant skills.
2. To educate the students with techniques, colours, colour schemes & applications for the development of their creativity.
3. To increase their observation skills.
4. To increase their capacity of appreciation of 'Native Beauty'.
5. To concrete the pioneer/foundation of the students for higher art education.
6. Through the 'Art History', introduce the students to Indian ancient Art, culture, sculpture, Architecture with contemporary Art & its journey.

These are the significant objectives of this syllabus.

Choice of Subjects

1. Each of the subject is considered for 100 marks.
2. Students will have to choose only one Theory paper - History of Art & Appreciation (60)
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1. Pictorial Composition

1.1 Introduction

2. Fundamentals of Art

2.2 Line

2.3 Shape

2.4 Colour

2.5 Tone

2.6 Texture

3. Basic Principles of Design

3.1 Repetition

3.2 Variety

3.3 Contrast

3.4 Radiation

3.5 Rhythm

3.6 Balance

3.7 Gradation

3.8 Dominance & Subordination

3.9 Proportion

3.10 Transition

3.11 Harmony

3.12 Unity

4. Print Making

4.1 Printing on Natural Surface

4.2 Relief Printing

4.3 Intaglio Printing

5. Style of Miniature Painting

5.1 Introduction of Indian Miniature Painting

5.2 Miniature Painting Medium of Pictorial Composition

5.3 Parts of Miniature Painting

5.4 Study Painting on the basis of Miniature Painting

6. Types and Information of Parts of Pictorial Composition

6.1 Decorative

6.2 Geometric

6.3 Abstract

Std – XII**Introduction**

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1. Difference between pictorial composition and memory drawing

Required work in Pictorial Composition

2. Decorative Pictorial Composition

Decorative Method

2.1 Study of compositions of Various Artist.

2.2 Study of various decorative parts of Ajantha mural drawing.

3. Geometric Pictorial Composition

Method Geometric

3.1 Study of Artist who works in Geometric methods.

3.2 Study of daily routine by using Geometric method

4. Abstract Pictorial Composition (Advance)

Abstract Method

4.1 Advance abstract composition

4.2 Aim

4.3 Opinion

4.4 Objective

4.5 Reference picture



History of Art & Appreciation (60)

Std. XI

Introduction

The History of Art is ancient. Sculpture, drawing has contributed a lot to the art. The art is a soul of culture. In the coming future, also the art will play an important role.

In the school education, the art education is crucial. The Western people are also attracted towards Indian Arts, traditions and the history. The Minakshi, the Kailas temple of Ellora, the Sun temple of Konarka, the Taj Mahal, the Kutubminar and the Ajintha Ellora caves with the cultural heritage, are the rich places of Indian art. Many people do education research in this Indian art and culture.

Keeping this in view, it is essential to study the History of the Western Art with Indian Art. So this separate subject is selected for the study.

The students will have to present a project for this subject. As a result, the students will do self study. The interest and favour will be created among the students about the Indian Art. They will preserve and enrich the Indian culture.

Objectives

To enable the students to

1. Develop the Artistic View
2. Acquire knowledge about Indian & Western culture.
3. Study of Indian & Western Architecture, Sculpture & Painting
4. To create awareness in student about the protection of public properties' cultural heritage.

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 1. Indus Valley Civilization 3000 B.C.to 1500 B.C.
 - 1.1 Back - Ground
 - 1.2 Architecture
 - 1.3 Sculpture
 - 1.4 Seals
 - 1.5 Artistic Things & Toys
 2. Period of Mouryas 322 B.C. to 185 B.C.
 - 2.1 Back – Ground
 - 2.2 Architecture
 - 2.3 Sculpture
 - 2.4 Singularitys of Mouryas Art
 3. Shunga Art 185 B.C. to 28 B.C.
 - 3.1 Back – Ground
 - 3.2 Architecture
 - 3.3 Sculpture
 4. Satavahana & Andra Art 230 B.C.to 225 A.D.
 - 4.1 Back – Ground
 - 4.2 Architecture
 5. Mathura Gandar School & Kushan Period 1 A.D.to 2 A.S.
 - 5.1 Back – Ground



- 5.2 Architecture
6. Gupta Period – Golden Age of Indian Art
320 A.D.to 650 A.D.
- 6.1 Back – Ground
- 6.2 Architecture
- 6.3 Sculpture
- 6.4 Painting
7. Western Art of prehistoric Man 10,000 \ B.C. B.C. to 6000 B.C.
- 7.1 Back – Ground
- 7.2 Old Stone Age Painting
- 7.3 New Stone Age
8. Egyptain Art 4000 B.C. to 1500 B.C.
- 8.1 Back – Ground
- 8.2 Architecture
- 8.3 Sculpture
- 8.4 Painting
9. Greek Art 700 B.C.to 4th A.D.
- 9.1 Architecture
- 9.2 Sculpture
10. Roman Art 31 B.C. to 314 A.D.
- 10.1 Architecture
- 10.2 Sculpture
- History of Art & Appreciation (60)

Std. XII

Introduction

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Theory

1. **Indian Temples Architecture**
 - 1.1 Construction of Hindu Temples
 - 1.2 North Indian Temples
 - 1.3 South Indian Temples & Sculpture
2. **Hindu Muslim & Mughal Architecture**
 - 2.1 Kutubminar
 - 2.2 Golghumat
 - 2.3 Buland Darwaza
 - 2.4 Taj-Mahal
3. **Art of Indian Miniatures.**
 - 3.1 Pal and Jain miniatures
 - 3.2 Rajastani miniatures.
 - 3.3 Mughal miniatures
 - 3.4 Pahari miniatures
4. **Indian Artists and Painting- Sculpture**
 - 4.1 Artists (Painting)
 - 4.2 Artists (Sculpture)
 - 4.3 Painting and Sculpture
5. **Western Art. Art of the middle Ages**
 - 5.1 Christain and Byzantine Art
 - 5.2 Gothic Art
6. **The Art of the Renaissance and the famous Trio**
 - 6.1 Art of the Renaissance
 - 6.2 famous Trio
 - 6.3 Painting and Sculpture
7. **Baroque Art**
 - 7.1 Baroque Art
 - 7.2 Artists
8. **Modern Art, Ism's and Artists**
 - 8.1 Ism's
 - 8.2 Artists
 - 8.3 Painting



History and Development of Indian Music (65)

Std. XI

Introduction

Music plays a very significant role in National and State Board's Art Education Curriculum. Since there is a lot of scope to develop the creativity of the students in Art Education. The curriculum of music would definitely help in developing the hidden qualities of the students.

Human life gets enriched due to Art that's why Art has been given significance in the curriculum. While restructuring the curriculum the students have been given the opportunities as per their age and interest and due to that his ability to express & stage daring would increase surely. The student would take pleasure after the study of each unit. They would do introspection. In this way they would become professionals like artists, teachers, accompanists etc.

It is also possible to make use of music in co-curricular activities. Self-study has a great importance in music and thus the curriculum also aims to inculcate the value and importance of 'RIYAZ' in the students.

Objectives

After completing the syllabus in 'Indian Music', the students will come to know –

1. History and Development of Indian Music
2. Vocal Light Music
3. Vocal Classical Music
4. Instrumental Music

The student will be able to

1. Define Technical Terms in Indian Music.
2. Differentiate between the characteristics of main school of Khyal singing

3. Describe the life sketches of well known Musicians, Instrumentalists & Musicologists
4. List the guidelines for appreciation of Music
5. Classify Musical Instruments of India into various categories.
6. Modern Musical Form
7. The importance of Music in everyday and social life.
8. Place of Music in education
9. The use of Modern Musical Aids in Music
10. Recognize Musical Notes.
11. The sing/play different Ragas
12. Write and recite Theka bols of Talas with demonstration
13. Write notation of Song and Talas
14. sing/play different forms with Gayaki Anga
15. Live stage performance (Majlis) with accompaniment – similarly
 1. To help for self-employment
 2. For realisation of rich heritage of music
 3. To inculcate moral values like unity, equality, brotherhood etc.
 4. To co-relate for the teaching of other subjects.
 5. Application of Music for advertisements, industries etc.

'Indian Music' consists of the following Four Subject :

- 1) History and Development of Indian Music. (Theory) - 65
- 2) Vocal Light Music (Practical) - 66
- 3) Vocal classical Music (Practical) - 67
- 4) Instrumental Music (Practical) - 68



Choice of Subject :

- i) Each of the four subjects mentioned above under 'Indian Music' is considered for 100 marks.
- ii) 'History and Development of Indian Music' (Theory) shall be compulsory for all students offering 'Indian Music' i.e. - Practical Subjects
- iii) The theory paper called 'History and Development of Indian Music' can be chosen independently.
- iv) But while choosing the Practical Papers i.e. Vocal Light Music OR Vocal Classical Music OR instrumental Music, it is compulsory to take the subject called 'History and Development of Indian Music'.
- v) Student can choose any one practical subject from Three Practical Subjects. (Vocal Light Music-66, Vocal Classical Music-67 and Instrumental Music-68).

Implementation of the Practical

1. For Teaching a Music Practical Subjects (Sub.No.66, 67, 68). The maximum number of students in one batch should be Twenty only.
2. For Vocal Light & Vocal Classical Music (66, 67) there should be separate batches for boys and girls, based on the Natural Vocal Limitations.
3. There should be six periods in a week (one period – every day) for all music practical subjects per batch.

XI - Syllabus**1. History of Indian Music**

- 1.1 Vedic Period
- 1.2 Mogal Period

2 Gurukul Padhhati

- 2.1 Nature
- 2.2 Merit and Demerit

3 Gharana : Study in View of Khyal Gayaki

- 3.1 Gwalieor Gharana
- 3.2 Agra Gharana
- 3.3 Jaipur Gharana
- 3.4 Kirana Gharana

4 Biographical Sketches

- 4.1 Pt.Balkrishnabuwa Ichalkaranijikar
- 4.2 Ustad Faiyaz Khan
- 4.3 Ustad Alladiya Khan
- 4.4 Ganhira Hirabai Badodekar

5 Musical Forms

- 5.1 Bhavgeet
- 5.2 Folksong
- 5.3 Bhajan
- 5.4 Natya Geet

6 Classification of Instruments

- 6.1 Four types of Instruments
- 6.2 Detail information about Tanpura, Tabla, Harmonium

7. Modern Forms

- 7.1 Orchestra
- 7.2 Choral Music
- 7.3 Fusion

Std.XII**Introduction**

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Human life gets enriched due to Art that's why Art has been given significance in the curriculum. While restructuring the curriculum the students have been given the opportunities as per their age and interest and due to that his ability to express & stage daring would increase surely. The student would take pleasure after the study of each unit. They would do introspection. In this way they would become professionals like artists, teachers, accompanists etc.

It is also possible to make use of music in co-curricular activities. Self-study has a great importance in music and thus the curriculum also aims to inculcate the value and importance of 'RIYAZ' in the students.

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- 4) Instrumental Music (Practical) - 68

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- iii) The theory paper called 'History and Development of Indian Music' can be chosen independently.
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Music OR instrumental Music, it is compulsory to take the subject called 'History and development of Indian Music'.

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Units	Sub-units
1. History of Indian Music	
	1.1 Pre-Independence and
	1.2 post-independence period
2. Biographical sketches	
	2.1 Pt.Vishnu Digambar Paluskar
	2.2 Pt.Vishnu Narayan Bhatkhande
	2.3 Ustad Abdul Karim Khan
	2.4 Natsamrat Balgandharva
	2.5 Pt.Govindrao Tembe
	2.6 Pt.Gajananbuwa Joshi
	2.7 Pt.Ravi Shankar
	2.8 Ustad Aliakbar Khan
	2.9 Ustad Bismilla Khan
	2.10 Pt.Pannalal Ghosh
	2.11 Swarsamradni Lata Mangeshkar

3. Musical Forms	
	3.1 Dhrupad
	3.2 Dhamar
	3.3 Khayal
	3.4 Tarana
	3.5 Thumari
4. Importance of Music in Daily life	
5. Importance of Music in social life	
6. Importance of Music in Education	
7. Use of Audio-Visual aids in the study of music	
	7.1 Radio
	7.2 tape-recorder
	7.3 Television
	7.4 Computer
8. Comparative study	
	8.1 Vocal music – Instrumental music
	8.2 Solo singing – Group singing
	8.3 Classical music – light music
	8.4 solo instrumental playing – instruments for accompaniment
9. Stage Performance/Presentation	
	9.1 Artists
	9.2 Accompaniment
	9.3 Listeners
	9.4 Organizers



Vocal Light Music (66)

Std. XI

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Human life gets enriched due to Art that's why Art has been given significance in the curriculum. While restructuring the curriculum the students have been given the opportunities as per their age and interest and due to that his ability to express & stage daring would increase surely. The student would take pleasure after the study of each unit. They would do introspection. In this way only they would become professionals like artists, teachers, accompanists etc.

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2	Alankar	2.1.	Shuddha Swaras
3	Theory of Ragas	3.1	Yaman.
		3.2	Durga
		3.3	Bhoopali
		3.4	Bihag
		3.5	Bhimpalas.
4	Theory of Talas with demonstration	4.1	Trital
		4.2	Ektal.
		4.3	Kerva.
		4.4	Dadra.
		4.5	Dhumali.
5	Presentation	5.1	Natya Geet (Any Two) in following Ragas.
		5.1.1	Bhoopali.
		5.1.2	Yaman
		5.1.3	Bihag
		5.1.4	Durga
		5.1.5	Bhimpalas
6	Specific forms presentation	6.1	Abhang (Any 2)
		6.2	Bhavgeet (Any 2)
		6.3	Group-Song (Any 2)
		6.4	Folk Song (Any 1)
		6.5	Environment Song. (Any 1)
7	Definition	7.1	Tala Anga - Technical terms Sam, Kal, Matra, Khand, Tali, Laya, Avartan.
		7.2	Raga Anga-Sangeet, Swara, (Shuddha&Vikrit) Thaat, Aroha, Avaroh, Vadi, Samvadi, Saptak, Jati, Gansamay.
8	Presentation	8.1	Sargam (Any two)

Implementation of the Music Practical Subjects

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Curriculum

S.No.	Unit	Sub.Unit
1	Swara	1.1 Shuddha Swara
		1.2 Vikrit Shwara



- 9 Notation in prescribed Raga. Sargam (Any one) in prescribed Raga.
- 10 Practical (Record Book)

Vocal Light Music - Std. XII

Introduction

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3. Describe the life sketches of well known Musicians, Instrumentalists & Musicologists
4. List the guidelines for appreciation of Music
5. Classify Musical Instruments of India into various categories.
6. Modern Musical Form
7. The importance of Music in everyday and social life.
8. Place of Music in education
9. The use of Modern Musical Aids in Music
10. Recognize Musical Notes.
11. The sing/play different Ragas
12. Write and recite Theka bols of Talas with demonstration
13. Write notation of Song and Talas
14. sing/play different forms with Gayaki Anga
15. Live stage performance (Majlis) with accompaniment – similarly
 1. To help for self-employment
 2. For realisation of rich heritage of music
 3. To inculcate moral values like unity, equality, brotherhood etc.
 4. To co-relate for the teaching of other subjects.
 5. Application of Music for advertisements, industries etc.

'Indian Music' consists of the following Four Subject :

- 1) History and Development of Indian Music. (Theory)



- 2) Vocal Light Music (Practical) - 66
 3) Vocal classical Music (Practical) - 67
 4) Instrumental Music (Practical) - 68

Choice of Subject :

- i) Each of the four subjects mentioned above under. 'Indian Music' is considered for 100 marks.
 ii) 'History and Development of Indian Music' (Theory) shall be compulsory for all students offering 'Indian Music' i.e. - Practical Subjects
 iii) The theory paper called 'History and Development of Indian Music' can be chosen independently.
 iv) But while choosing the Practical Papers i.e. Vocal Light Music OR Vocal Classical Music OR instrumental Music, it is compulsory to take the subject called 'History and develop of Indian Music'.
 v) Student can choose any one practical subject from Three Practical Subjects. (Vocal Light Music-66, Vocal Classical Music-67 and Instrumental Music-68).

5 Presentation

- 4.2 Roopak.
 4.3 Kawwali.
 4.4 Zaptal..
 5.1 Natya Geet
 (Natya Geet of one dramatist one from A and B Group)

5.1.1-A- K.P.Khadilkar.
 R.G.Gadkari.
 G.B.Deval.
 Annasaheb Kirloskar

5.1.2 -B-Vidyadhar Gokhale.
 V.V.Shirwadkar.
 Purushottam Darvekar.
 Vasant Kanetkar.

5.2 Gayaki.

6 Presentation

6.1 To sing Sargam with Aroh-Avaroh in prescribed Raga. (Any two)

7.1 Group-Song (One)

7.2 Folk Song (One)

8.1 Jan-gan-man.

8.2 Vande mataram.

8 National Anthem
 9 Definition- Technical turms.

9.1 Tal Anga – Sam, Kal, Matra, Khand, Tali, Avartan, Laya.

9.2 Raga Anga – Sangeet, Shuddha and Vikrit swara, Thaata,

Sr.No.	Unit	Sub.Unit
1	Swara	1.1 Shuddha Swara 1.2 Vikrit Shwara
2	Alankar	2.1. Shuddha Swaras
3	Theory of Ragas	3.1 Pilu. 3.2 Des. 3.3 Pahadi. 3.4 Mand. 3.5 Kafi. 3.6 Khamaj 3.7 Tilang. 3.8 Bhairavi.
4	Theory & demonstration of Talas.	4.1 All talas prescribal for Std.XI.

7 Specific forms presentation

8 National Anthem

9 Definition- Technical turms.



- Jati, Vadi,
Samvadi,
Gan samay
- 9.3 Gayaki Anga –
Alap, Taan,
Meend, Kan,
Murki.
- 10 Notation
writing
- 10.1 Sargam Notation
any one Ragas.
- 10.2 Natya Geet- write
the notation of
any one
Natyageet in
prescribed Raga.
- 11 Practical
(Record Book)



Vocal Classical Music (67)

Std. XI

Introduction :

Music plays a very significant role in National and State Board's Art Education Curriculum. Since there is a lot of scope to develop the creativity of the students in Art Education, The curriculum of music would definitely help in developing the hidden qualities of the students.

Human life gets enriched due to Art that's why Art has been given significance in the curriculum. While restructuring the curriculum the students have been given the opportunities as per their age and interest and due to that his ability to express & stage daring would increase surely. The student would take pleasure after the study of each unit. They would do introspection. In this way only they would become professionals like artists, teachers, accompanists etc.

It is also possible to make use of music in co-curricular activities. Self-study has a great importance in music and thus the curriculum also aims to inculcate the value and importance of 'RIYAZ' in the students.

Objectives

After completing the syllabus in 'Indian Music', the students will come to know

1. History and Development of Indian Music
2. Vocal Light Music
3. Vocal Classical Music
4. Instrumental Music

The student will be able to

1. Define technical terms in Indian Music.
2. Differentiate between the characteristics of main school of Khyal singing

3. Describe the life sketches of well known Musicians, Instrumentalists & Musicologists
4. List the guidelines for appreciation of Music
5. Classify Musical Instruments of India into various categories.
6. Modern Musical Form
7. The importance of Music in everyday and social life.
8. Place of Music in education
9. The use of Modern Musical Aids in Music
10. Recognize Musical Notes.
11. The Sing/play different Ragas
12. Write and recite Theka bols of Talas with demonstration
13. Write notation of Song and Talas
14. sing/play different forms with Gayaki Anga
15. Live stage performance (Majlis) with accompaniment – similarly
 1. To help for self-employment
 2. For realisation of rich heritage of music
 3. To inculcate moral values like unity, equality, brotherhood etc.
 4. To co-relate for the teaching of other subjects.
 5. Application of Music for advertisements, industries etc.

'Indian Music' consists of the following Four Subject :

- 1) History and Development of Indian Music. (Theory) - 65
- 2) Vocal Light Music (Practical) - 66
- 3) Vocal classical Music (Practical) - 67



4) Instrumental Music (Practical) - 68

Choice of Subject :

- i) Each of the four subjects mentioned above under. 'Indian Music' is considered for 100 marks.
- ii) 'History and Development of Indian Music' (Theory) shall be compulsory for all students offering 'Indian Music' i.e. - Practical Subjects
- iii) The theory paper called 'History and Development of Indian Music' can be chosen independently.
- iv) But while choosing the Practical Papers i.e. Vocal Light Music OR Vocal Classical Music OR instrumental Music, it is compulsory to take the subject called 'History and develop of Indian Music'.
- v) Student can choose any one practical subject from Three Practical Subjects. (Vocal Light Music-66, Vocal Classical Music-67 and Instrumental Music-68).

Implementation of the Music Practical Subjects

1. For Teaching a Music Practical Subjects (Sub.No.66, 67, 68). The maximum number of students in one batch should be Twenty only.
2. For Vocal Light & Vocal Classical Music (66, 67) there should be separate batches for boys and girls, based on the Natural Vocal Limitations.
3. There should be six periods in a week (one period – every day) for all music practical subjects per batch.

Curriculum

Sr.No. Unit Sub unit

1. Swara 1.1 Shuddha Swara.

- | | | | |
|----|---------------------------------|-----|--|
| 2. | Alankar | 1.2 | Vikrit Swara. |
| 3. | Theory of Ragas. | 2.1 | Shuddha Swara's |
| | | 3.1 | Khamaj |
| | | 3.2 | Durga |
| | | 3.3 | Kafi |
| | | 3.4 | Bihag |
| | | 3.5 | Bhairavi |
| | | 3.6 | Alhiyya Bilawal |
| | | 3.7 | Yaman |
| | | 3.8 | Bhoopali |
| | | 3.9 | Bhimpalas |
| 4. | Theory & demonstration of Talas | 4.1 | Trital |
| | | 4.2 | Ektal |
| | | 4.3 | Zaptal |
| | | 4.4 | Kerwa |
| | | 4.5 | Dadra |
| | | 4.6 | Roopak |
| | | 4.7 | Dhumali |
| 5. | Presentation | 5.1 | Sargam (Any Two) |
| | | 5.2 | Laxangeet (Any Two) In prescribed Ragas. |
| 6. | Presentation | 6.1 | Chhota Khyal (Any Two) |
| | | 6.2 | Alap - 2-2 Alap in sthai & antara. |
| | | 6.3 | Taana - 2-2Taana in sthai & antara. |
| | | 6.4 | Khamaj |
| | | 6.5 | Kafi |
| | | 6.6 | Durga |
| | | 6.7 | Bihag |
| | | 6.8 | Bhairavi |
| | | 6.9 | Alhiyya-Bilawal |
| 7. | Presentation | 7.1 | Vilambit Khyal (Any two) |
| | | 7.2 | Chhota Khyal (only Bandish) |



		Yaman, Bhoopali, Bhimpalās
8.	Specific forms Presentation.	8.1 Tarana (one) 8.2 Bhajan (one) or Environment Song (one)
9.	Definitions – Technical terms.	9.1 Tal Anga – Sam, Kal, Matra, Khand, Tali, Awartan, Laya. 9.2 Raga Anga – Sangeet, Swara, Chala Swar, Achala Swar, Komal Swara, Tivra Swara, Thaata, Aroha, Awarha, Vadi, Samvadi, Anuvadi, Vivadi, Varja, Saptak, Jati, Gansamay, Pakad
10.	National Anthem	10.1 Jan-gan-man. 10.2 Vande mataram
11.	Notation Writing	11.1 One Sargam from Unit No.6 11.2 One Sargam from Unit No.7
12.	Record Book	

Std. XII

Introduction

Music plays a very significant role in National and State Board's Art Education Curriculum. Since there is a lot of scope to

develop the creativity of the students in Art Education. The curriculum of music would definitely help in developing the hidden qualities of the students.

Human life gets enriched due to Art that's why Art has been given significance in the curriculum. While restructuring the curriculum the students have been given the opportunities as per their age and interest and due to that his ability to express & stage daring would increase surely. The student would take pleasure after the study of each unit. They would do introspection. In this way they would become professionals like artists, teachers, accompanists etc.

It is also possible to make use of music in co-curricular activities. Self-study has a great importance in music and thus the curriculum also aims to inculcate the value and importance of 'RIYAZ' in the students.

Objectives

After completing the syllabus in 'Indian Music', the students will come to know –

1. History and Development of Indian Music
2. Vocal Light Music
3. Vocal Classical Music
4. Instrumental Music

The student will be able to

1. Define Technical Terms in Indian Music.
2. Differentiate between the characteristics of main school of Khyal singing
3. Describe the life sketches of well known Musicians, Instrumentalists & Musicologists
4. List the guidelines for appreciation of Music
5. Classify Musical Instruments of India into



- various categories.
6. Modern Musical Form
 7. The importance of Music in everyday and social life.
 8. Place of Music in education
 9. The use of Modern Musical Aids in Music
 10. Recognize Musical Notes.
 11. The sing/play different Ragas
 12. Write and recite Theka bols of Talas with demonstration
 13. Write notation of Song and Talas
 14. sing/play different forms with Gayaki Anga
 15. Live stage performance (Majlis) with accompaniment – similarly
 1. To help for self-employment
 2. For realisation of rich heritage of music
 3. To inculcate moral values like unity, equality, brotherhood etc.
 4. To co-relate for the teaching of other subjects.
 5. Application of Music for advertisements, industries etc.

'Indian Music' consists of the following Four Subject :

- 1) History and Development of Indian Music. (Theory) - 65
- 2) Vocal Light Music (Practical) - 66
- 3) Vocal classical Music (Practical) - 67
- 4) Instrumental Music (Practical) - 68

Choice of Subject :

- i) Each of the four subjects mentioned above under. 'Indian Music' is considered for 100 marks.
- ii) 'History and Development of Indian Music' (Theory) shall be compulsory for all students offering 'Indian Music' i.e. - Practical Subjects

- iii) The theory paper called 'History and Development of Indian Music' can be chosen independently.
- iv) But while choosing the Practical Papers i.e. Vocal Light Music OR Vocal Classical Music OR instrumental Music, it is compulsory to take the subject called 'History and develop of Indian Music'.
- v) Student can choose any one practical subject from Three Practical Subjects. (Vocal Light Music-66, Vocal Classical Music-67 and Instrumental Music-68).

Syllabus

S.No.	Unit	Sub unit
1.	Swara	1.1 Shuddha Swara. 1.2 Vikrit Swara.
2.	Alankar	2.1 Shuddha Swar's Alankar
3.	Theory of Ragas	3.1 Kedar 3.2 Jounpuri 3.3 Bhairav 3.4 Bageshree 3.5 Shankara 3.6 Tilak kamod 3.7 Deskar 3.8 Malkauns 3.9 Vrindawani Sarang
4.	Theory & demonstration of Talas	4.1 All talas prescribed for Std.XI 4.2 Zumra 4.3 Tilwada 4.4 Choutal 4.5 Dhamar
5.	Presentation	Chhota Khyal (Any two)



- | | | | |
|-----------------|--|--------------------------|---|
| | 5.1 Shankara | | 8.2 Chatarang |
| | 5.2 Tilakkamod | 9. Definition | 9.1 All definitiions
Technical terms
prescribed for
Std.XI |
| | 5.3 Deskar | | 9.2 Alap, Taan,
Meend,
Kanaswara,
Murki |
| | 5.4 Malkauns | | 10.1 Notation of
Chhota Khyal
from Unit 5 |
| | 5-5 Vrindawani
Sarang | | 10.2 Notation of
Chhotal Khyal
from Unit 6. |
| 6. Presentation | Vilambit Khyal
(Any two) | 10. Notation
Writting | |
| | 6.1 Kedar | | |
| | 6.2 Bhairav | | |
| | 6.3 Jounpuri | | |
| | 6.4 Bageshree | | |
| 7. Presentation | 7.1 Dhrupad (one) | | |
| | 7.2 Dhamar (one) | | |
| 8. Presentation | 8.1 Any two Sargam
given in the
syllabus | 11. Record Book | |



Instrumental Music (68)

Std. XI

Introduction

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Human life gets enriched due to Art that's why Art has been given significance in the curriculum. While restructuring the curriculum the students have been given the opportunities as per their age and interest and due to that his ability to express & stage daring would increase surely. The student would take pleasure after the study of each unit. They would do introspection. In this way only they would become professionals like artists, teachers, accompanists etc.

It is also possible to make use of music in co-curricular activities. Self-study has a great importance in music and thus the curriculum also aims to inculcate the value and importance of 'RIYAZ' in the students.

Objectives

After completing the syllabus in 'Indian Music', the students will come to know

1. History and Development of Indian Music
2. Vocal Light Music
3. Vocal Classical Music
4. Instrumental Music

The student will be able to

1. Define technical terms in Indian Music.
2. Differentiate between the characteristics of main school of Khyal singing

3. Describe the life sketches of well known Musicians, Instrumentalists & Musicologists
4. List the guidelines for appreciation of Music
5. Classify Musical Instruments of India into various categories.
6. Modern Musical Form
7. The importance of Music in everyday and social life.
8. Place of Music in education
9. The use of Modern Musical Aids in Music
10. Recognize Musical Notes.
11. The Sing/play different Ragas
12. Write and recite Theka bols of Talas with demonstration
13. Write notation of Song and Talas
14. sing/play different forms with Gayaki Anga
15. Live stage performance (Majlis) with accompaniment – similarly
 1. To help for self-employment
 2. For realisation of rich heritage of music
 3. To inculcate moral values like unity, equality, brotherhood etc.
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 5. Application of Music for advertisements, industries etc.

'Indian Music' consists of the following Four Subject :

- 1) History and Development of Indian Music. (Theory) - 65
- 2) Vocal Light Music (Practical) - 66
- 3) Vocal classical Music (Practical) - 67



4) Instrumental Music (Practical) - 68

Choice of Subject :

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1. For Teaching a Music Practical Subjects (Sub.No.66, 67, 68). The maximum number of students in one batch should be Twenty only.
2. For Vocal Light & Vocal Classical Music (66, 67) there should be separate batches for boys and girls, based on the Natural Vocal Limitations.
3. There should be six periods in a week (one period – every day) for all music practical subjects per batch.

Curriculum

Sr.No. Unit Subunit

- | | | | |
|----|---------|-----|----------------|
| 1. | Swara | 1.1 | Shuddha Swara. |
| | | 1.2 | Vikrit Swara. |
| 2. | Alankar | 2.1 | Shuddha Swaras |

3. Theory of Ragas

- 3.1 Khamaj
- 3.2 Durga
- 3.3 Kafi
- 3.4 Bihag
- 3.5 Bhairavi
- 3.6 Alhiyya-Bilawal
- 3.7 Yaman
- 3.8 Bhoopali
- 3.9 Bhimpalas

4. Theory & demonstration of Talas

- 4.1 Trital
- 4.2 Ektal
- 4.3 Zaptal
- 4.4 Kerwa
- 4.5 Dadra
- 4.6 Rupak
- 4.7 Dhumali

5. Presentation

- 5.1 Rajakhani Gat (Any Two)
- 5.2 Alap (Minimum Two alaps in Sthayee and Antara each)
- 5.3 Taan (Minimum Two taanas in Sthayee and Antara each) in the following Ragas

- 5.4 Khamaj
- 5.5 Kafi
- 5.6 Durga
- 5.7 Bihag
- 5.8 Bhairavi
- 5.9 Alhiyya-Bilawal

6. Presentation

- 6.1 Masidkhani Gat (Any Two)
- 6.2 Rajakhani Gat (Any Two) in the following Ragas



- | | | |
|-----|------|---|
| | 6.3 | Yaman |
| | 6.4 | Bhoopali |
| | 6.5 | Bhimpalas |
| 7. | 7.1 | Gat with Dugan
(one) |
| | 7.2 | Dhun (one) |
| 8. | 8.1 | Tal Angas – Sam,
Kal, Matra,
Khand, Tali,
Laya, Avartan |
| | 8.2 | Raga Anga –
Sangeet, Swara,
Komal Swara,
Tivra Swara,
Raga, Saptak,
Thaat, Aroha,
Awaroha, Vadi,
Samvadi,
Anuwadi Vivadi,
Varja Swara,
Gansumay,
Pakad |
| 9. | 9.1 | Jan-gan-man |
| | 9.2 | Vande-mataram
(official) |
| 10. | 10.1 | Sargam – Any
one in the
prescribed
Ragas from
unit 5 |
| | 10.2 | Sargam – Any
one in the
prescribed
Ragas from
unit 6 |
| 11. | | Practical Record Book |

Std XII

Introduction

Music plays a very significant role in National and State Board's Art Education Curriculum. Since there is a lot of scope to develop the creativity of the students in Art Education. The curriculum of music would definitely help in developing the hidden qualities of the students.

Human life gets enriched due to Art that's why Art has been given significance in the curriculum. While restructuring the curriculum the students have been given the opportunities as per their age and interest and due to that his ability to express & stage daring would increase surely. The student would take pleasure after the study of each unit. They would do introspection. In this way they would become professionals like artists, teachers, accompanists etc.

It is also possible to make use of music in co-curricular activities. Self-study has a great importance in music and thus the curriculum also aims to inculcate the value and importance of 'RIYAZ' in the students.

Objectives

After completing the syllabus in 'Indian Music', the students will come to know –

1. History and Development of Indian Music
2. Vocal Light Music
3. Vocal Classical Music
4. Instrumental Music

The student will be able to

1. Define Technical Terms in Indian Music.
2. Differentiate between the characteristics of main school of Khyal singing



3. Describe the life sketches of well known Musicians, Instrumentalists & Musicologists
4. List the guidelines for appreciation of Music
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'Indian Music' consists of the following Four Subject :

- 1) History and Development of Indian Music. (Theory) - 65
- 2) Vocal Light Music (Practical) - 66
- 3) Vocal classical Music (Practical) - 67
- 4) Instrumental Music (Practical) - 68

Choice of Subject :

- i) Each of the four subjects mentioned above

under 'Indian Music' is considered for 100 marks.

- ii) 'History and Development of Indian Music' (Theory) shall be compulsory for all students offering 'Indian Music' i.e. - Practical Subjects
- iii) The theory paper called 'History and Development of Indian Music' can be chosen independently.
- iv) But while choosing the Practical Papers i.e. Vocal Light Music OR Vocal Classical Music OR instrumental Music, it is compulsory to take the subject called 'History and development of Indian Music'.
- v) Student can choose any one practical subject from Three Practical Subjects. (Vocal Light Music-66, Vocal Classical Music-67 and Instrumental Music-68).

Curriculum

S.No.	Unit	Subunit
1.	Swara	1.1 Shuddha Swara. 1.2 Vikrit Swara.
2.	Alankar	Shuddha Swara's alankar based on tala
3.	Theory of Ragas	3.1 Kedar 3.2 Bhairav 3.3 Jounpuri 3.4 Bageshree 3.5 Shankara 3.6 Tilak-Kamod 3.7 Deshkar 3.8 Malkauns 3.9 Vrindavani Sarang
4.	Theory & demonstration of Talas	4.1 All talas prescribed for Std.XI



- | | | | | | | |
|----|-----|---------------------------------|-----|-------------------|-----------|---|
| | 4.2 | Zumra | | 6.4 | Bageshree | |
| | 4.3 | Tilwada | 7. | Spetic Forms | 7.1 | Gat with Dugun & Chaugun |
| | 4.4 | Addha | | Presentation | | |
| | 4.5 | Roopak | | | 7.2 | Dhun |
| 5. | | Rajakhani Gat | 8. | Definitions : | 8.1 | All terms prescribed for Std.XI |
| | | (Any two) with 2 alap & 2 taans | | (Technical Terms) | | |
| | 5.1 | Shankara | | | 8.2 | Alap, Taan, Meend, Kan, Murki |
| | 5.2 | Tilak kamod | | | | |
| | 5.3 | Deshkar | | | | |
| | 5.4 | Malkauns | 9. | Notation Writing | 9.1 | Notation wirting at one Rajakhani Gat from Unit 5 |
| | 5.5 | Vrindawani Sarang | | | | |
| 6. | | Masidkhani Gat | | | 9.2 | Notation writing of one Rajakhani Gat from Unit 6 |
| | | (Any Two) | | | | |
| | 6.1 | Kedar | | | | |
| | 6.2 | Bhairav | 10. | (Practical) | | |
| | 6.3 | Jounpuri | | Record - book | | |



Percussion Instruments (69)

Std. XI

Introduction

In the subject music, the Percussion Instruments (Talvadya) has been given a very significant role in National and State Boards Art Education Curriculum. Since Art Education has a lot of scope to develop to develop the creativity of the students, the curriculum of music would definitely help in developing the hidden qualities of the students.

Human life gets enriched due to Art that's why the subject 'Talvadya' has been given significance in the curriculum.

While restructuring the curriculum, the students have been given the opportunities, as per their age and interest. And due to that his ability to express and stage daring would develop surely. The student would gain pleasure after the study of each unit. They would do introduction. In this way only they would become professionals like artists, teachers, accompanists etc.

It is also possible to make use of music in the co-curricular activities. Self study has a great importance in music and thus the curriculum also aims to inculcate the value and importance of 'RIYAZ' in the students.

Instructional Objectives

After completing the syllabus in 'Indian Music' the students would be able to get the information regarding Talvadya (Theory & Practical) to. After Studying this subject the students will be able to-

1. Study about different schools of Tabla (Gharanas), the study and analysis of their tradition and of the characteristics of playing tabla.

2. Study about the biographical sketches of Percussion Masters along with their Riyaz and style of playing etc.
 3. Explain the importance of 'Laya' in music and learn it too as when we talk of Music, Laya and Layakari naturally comes with it.
 4. Tell the definition and explanation of different styles in Talvadya playing.
 5. Do the classification of different Percussion instruments.
 6. Get the basic knowledge or basic introduction about how to give sequential solo performance.
 7. Information regarding writing notation in music and the process of 'PADHANT'
 8. Encourage students for accompaniment alongwith various vocal music styles.
- For Teaching Percussion Instruments (Sub-69) The maximum number of students in one batch should be Twenty only.

Std. XI

Theory

Sr.No. Unit Sub - unit

- | | | | |
|----|---|-----|-----------------------------|
| 1. | Rhythm (Laya) and Music | 1.1 | Definition of Laya (Rhythm) |
| | | 1.2 | Importance of Laya in music |
| 2. | Introduction of Indian Rythmic Instrument | 2.1 | Pakhawaj |
| | | 2.2 | Dholki |
| | | 2.3 | Sambal |
| 3. | Introduction of Western Rythmic Instruments | 3.1 | Kongo |
| | | 3.2 | Bongo |



4.	Anatomy of Tabla		Various parts of Tabla Dugga	Practical		
				S.No.	Unit	Subunit
5.	Alphabets, Script and Language of Tabla	5.1	Various sounds produced on the different parts of Tabla Dugga	1.	Tal Notation Writing (only single laya)	1.1 Dadra 1.2 Keharwa 1.3 Rupak 1.4 Trital 1.5 Zaptal 1.6 Ektal 1.7 Tevara 1.8 Bhajani
		5.2	Sound produced in multiple combinations of Tabla Dugga.	2.	Presentation	2.1 Various Bol playing on Tabla and Dugga 2.2 Playing talas given in unit – 1 and oral presentation 2.3 Kayda, Tihai, Mukhada, Laggi
6.	Matrices of Tala	6.1	Definition			
		6.2	Analysis of Talas			
		6.3	Notation Writing			
7.	Definitions of the following Terms with illustrations	7.1	Kayda			
		7.2	Rela			
		7.3	Tihai			
		7.4	Mukhada			
8.	Schools Tabla (Gharanas) short history and peculiarities	8.1	Delhi	3.	Tabla Solo	3.1 Trital 3.2 Zaptal
		8.2	Lakhnaw	4.	Various Rhythmic Instrument Solo	4.1 Pakhawaj 4.2 Dholki 4.3 Kongo 4.4 Bongo 4.5 Sambal
		8.3	Farukhabad			

Std. XII

Introduction

In the subject music, the Percussion Instruments (Talvadya) has been given a very significant role in National and State Boards Art Education Curriculum. Since Art Education has a lot of scope to develop to develop the creativity of the students, the curriculum of music would definitely help in developing the hidden qualities of the students.

Human life gets enriched due to Art that's why the subject 'Talvadya' has been given significance in the curriculum.

While restructuring the curriculum, the students have been given the opportunities, as per their age and interest. And due to that his ability to express and stage daring would develop surely. The student would gain pleasure after the study of each unit. They would do introduction. In this way only they would



become professionals like artists, teachers, accompanists etc.

It is also possible to make use of music in the co-curricular activities. Self study has a great importance in music and thus the curriculum also aims to inculcate the value and importance of 'RIYAZ' in the students.

Instructional Objectives

After completing the syllabus in 'Indian Music' the students would be able to get the information regarding Talvadya (Theory & Practical) to. After Studying this subject the students will be able to-

1. Study about different schools of Tabla (Gharanas), the study and analysis of their tradition and of the characteristics of playing tabla.
2. Study about the biographical sketches of Percussion Masters along with their Riyaz and style of playing etc.
3. Explain the importance of 'Laya' in music and learn it too as when we talk of Music, Laya and Layakari naturally comes with it.
4. Tell the definition and explanation of different styles in Talvadya playing.
5. Do the classification of different Percussion instruments.
6. Get the basic knowledge or basic introduction about how to give sequential solo performance.
7. Information regarding writing notation in music and the process of 'PADHANT'
8. Encourage students for accompaniment alongwith various vocal music styles.

Std. XII

Theory

Sr.No.	Unit	Sub - unit
1.	Schools Tabla (Gharanas)	1.1 Ajarada
		1.2 Banaras
		1.3 Punjab
2.	Biographical sketches and contributions of the following Percussionist Masters.	2.1 Ustad Zakir hussain
		2.2 Pt. Anindo Chatterji
		2.3 Pt. Bhawani-shankar (Pakhawaj)
3.	Laya and Typs of Laya	3.1 Vilambit Laya
		3.2 Madhya Laya
		3.3 Drut Laya
4.	Details study of Rhythmic Instrument	4.1 Pakhawaj
		4.2 Dholki
		4.3 Dholak
		4.4 Drumset
		4.5 Rhythms Macchine
5.	Study of the following Terms with illustrations	5.1 Damdar Tihai
		5.2 Bedam Tihai
		5.3 Mohara
		5.4 Tukada
		5.5 Paran
		5.6 Laggi
6.	Utility of various Rhythmic Instruments	6.1 Classical music
		6.2 Semi classical music
		6.3 Light music
		6.4 Folk music
		6.5 Western music
7.	Solo recital	—
8.	Information about Talas and their	8.1 Dadra
		8.2 Keharwa
		8.3 Rupak



Notation writing	8.4	Zaptal
	8.5	Trital
	8.6	Ektal
	8.7	Tevara
	8.8	Chowtal

Laggi, Paran,
etc. Forms of
presentation.

2.2 11th Std. of all
Talas information
and presentation.

2.3 11th Std. of all
Talas by showing
Tali and Khali on
hand.

Practical (XII)

Sr.No.Unit

Sub-Unit

1.	Write Notation of following Terms in the given talas. One Kkayda and one Chakradar	1.1 Trital 1.2 Zaptal	3. Accompaniment —
2.	Presentation	2.1 Kayda, Mohara, Tukada, Chakradar,	4. Solo recital with Lehara accompaniment. 5. Various Rhythmic Instrument solo
			4.1 Trital 4.2 Zaptal 5.1 Pakhawaj 5.2 Dholki 5.3 Kongo 5.4 Drumset
			6. Practical Record Book —



Agriculture Science and Technology (75)

Introduction

Agriculture is the back bone of countries development, as more than 65 % Indian population living in the rural area is mainly dependant on agriculture and the related fields. Hence, development of agriculture is the only way to improve the economic status of the rural population. Besides, agriculture has the potential to nourish the ever increasing population provided the productivity and production of the various crops is increased substantially.

It is the need of the hour to strengthen agricultural education and extension activity for the benefit of the farming community through the inclusion of agriculture subjects to the 10 + 2 students or technicians. As majority of the school going children belong to villages, they are expected to acquire knowledge of improved techniques in agriculture easily.

Objectives

To enable the students to

1. acquire knowledge of different soil forming rocks and soil formation procedure.
2. know the properties of soil, soil types and soil management practices.
3. understand different agricultural practices for maintenance of soil fertility and productivity.
4. understand different factors of crop production.
5. know the use of farm waste for soil improvement.
6. study the dry land farming and watershed management.
7. understand the cultivation of important field crops, fruits, vegetables and floriculture crops.
8. know the improved technology like hybridization, tissue culture, polyhouse, farm mechanization etc.
9. study climate in relation to plant growth.
10. acquire knowledge about weed, pest and disease management.
11. develop the skill in using various agricultural appliances.
12. study management practices for sustainable agriculture.
13. develop the habits of working in field conditions.
14. know the extension teaching methods and aids.
15. appreciate and honour the work of farming community.

Std. XI : Theory

1. **Introduction to Agronomy and Crop Production**
 - 1.1 Agronomy
 - 1.2 Crop production
2. **Rocks and minerals**
 - 2.1 Meaning of rock
 - 2.2 Types of rocks
 - 2.3 Study of minerals
 - 2.4 Weathering of rocks
3. **Soil**
 - 3.1 Meaning
 - 3.2 Functions
 - 3.3 Soil formation
 - 3.4 Properties of soil
 - 3.5 Soil fertility and productivity



- 3.6 Soils of Maharashtra
4. **Weather and climate**
- 4.1 Different weather elements
- 4.2 Instruments of measurement
- 4.3 Weather forecasting
5. **Plant morphology and physiology**
- 5.1 Study of different plant parts viz. root, stem, leaf and flower
- 5.2 Plant physiology
6. **Tillage and farm operations**
- 6.1 Definition
- 6.2 Objectives
- 6.3 Types
- 6.4 Tillage implements
- 6.5 Modern concepts
- 6.6 Farm operations
7. **Seed and sowing**
- 7.1 Meaning
- 7.2 Difference between seed and grain
- 7.3 Characteristics of seed
- 7.4 Parts of seed
- 7.5 Seed technology
- 7.6 Seed multiplication
- 7.7 Seed treatment
- 7.8 Sowing methods
- 7.9 Sowing time, depth and spacing
8. **Seed testing**
- 8.1 Objectives
- 8.2 International Seed Testing Association
- 8.3 Seed germination
- 8.4 Seed dormancy
- 8.5 Different seed tests
9. **Plant protection**
- 9.1 Pest and diseases
- 9.2 Control methods
- 9.3 Integrated pest management
- 9.4 Integrated disease management
- 9.5 Study of important pests
- 9.6 Study of important diseases
10. **Weed management**
- 10.1 Meaning
- 10.2 Characteristics
- 10.3 Classification
- 10.4 Effects of weeds
- 10.5 Dispersal of weeds
- 10.6 Weed control
11. **Crop rotation and cropping scheme**
- 11.1 Crop rotation
- 11.2 Cropping scheme
12. **Dryland agriculture**
- 12.1 Meaning and classification
- 12.2 Characteristics of dry land agriculture
- 12.3 Water shed management
- 12.4 Water harvesting
- 12.5 Contingency planning
- 12.6 Sustainable agriculture
13. **Study of different crops**
- 13.1 Cereals and pulses: Jowar and bajra, gram and red gram
- 13.2 Importance of vegetables
- 13.3 Classification of vegetables
- 13.4 Study of vegetables – potato, brinjal, chilli, okra, cabbage, onion, spinach and cucumber
14. **Agricultural economics**
- 14.1 Introduction to basic concepts
- 14.2 Agricultural costing
- 14.3 Cost of cultivation
- 14.4 World Trade Organization (WTO)
- 14.5 Awareness in purchasing agricultural inputs.
- Practicals**
- Std. XI**
1. Identification of important rocks.
 2. Identification of seeds of different crops, manures and fertilizers.
 3. Study of soil profile and different types of



- soils.
4. Handling and use of different tillage implements and plant protection equipments.
 5. Seed treatment for the crops included in the syllabus.
 6. Study of meteorological equipments.
 7. Visit to a meteorological observatory.
 8. Study of different types of weeds and herbicides.
 9. Practice of seed bed preparation.
 10. Determination of physical purity of seed.
 11. Visit to a seed processing plant and seed testing laboratory.
 12. Methods of sowing for different crops.
 13. Collection and preparation of soil sample for analysis.
 14. Visit to a soil testing laboratory.
 15. Demonstration of spraying of insecticides, pesticides and herbicides.
 16. Study of cropping schemes.

Project work

Note : Students may be given choice to do any one of the project work listed below.

1. Collection of weeds and preparing an album with brief information.
2. Collection of seeds and preparing an album with brief information.
3. Collection of samples of different soils with brief information.
4. Preparation of any one model of tillage implements.

Std. XII : Theory

1. Plant nutrition

- 1.1 Essential elements
- 1.2 Classification
- 1.3 Functions
- 1.4 Deficiency symptoms

- 1.5 Integrated nutrient management
2. **Manures and fertilizers**
 - 2.1 Meaning
 - 2.2 Classification
 - 2.3 Study of organic manures
 - 2.4 Green manuring
 - 2.5 Vermicompost
 - 2.6 Bio-fertilizers
 - 2.7 Organic farming
 - 2.8 Chemical fertilizers
 - 2.9 Time and methods of application
3. **Irrigation and drainage**
 - 3.1 Meaning of irrigation
 - 3.2 Advantages and adverse effects
 - 3.3 Systems of irrigation
 - 3.4 Scheduling of irrigation
 - 3.5 Meaning of drainage
 - 3.6 Importance of drainage
 - 3.7 Causes of improper drainage and remedies
4. **Cropping systems**
 - 4.1 Meaning
 - 4.2 Study of different cropping systems
5. **Plant breeding**
 - 5.1 Introduction to plant breeding
 - 5.2 Objectives
 - 5.3 Activities in plant breeding
 - 5.4 Modes of reproduction
6. **Seed production technology**
 - 6.1 Principles of seed production
 - 6.2 Seed act
 - 6.3 Hybrid seed production of jowar
 - 6.4 Hybrid seed production of cotton
7. **Study of field crops**
 - 7.1 Cash crops : Cotton and sugarcane
 - 7.2 Cereals and oilseeds : Paddy, wheat, soybean and groundnut
 - 7.3 Fodder crops : Lucerne, berseem, jowar, maize



8. Fundamentals of horticulture

- 8.1 Scope, importance and limitations of fruit growing in India
- 8.2 Importance of fruits in human diet
- 8.3 Planning of fruit orchard
- 8.4 Special horticultural practices

9. Cultivation of horticultural crops

- 9.1 Cultivation of fruit crops : Mango, grape, banana, santra, pomegranate
- 9.2 Cultivation of fruit crops (in brief) : Ber, guava, custard apple, chikoo, coconut, cashewnut and papaya
- 9.3 Cultivation of flower crops : Rose, tuberose, marigold, chrysanthemum

10. Fruit preservation

- 10.1 Principles
- 10.2 Methods of preservation
- 10.3 Preparation of preserved products viz. jam, jelly and pickles.

11. Advanced technologies in agriculture

- 11.1 Scope and importance of bio-technology
- 11.2 Plant tissue culture
- 11.3 Genetic manipulation technique
- 11.4 Polyhouse culture
- 11.5 Farm mechanization

12. Agricultural extension

- 12.1 Meaning
- 12.2 Objectives
- 12.3 Formal and extension education
- 12.4 Extension teaching methods
- 12.5 Teaching aids
- 12.6 New communication technologies

Practicals : Std. XII

1. Study of various systems of irrigation.
2. Study of calculation of theoretical seedrate required for different crops.
3. Calculations regarding plant population.
4. Study of calculation of doses of fertilizers for different crops.
5. Raising of seedlings of flowers and fruits.
6. Practice of filling containers for pot culture.
7. Preparation of crop-cafeteria and practice of sowing, planting, transplanting, interculturing and harvesting.
8. Practice of training and pruning.
9. Study of asexual methods of propagation viz. cutting, layering, budding and grafting.
10. Study of methods of fertilizer application.
11. Seedbed preparation for different crops included in syllabus.
12. Visit to a tissue culture laboratory.
13. Visit to a nursery and polyhouse.
14. Emasculation and pollination in cotton.
15. Preparation of extension teaching aids.

Project work

Note : Students may be given choice to do any one of the project work listed below.

1. Collection of manure and fertilizer samples and preparing an album with brief description.
2. Collection of pest samples along with brief information regarding its name, nature of damage and control measures.
3. Collection of disease samples along with brief information regarding its name, symptoms and control measures.
4. Collection of samples regarding visual aids used in extension teaching.



Animal Science and Technology (76)

Introduction

About 70 per cent of the Indian population is dependent on agriculture for their livelihood. Livestock constitute an important component of the agriculture and about 80 per cent of livestock is held by the small and marginal farmers. The per cent contribution of the livestock to the national economy is about 6 % of GDP.

Production and use of animal products in the human diet is receiving tremendous attention in the recent times and the need for developing modern livestock management is recognized very well. The other objectives are to provide animal power for farming and transportation and utilize agro industrial by-products for converting these into valuable animal products and also for the creation of numerous employment opportunities throughout the year. The major improvement in animal productivity will take place through new approach of biotechnology in the field of nutrition, breeding and management.

Considering the existing educational status at the higher secondary level it is obvious that the Animal Science course would provide strong backup for self and wage employment opportunities to the students in future.

Objectives

To enable the students to

1. acquire the knowledge of the habitat, general characteristics and economic utility of various breeds of cattle, buffalo, sheep, goat, poultry, pigs and dogs.
2. study anatomy and physiology of livestock and poultry.
3. understand feeding and management practices of various categories of dairy animals.
4. study various practices involved poultry keeping viz. housing, feeding, health coverage and marketing.
5. impart knowledge about sheep, goat and pig farming.
6. know housing, feeding and management practices of pups, bitches and dogs.
7. train the students in livestock management, forage production and health control measures.
8. study the various diseases of livestock and poultry including their control measures.
9. develop young entrepreneurs for self employment through livestock farming.
10. have information about role of livestock products viz. milk, meat, mutton, pork and eggs in human nutrition.

Std. XI : Theory

1. Introduction to Animal Husbandry

- 1.1 Present position of Livestock and Poultry in India and World
- 1.2 Scope and limitations for Livestock and Poultry farming in India
- 1.3 Nutritive value of animal products
- 1.4 Integrated livestock farming
- 1.5 Common terms used in Animal Husbandry

2. Cattle breeds

- 2.1 Classification of cattle breeds
- 2.2 Milch purpose- Sahiwal, Red Sindhi, Gir and Tharparkar



- 2.3 Dual purpose-Deoni, Ongole, Kankrej and Hariana
- 2.4 Draft purpose-Khillar, Dangi, Red Kandhari and Gaolao
- 2.5 Exotic breeds - Holstein Friesian, Jersey and Brown Swiss.
- 2.6 Crossbreds of Maharashtra - Holdeo and Phule Triveni
- 3. Buffalo breeds**
- 3.1 Classification of buffalo breeds
- 3.2 Murrah, Surti, Mehsana, Jaffarabadi, Nagpuri, Pandharpuri, Marathwadi
- 4. Sheep and Goat breeds**
- 4.1 Classification of sheep breeds
- 4.2 Sheep breeds: Indian (Deccani, Bannur) and Extotic (Merino, Rambouillet and Southdown) breeds.
- 4.3 Classification of goat breeds
- 4.4 Goat breeds: Indian breeds (Osmanabadi, Sangamneri, Jamunapari, Black Bengal, Barberi and Pashmina) and extotic breeds (Saanen, Alpine)
- 5. Pig and Dog breeds**
- 5.1 Classification of pig breeds
- 5.2 Pig breeds: Indian (Deshi breed) and exotic (White Yorkshire, Landrace) breeds.
- 5.3 Classification of dog breeds
- 5.4 Dog breeds: Pomeranian, German shepherd, Doberman and Labrador
- 6. Poultry breeds**
- 6.1 Classification of poultry breeds
- 6.2 Indian breeds : Aseel and Kadaknath
- 6.3 Exotic breeds : White Leg Horn and Rhode Island Red
- 6.4 Commercial strains
- 7. Animal breeding and selection**
- 7.1 Systems of breeding: Inbreeding and Outbreeding
- 7.2 Basis of selection: Individual, pedigree and progeny testing.
- 7.3 Methods of selection: Tandem, Independent culling and Selection Index Method
- 7.4 Conservation of local germplasm
- 8. Skeletal system**
- 8.1 Bones
- 8.2 Skeleton
- 8.3 Joints
- 9. Circulatory System**
- 9.1 Heart
- 9.2 Blood vessels
- 9.3 Blood
- 9.4 Blood circulation
- 9.5 Lymphatic system
- 10. Respiratory System**
- 10.1 Respiratory organs
- 10.2 Mechanism of respiration
- 11. Urinary System**
- 11.1 Organs of urinary system
- 11.2 Structure of nephron
- 11.3 Urine formation
- 12. Digestive System**
- 12.1 Organs of alimentary canal of ruminants
- 12.2 Accessory glands
- 12.3 Ruminant digestion
- 13. Reproductive System**
- 13.1 Male reproductive system
- 13.2 Female reproductive system
- 13.3 Oestrous cycle
- 13.4 Fertilization
- 13.5 Pregnancy
- 13.6 Parturition
- 13.7 Udder



14. Nervous system, endocrine glands and sense organs

- 14.1 Central Nervous system
- 14.2 Endocrine glands
- 14.3 Sense organs: Eye, ear and skin

15. Poultry anatomy and Physiology

- 15.1 Skeletal system
- 15.2 Digestive system
- 15.3 Respiratory system
- 15.4 Reproductive system
- 15.5 Endocrine glands

16. Artificial Insemination

- 16.1 Definition, advantages and disadvantages
- 16.2 Semen collection
- 16.3 Semen composition and properties
- 16.4 Semen preservation
- 16.5 Insemination
- 16.6 Embryo transfer technology
- 16.7 Cloning technique

17. Milk

- 17.1 Composition of milk
- 17.2 Properties of milk
- 17.3 Preservation of milk
- 17.4 Marketing of milk
- 17.5 Adulteration of milk

18. Forage production

- 18.1 Forage production in India
- 18.2 Cultivation practices of common fodder crops viz. Maize, Jawar, cowpea, Lucerne, Berseem, Gajraj, Subabhul

Practicals (XI)

1. Nomenclature of external body parts of livestock and poultry.
2. Demonstration of morphological features of various breeds of cattle.
3. Demonstration of morphological features of various breeds of buffalo.

4. Demonstration of morphological features of various breeds of sheep and goat.
5. Demonstration of morphological features of various breeds of dog and pig.
6. Demonstration of morphological features of various breeds of poultry.
7. Demonstration of age of livestock by dentition and horn ring method.
8. Demonstration of weight of animals by measurement.
9. Preparation of animals for show and judging of animals.
10. Handling and casting of animals.
11. Study of various body systems of ruminants.
12. Signs and detection of heat in animals.
13. Study of methods of pregnancy diagnosis.
14. Signs and stages of parturition.
15. Demonstration of internal organs of poultry and structure of an egg.
16. Study of equipments required for collection of semen
17. Analysis of milk for fat and specific gravity.
18. Identification of commonly used fodder crops.
19. Visit to local veterinary dispensary to demonstrate A.I. technique.
20. Visit to dairy plant and slaughter house

Project Work (XI)

1. Collect the information of Cattle/ Buffalo/ Sheep/ Goat/ Pig/ Dog /Poultry breeds in the surrounding area.
2. Visit and observe nearest Artificial Insemination (A.I.) Centre.
3. Visit and study co-operative milk sangh/ Government milk scheme.
4. Collect the specimens of common fodder crops.



Note : Teacher can allot any one above project work.

Std. XII

1. Feed nutrients

- 1.1 Water
- 1.2 Protein
- 1.3 Carbohydrates
- 1.4 Lipids
- 1.5 Vitamins
- 1.6 Minerals

2. Feeds and Feeding

- 2.1 Classification of feedstuffs
- 2.2 Unconventional feedstuffs
- 2.3 Preservation of forages
- 2.4 Anti-nutritional/harmful constituents
- 2.5 Processing of feedstuffs
- 2.6 Feeding standards
- 2.7 Ration
- 2.8 Thumb rule for cattle feeding
- 2.9 Watering of animals

3. Routine management practices

- 3.1 Identification of animals
- 3.2 Dehorning
- 3.3 Castration
- 3.4 Grooming
- 3.5 Milking
- 3.6 Drying off
- 3.7 Culling
- 3.8 Hoof trimming
- 3.9 Ringing of bulls
- 3.10 Deworming
- 3.11 Spraying and dipping
- 3.12 Vaccination
- 3.13 Record keeping
- 3.14 Carcass disposal

4. Housing of dairy animals

- 4.1 Objectives of housing
- 4.2 Selection of site
- 4.3 Systems of housing
- 4.4 Components of the farm buildings

5. Dairy cattle and Buffalo management

- 5.1 Raising of calves
- 5.2 Raising of heifers
- 5.3 Care and management of pregnant animals
- 5.4 Care and management of freshly calved animals
- 5.5 Care and management of lactating animals
- 5.6 Care and management of breeding bull

6. Goat Management

- 6.1 Importance of goat farming
- 6.2 Housing
- 6.3 Management of kids
- 6.4 Management of pregnant and lactating does
- 6.5 Management of breeding bucks

7. Sheep Management

- 7.1 Importance of sheep farming
- 7.2 Housing
- 7.3 Management of lambs
- 7.4 Management of pregnant and lactating ewes.
- 7.5 Management of breeding rams.

8. Poultry housing and equipments

- 8.1 Principles of housing
- 8.2 Construction of house
- 8.3 Systems of poultry keeping
- 8.4 Equipments

9. Poultry nutrition

- 9.1 Principles of poultry feeding
- 9.2 Classification of poultry feed ingredients.



- 9.3 Balanced ration for poultry
- 9.4 Methods of feeding for chicks, broilers and layers
- 10. Poultry Management**
- 10.1 Hatchery Management
- 10.2 Rearing of chicks
- 10.3 Layer management
- 10.4 Broiler management
- 10.5 Marketing of poultry products
- 11. Pig Management**
- 11.1 Importance of pig farming
- 11.2 Management of piglets
- 11.3 Management of lactating and pregnant sows
- 11.4 Management of boars
- 12. Dog Management**
- 12.1 Importance of dogs
- 12.2 Management of pups
- 12.3 Management of lactating and pregnant bitches
- 12.4 Management of male dogs
- 13. Diseases of livestock**
- 13.1 Introduction to diseases
- 13.2 Bacterial diseases : Anthrax, H.S., B.Q., Brucellosis, Enterotoxaemia, Mastitis
- 13.3 Viral diseases : Foot and mouth disease, Ephemeral fever, PPR (Peste des petits Ruminants), Blue tongue, Sheep and goat pox, Rabies
- 13.4 Protozoan diseases : Theileriosis, Surra and Babesiosis
- 13.5 Parasitic diseases : Endoparasites and Ectoparasites
- 13.6 Systemic diseases : Simple indigestion, Tympany, Diarrhoea, Pneumonia, Anaemia
- 13.7 Reproductive disorders : Dystokia, Retention of placenta, Metritis, Prolapse of uterus, Infertility
- 13.8 Metabolic diseases : Milk fever, Ketosis
- 13.9 Contingency planning for livestock
- 14. Poultry diseases**
- 14.1 Bacterial diseases : Bacillary white diarrhoea, Colibacillosis, Chronic respiratory disease (C.R.D.)
- 14.2 Viral diseases : Ranikhet disease, Gumboro disease, Marek's disease, Fowl pox, Bird flu
- 14.3 Fungal diseases : Aflatoxicosis, Aspergillosis
- 14.4 Parasitic diseases : Coccidiosis, Ectoparasites and endoparasites
- 14.5 Nutritional diseases : Vitamins and mineral deficiencies
- Practicals (XII)**
1. Study and identification of commonly used conventional and non-conventional feedstuffs.
 2. Method for silage and hay making.
 3. Feeding schedules for different classes of livestock.
 4. Computation of ration of various classes of livestock as per ISI standards and feed formulation by using computer.
 5. Demonstration of chaffing and urea-molasses treatment.
 6. Study of housing systems for livestock.
 7. Identification marks for livestock.
 8. Demonstration of dehorning and castration.
 9. Routine management practices viz. grooming, washing, clipping and spraying.
 10. Milking of animals.
 11. Maintenance of various farm, breeding and health record by using computers.
 12. Study of poultry housing.



13. Study of equipments required for poultry farming.
14. Computation of ration for chicks, broilers and layers as per ISI standards.
15. Grading of eggs.
16. Recording of temperature, pulse and respiration.
17. Identification and uses of commonly used medicines and instruments in animal treatment.
18. Demonstration of various methods of administration of drugs.
19. First-aid for bleeding, wound, tympany, diarrhoea and indigestion.
20. Visit to various livestock , poultry and pig farms.

Project Work (XII)

1. Practice of routine management practices of cattle/ Buffalo.
 2. Visit and study cattle / buffalo scientific byre.
 3. Visit, observe and practice scientific milking method.
 4. Vaccinations against Ranikhet disease to deshi birds in villages.
 5. Observe feeding pattern and prepare feeding schedules for cattle / buffalo.
- Note : Teacher can allot any one above project work.

List of Equipments / Materials

1. A.I equipments – Artificial vagina, latex cone, latex liner, glass tube.
2. Dairy equipments – Lactometer, Butyrometer, Gerber’s centrifugal machine.
3. Poultry equipments – waterers, feeders, nests, roosts, egg cages and trays, brooder, egg incubator.
4. Veterinary instruments – Drenching bottle, feeding cup, enema pot, irrigator, infusion set, syringe, trocar and canula, pestle mortar, milk siphon, scalpel, scissor, artery forcep, tissue forcep, Burdizzo’s castrator, automatic vaccinator, strip cup, plastic paddle.
5. Dairy farm equipments – Hot and cold branding sets, ear tags (metal and plastic), tattooing set, dehorning saw, electric dehorner, spray pump, bull holder, bull nose punch, bullnose ring, hoof trimmer, curry comb, body brush, feeding pail, wool shearer.
6. Feed processing equipments – Chaff cutter, hammer mill.
7. Computer.
8. Models of livestock breeds and body systems, laboratory model for silage making.
9. Laminated photographs of livestock breeds.
10. Charts of body systems, external body parts of livestock and poultry, structure of egg.
11. Drug museum of commonly used drugs in animal treatment.
12. Museum of commonly used feedstuffs in livestock production.



Defence Studies (77)

Introduction

India has emerged as a global leader and a strong nation at the turn of 21st century. Education is the key to the task of nation building as well as to provide requisite knowledge and skill for sustained growth of economy and to ensure overall progress. India is a nation of young people, working age population. This young population is an invaluable asset of our nation. This population should be equipped with requisite knowledge and skill of defence and security along with the knowledge of social and industrial development so that they can contribute to the defence and development of our nation as well as to defend International human rights.

The concept of the discipline “Defence Studies” recognises the role of the education of this discipline in installing the values of secularism, respect for democratic traditions and civil liberties and quest for justice. It aims at creating citizens equipped with necessary knowledge, skill and values to build an inclusive, just, progressive and defensive society. The strength of National defence depends upon the Armed forces, their tradition, honesty, morale, uniform, weapons, equipments, training, logistic support and military leadership. Following are the objectives of this syllabus.

Objectives

- 1) To acquaint the students with the Defence, Scope of Defence and Principles of National Defence.
- 2) To inculcate the origin and evolution of Indian Armed Forces, their weapons, uniforms and organisations from 1748 to 1947.
- 3) To understand the contribution of Indian soldiers in various Battles, campaigns and wars under British rule.
- 4) To inculcate the valour of Indian soldiers, through the study of various Battles, campaigns and the Role played in I & II world war as well as the important role of Indian leaders in Indianisation of Indian Armed forces during British rule.
- 5) To enable the students to join the National Armed forces to defend Nation and human right.
- 6) To understand the defence and security problems of India.
- 7) To understand war, principles of war, Battle procedures and the organisation of our Armed forces.
- 8) To understand the defence intelligence procedure, the importance of intelligence and logistics in varied terrains for war operations.
- 9) To understand the organisation of Indian Armed Forces.



Std. XI

- 1) Defence Introduction,
 - Introduction – Meaning and Definitions
 - Scope of Defence– Defence of Family, Defence of city, Defence of nation
- 2) **A Brief History of Indian Army (1748-1857)**
 - The protection of British Factories – Surat, Bombay (Mumbai), Madras and Calcutta (Kolkata). Local Guards.
 - Establishment of First Indian Battalion – 1748, Founder of First Indian Battalion. Difference between European and Indian Troops.
 - Presidential Armies- Madras Army, Bengal Army, Bombay Army.
 - System of Presidential Army – Command and Control, Organisation, Weapons.
 - Development of presidential Army- Introduction, Punjab Regiment, Ratio of British and Indian troops, Major events before the Revolt of 1857.
- 3) **Development of Indian Army (1857-1914)**
 - Revolt of 1857- Background, Military causes.
 - Consequences of Revolt – Changes in Indian Army, Organisational Changes, Recruitment policy, Political changes, The Rise of Indian Army, Reorganisation of Army.
 - Raising of Cavalry and Artillery – causes.
- 4) **The Role of Indian Army in First World War (1914-18)**
 - Major Events and Achievements of Honours and Awards- The Gallant and courage shown by Indian soldiers. The Winners of Victoria Cross.
 - Army organisation and Committee – Introduction, King's Commission for Indians (Royal Military College Sandhurst), Establishment of the Indian Military Academy.
- 5) **The progress of Indiansation and the Rising of Royal Indian Navy and Royal Indian Airforce.**
 - Modernisation of the Armed forces- Meaning of Indianisation, Views about Indiansation, Progress of Indiansation, The raise of Royal Indian Navy, The raising of Royal Indian Airforce.
 - The Chatfield committee – Recommendations of chatfield committee.
- 6) **The Role of Indian Army in Second World War. (1939 to 1945)**

Introduction

Expansion of Indian Army, Emergency Commission, Honours and Awards For Indians, Role of Indian Officers in the Royal Air Force.

 - Role of Indian Troops in the Battles of Malaya, and Singapore, Role of Indian Troops in Battle of Malaya, Battle of Singapore, Prisoners of War, Rise of Indian National Army, Establishment of South-East Asia Command.
 - Toronto and Gothic, Line- Role of the 8th and 10th Infantry Division, Honours and Awards.
 - Burma Operation- Role of 4th, 15th, and 33rd corps, Role of Royal Indian



AirForce, Role of Royal Indian Navy, Honours and Awards.

7) Tradition of Indian Army and Division of Armed Forces (1947)

- Recruitment of Army, Navy and AirForce – Pattern of Recruitment, Basic Recruitment- Technical and Non Technical Recruitment, Importance of literacy and Education, Qualities of Indian Soldiers.
- Composition of Indian Army, Navy and AirForce- Traditions, Cripps proposal, changes after World War-II, Establishment of National Government.
- Partition of India - Division of Armed Forces- Army, Navy, AirForce and others.

8) Avenues in Armed Forces

1. Officers –a) Army – Officers entries through- NDA and CDSE a) IMA b) OTA
 - i) Entry in to IMA -(I) Army Cadet College (ACC).
 - (II) 10+2 Army Technical Entry.
 - (III) University Entry Scheme.
 - (IV) Technical graduate course.
 - ii) Entry into OTA
 - (I) Technical graduate.
 - (II) Women's graduate.
 - (III) NCC – Special Entry.
- b) Navy – 1. NDA 2. 10+2 Technical Entry 3. CDSE 4. Naval Technical Branch 5. Naval Armament Inspection Cadre 6. Naval Women's Special Entry 7. Naval NCC (Special Entry)
- c) Air force :- 1. NDA 2. CDSE 3. University Entry Scheme

4. NCC – (Airwing – NCC-"C"-Certificate 5. Technical branch

6. Women's Special Entry 7. Short Service Commission (Male).

2. Soldiers – (A) Army – 1. Army Recruitment office 2. Zonal recruitment office 3. Branch recruitment office 4. Direct recruitment – JCOs and NCOs .
- (B) Navy – i) Naval Recruitment Establishment.
 - ii) Zonal Recruitment Office.
 - iii) Branch Recruitment Office.
 - iv) Airman Selection Centre.
- (C) Airforce – Centralised Recruitment is done "The President Central Airman Selection Board, New Delhi".

Practical Exam Scheme

1. The said Practical examination is divided in to two sections-
 - A) Oral Examination.
 - B) Practical File.
- A) Oral Exam :- Oral exam will be based on the theory syllabus of std. XIth. Minimum three questions should be asked to the candidate. Oral exam will be of maximum 15 marks.
- B) Practical File :- It will consist the following -
 - 1) Map Indicating directions.
 - 2) Map indicating location, important from the military point of view.
 - 3) Map indicating various training institutes & recruitment centres.
 - 4) Entry into Armed Forces – Table Form.

This section carries 05 marks.

15+5=20 Marks for practical Exam



- 1) Scheme of marking
- A) Oral Exam :- Minimum three questions should be asked to the candidate-
- Que. No. 1 - 4 Marks
 Que. No. 2 - 5 Marks
 Que. No. 3 - 6 Marks

Total 15 Marks

- B) Practical File
- 1) Map Indicating directions. - 1 Marks.
- 2) Map indicating locations. - 1 Marks
- 3) Map indicating training institutes & recruitment centres. - 1 Marks
- 4) Chart of Recruitment Procedure - 2 Marks

Total 5 Marks

- 2) Organise practical exam according to time table. Separate arrangement for practical exam should be made. At a time, only one candidate be called for practical examination. Candidate should have practical file, it should be signed by internal examiner and should be returned to the candidate. Candidate should not be allowed to appear for practical examination without practical file.
- 3) Total candidates should be divided into batches of 25 candidates in each batch. Two batches should be examined by a day. Maximum 05(Five) minits should given to each candidate for this examination.
- 4) The syllabus for a year is given in curriculum. The teacher should complete the theory & practicals accordingly

STD- XII

1. Principles of National Defence

- Definition & Scope of National Defence.-
- Meaning & Determinants of Defence Policy- International Relations, Economic Development, National Personality & Traits.
- Postures of Defence Policy – Defensive posture & offensive Posture.
- Defence & Security – Meaning & Definition.

2. Outline of India's Defence Problems

- Objectives of National Defence - Independence & Sovereignty, Territorial Integrity, National Constitution.
- Internal Threats to India's Security–**
- 1) Terrorism, 2) Naxalism,
 - 3) Corruption, 4) Environmental Imbalance

India's Borders

- Land Borders—Introduction, Northern Border –Sectors & Peculiarities.
- Western Border – LOC & Indo-Pak International Border.
- Eastern border – Internal & External.
- Sea Border –Eastern Sea border and Western Sea border. Importance of Territorial Waters.
- Air Space – Meaning and Scope.

3. Prelude to Armed Conflict

- Introduction - Extent of Armed conflict
- Tensions Before Conflict – Nature
- Types of Tension – Propaganda Offensive, Diplomatic Offensive,



- Warlike
 Movement - Troop movement,
 Restraints on Transport &
 Communication,
 Control on Resources, Declaration
 of Emergency.
 * Declaration of War,
 * War Mobilisation.
- 4. Acquisition of Defence Information**
- Vigilance -Nature of Vigilence.
 - Long Term Information-Sources of long term information
 - Books, Journals, Newspapers, Radio & Television, Diplomatic Corps, Delegations & study Groups, Electronic equipments, Aerial surveillance, Espionage.
 - Observation & Reconnaissance – Meaning & Difference, Principles of observation, Principles of Reconnaissance.
- 5. Intelligence**
- Intelligence –Meaning and Scope, Divisions and Types, Sources & Agencies of Battle Intelligence. principles of intelligence.
 - Processing of Intelligence - Collection & Collation, Grouping & Evaluation, Analysis, Interpretation & Assessment, Synthesis.
 - Intelligence Requirments of the field forces -Army, Navy & Airforce.
- 6. War & Principles of War**
- War - Meaning & Definition, Conventional War & Total War.
 - Principles of War - Selection & Maintenance of the Aim, Offensive Action, Concentration of force,
- Economy of force, Co-operation, Security, Surprise, Mobility, Morale, Administration.
- 7. Battle Procedures & Logistics**
- Battle Procedure -
 - 1) Appreciation of Situation.
 - 2) Operations of War
 - 3) Warfare in varied terrains.
 - Logistics – Meaning of Principles. Logistics requirements of Navy and Air Force.
 * Teeth and Tail Elements.
- 8. Warfare in Various Terrain**
- Warfare in Plains - Characteristics, Forces & Armaments and Logistics.
 - Warfare in Deserts - Characteristics, Forces& Armaments and Logistics.
 - Warfare in High Altitude Areas - Characteristics, Forces & Armaments and Logistics.
 - Warfare in Jungles - Characteristics, Forces & Arnaments and Logistics.
- 9. Organisation of Indian Armed forces**
- Army - Organisation of Army Headquarters and Army Commands.
 - Navy - Organisation of Naval Headquarters and Naval Commands.
 - Airforce – Organisation of Air Headquarters and Air Commands.
- 10. Para Military Forces**
- Border Security Force, Central Reserve Police Force, Rapid Action Force, Assam Rifles, Coast Guard and N.C.C.
 - Establishment, Head Quarters, Control by Ministry, Chief Officers, Duties - (Wartime, Peace Time) - Of each Services mentioned above.



Std-XII : PRACTICAL EXAMINATION**Instructions to the Head of Institutions**

1. Please arrange for notifying the date(s), time and place for this practical Examination. There should be no doubt about it.
2. Kindly instruct the subject teacher, to be present to supervise the arrangements for this Practical Examination.
3. The teacher in the subject will not be with examiner at the time of the test unless he is appointed by the board as the internal examiner.
4. All the candidates will be seated in a room, adjacent to the rooms for the oral test. The candidates will be called serially according to the roll list.
5. No candidate should be allowed to leave the class-room till the test finishes.
6. Those who have finished the test will not be allowed to enter the classroom of the examiners for any reason.

Please ensure that all this is carried out carefully.

Instructions to the Examiners

1. The object is test whether the candidate has read the prescribed course carefully.
2. As far as possible ask any three (3) questions from (amongst) list of questions given in the set of question paper for this Practical Examination.
3. If the candidate fails to understand the question, another question may be asked. In no case, will he/she be asked more than 5 to 6 questions.
4. It is not necessary to allot ten minutes per candidate, if the candidate, gives correct answer he/she will take less time.
5. If necessary, give the necessary instruction to the candidates before the

commencement of the examination. Emphasise the necessity of giving brief and correct answers.

6. The Head of the Institutions should be informed well in advance for the necessary arrangements of this practical examination oral test.
7. Any thing not covered by these instructions is left entirely to discretion of the examiner appointed by the board for the oral test Practical Examination.
8. The examiners (Internal and External) must sign the record –books of the candidates. The candidates should not be examined without record-books. After the examination, the record-books should be returned to the candidates.

Std. XII - Practical Exam Scheme

1. The said Practical exam is divided in two sections-
 - A) Oral Exam
 - B) Practical File.
 - A) Oral Exam :- Oral exam will be based on the syllabus of std. XII th. Minimum three questions should be asked to the candidate. Oral exam will have maximum 15 marks.
 - B) Practical File :- It will have two sections-
 - I) Plotting Map
 - II) Collection of applied military information. Practical File will have maximum 05 marks.
- D) Plotting Map-
 - a) Map Indicating countries on the periphery of India.
 - b) Map indicating various sectors on India's land border.



- II) Collection of applied military information.
To collect information of any two topic from the following.
- (A) India's Land border & passes.(chart)
(B) India's Sea border & territorial waters. (Maps)
(C) Weapons used in various terrains.
(D) Chart showing details about organisations of second line of defence in India.
2. Scheme of Marking
- A) Oral Exam :- Any three questions be asked to each candidate & marks should be allotted as-

Que. No. 1 -	4 Marks
Que. No.2 -	5 Marks
Que. No.3 -	6 Marks

Total 15 Marks

- B) Practical File
- I) Map Plotting - 2 Marks
- II) Collection of Information - 3 Marks

(A+B=15+5=20)

Total 5 Marks

3. Exam should be conducted according to the time table sent by State board. Separate arrangement be made for practical examination.
4. Internal & External Examiner must sign on practical file of each candidate.



Education (78)

Introduction

Maharashtra State is a leading state to introduce Education as a subject in 1994 for the first time at the higher secondary level. This subject is still not included in NCERT, ICSE and CBSE, framework, no other state has introduced this subject in their curriculum at Std. XI and Std. XII.

The subject helps to create background for the students to study the subject Education at graduate and post graduate level. Also this subject will develop interest in teaching profession for which interested students will be diverted to D.T. Ed. and B.Ed. even though students, who do not go for teaching as profession, can also have benefit, as this subject gives vision for better living and lifelong learning.

The Syllabus includes in its content meaning, types, aims, and four pillars of education, History of education, Education in Maharashtra after independence. It also includes Contribution of various educational thinkers and workers in Maharashtra and India. Current trends such as disaster management, entrepreneurship development, e-learning and virtual classroom are included. The topic library as a resource center will give insight about use of printed reference material for learning. Syllabus includes stages of development, adjustment and personality development, teaching, learning, self learning, communication and mass media and leadership development. The subject will help to better understand

values, core elements, importance of guidance and counselling and also to develop leadership qualities. The syllabus will make students active learner and will help to perform his/her active role in the learning society.

Objectives

To enable the students to

1. understand meaning and types of education.
2. understand aims of education.
3. understand the history of education in different periods
4. get acquainted with present system of education in Maharashtra.
5. get acquainted with the contribution of eminent thinkers in Maharashtra and India.
6. understand role of education in development of society.
7. understand importance of values and core elements and role of education.
8. get acquainted with various current trends in education
9. understand characteristics and problems of adolescent stage.
10. understand role of guidance and counselling for adjustment and personality development.
11. understand the process of learning and self learning skills.
12. understand concept and methods of teaching.
13. understand meaning of effective communication and role of mass media.



Std. XI

S.No.	Unit	Sub unit		
1.	Education	1.1 Meaning of Education		5.2 Characteristics of Indian Society.
		1.2 Types of Education		5.3 Problems of Indian Society.
		1.3 Aims of School Education		5.4 Role of Education in the development of Society.
		1.4 Four Pillors of Education		5.5 Learning Society.
2.	History of Education	2.1 Vedic period	6. Value Education and Core elements	6.1 Concept of value education.
		2.2 Buddhist and Jainism period		6.2 Need of value education in present context.
		2.3 Islamic period		6.3 New Educational Policy (NEP) with special reference to core element.
		2.4 Pre Independence period		
3.	Education in Maharashtra after post independence period	3.1 Pattern of education	7. Current Trends in Education	7.1 Population Education
		3.2 Stages of education (I) Pre- primary education		7.2 Health Education (A) Yoga (B) Stress Management
		(II) Primary education		
		(III) Upper primary education	8. Library as a support system of education	8.1 Library services
		(IV) Secondary education and Higher Secondary education		8.2 Library as a reference centre
		(V) Higher education		
4.	Contribution of Educational Thinkers And Workers	4.1 Mahatma Jyotiba Phule		
		4.2 Maharshi Dhondo Keshav Karve		
		4.3 Karmveer Bhaurao Patil		
		4.4 Dr.Punjabrao Deshmukh		
		4.5 Anutai Wagh		
5.	Indian society And Education	5.1 Inter-relationship between Education and Society.		

Std. XII**Objectives****To enable the students to**

1. get acquainted with contribution of eminent thinkers from India.
2. get acquainted with stages of development.
3. understand characteristics of development and problems of adolescent stage.
4. understand concept of adjustment and personality.



5. understand the role of guidance and counselling for adjustment and personality development.
6. understand the meaning and nature of learning process.
7. understand the factors affecting learning.
8. understand the types of self learning skills.
9. understand changing concept and methods of teaching.
10. understand meaning and types of communication.
11. understand role of different massmedia.
12. get acquainted with current trends in education.

Sr.No. Unit Subunit

1.	Educational Thinkers & workers	1.1 Ravindranath Tagore 1.2 Swami Vivekanand 1.3 Mahatma Gandhi 1.4 Dr.S.Radhakrishnan 1.5 Dr.Babasaheb Ambedkar	7.	Communication and Mass Media	7.1 Meaning of communication 7.2 Types of communication 7.3 Importance of communication 7.4 Effective communication skills 7.5 Mass Media –
2.	Stages of Development	Stages of development with special reference to characteristics & problems of adolescence	8.	Current trends in Education	8.1 Women's Education 8.2 Vocational education 8.3 Peace Education 8.4 Virtual classroom 8.5 E-learning 8.6 Entrepreneurship education 8.7 Disaster – management
3.	Adjustment and Personality development.	3.1 Concept of adjustment & personality 3.2 Development of Personality 3.3 Guidance and counselling 3.4 Development of leadership			
4.	Learning	4.1 Meaning and nature of learning Process			



Occupational Orientation (85)

(i) Library and Information Science

Introduction

In the age of communication revolution, information has got prime importance. It has become an inevitable part of human life. At the same time generation of information today is at an enormous speed. To make the right information available to the user at the right time has become a challenge considering this background.

The library is the only place where information can be retrieved. To collect information to organize it, to disseminate it and to preserve it for posterity are the basic duties of library and information professionals. The students should be trained in this subject to acquire the skills to manage the vast knowledge and requirements of users. They have to master the techniques to balance the expanded knowledge and users.

So the syllabus has been framed in pursuit of the following objectives.

Objectives

To enable the students to

1. understand librarianship and library system with changing background.
2. cultivate the spirit of service with philosophy enunciated by laws of library science.
3. get familiar with the skills and techniques in librarianship.
4. become aware of library management skills.
5. develop abilities to render effective reference service.
6. seek the current developments in the field.
7. motivate the students for career development in this field.

Std.XI : Theory

1. Library, Librarianship : Trends and Practices

- 1.1 What is library, its role in society and other branches of knowledge, Education and culture
- 1.2 Functions : Collection, organisation, dissemination and preservation of information and knowledge
- 1.3 Brief history and development : History of library and librarianship in general.
- 1.4 Types of libraries : National, Public, Academic and Special (only concept is expected)
 - 1.4.1 National
 - 1.4.2 School, College and University Library
 - 1.4.3 Special –
 - 1.4.3.1 **Userwise** – Blind, R&D, Hospital
 - 1.4.3.2 **Collectionwise** – Newspaper and Media, Manuscripts
 - 1.4.3.3 **Other** : Industrial
- 1.5 Five laws of Library Science – Enunciation and general outline only (with emphasis on philosophy and ethics of the profession)

2. Library Management

- 2.1 What is management (concept only)



- 2.2 What is library management ?
(concept only)
- 2.3 Acquisition and Book Processing :
- 2.3.1 Book Selection – Sources and Tools of Book Selection, Publisher’s catalogue, Book Reviews, Suggestions from Readers, Web based sources
- 2.3.2 Methods of Selections :
- (i) Approval
- (ii) Recommendation
- 2.3.3 Ordering
- 2.3.4 Receipts of books, Accessioning, Stamping, Labelling
- 2.3.5 Technical Processing – Classification, Cataloguing
- 2.4 Types of Reading Material – Introduction of book and non-book material
- 2.5 Record maintenance – Accession register, Bill register, File system (Vendor’s file, Currency rates file etc.)
- 2.6 Circulation – Stacking
- 2.7 Library Rules and Regulations
- 3. Technical Processing of Library Material**
- 3.1 Classification**
- 3.1.1 What is Classification? General concept, Nature and Purpose with elaborative examples in daily life
- 3.1.2 What is book classification?
- 3.1.2.1 Need
- 3.1.2.2 Special features or requirements of books classification :
- (i) General class
- (ii) Form classes
- (iii) Form divisions
- (iv) Notation
- (v) Index
- 3.1.3 Schemes of Classification
- 3.1.3.1 Dewey Decimal Classification (21st Edn.)
- 3.1.3.2 Colon Classification (General outline, Main classes only)
- 3.2 Cataloging**
- 3.2.1 Concept, need, definition, nature and purpose, importance and functions
- 3.2.2 What is library catalogue? Its necessity in the library
- 3.2.3 Various functions of the catalogue
- 3.2.4 Physical Forms (i) Book (ii) Card, their merits and demerits
- 3.2.5 Computer Aided catalogue OPAC and others (concept only)
- 3.2.6 Entries – Main and Added (Unit Entry principle)
- 3.2.6.1 What is an entry ? Need for preparing more entries for a single book
- 4. Reference Service**
- 4.1 Introduction
- What is reference service ?
- 4.1.1 Concept, definition, need and importance
- 4.1.2 Types of reference services
- 4.2 Reference book – What is reference book ? Difference between ordinary



and reference book. Reference questions : Concept only. Type of reference books. Encyclopedia – (General), Dictionary – (General), Internet based sources

4.3 What is information? (concept only)

Practicals

- 1) **Library Classification** : (24 hours)
200 books to be classified according to Dewey Decimal Classification & Colon Classification, Main classes only. Preparation of Book Number according to DDC
- 2) **Library Cataloguing** : (24 hours)
40 books to be catalogued covering the following categories :
 - (i) How to read a book technically.
 - (ii) Simple book by one author, edition, title without subtitle.
 - (iii) Simple book by two authors : title, editions without subtitle.
 - (iv) Simple book by three or more than three authors: title, subtitle, editions
- 3) **Reference Service** : (6 hours)
 - (i) 50 questions based on reference sources like encyclopedias and dictionaries.
 - (ii) 10 questions/queries based on Internet, e.g. search : general search engines, online library catalogue etc.
- 4) **Library Management** : (2 hours)
 - (i) Selection of books of one subject – 15 books
 - (ii) Label writing – 15 books

Evaluation Pattern : (Internal)

Library Cataloguing	-	40
Reference Service	-	15
Total		100

Library Classification	-	40
Library Management	-	5
Average		10

Std.XII : Theory

1. Library, Librarianship : Trends and Practices

- 1.1 Library Associations : Concept only
- 1.2 Public Library Legislation
 - (i) Its need
 - (ii) Maharashtra State Public Library Act
- 1.3 Current World Scenario
- 1.4 Use of IT in Library
- 1.5 Community Information Networks

2. Library Management

- 2.1 Important records in the library : Donation Register, Withdrawal Register, Binding Register
- 2.2 Study of Circulation Section
 - (i) Registration of borrowers
 - (ii) Charging/Discharging Systems : One Card, Two Cards, Browne, Newark, Automated
- 2.3 Library Finance
 - (i) Library Committee
 - (ii) Library budget : provision in budget
 - (a) Reading material
 - (b) Furniture, equipment, staff
- 2.4 Stock verification – concept
- 2.5 Annual report – need and content

3. Technical processing of library material

- 3.1 Study of Classification Scheme
 - 3.1.1 Dewey Decimal Classification

OR

 Colon Classification



In case of DDC

- a. Theoretical background of the scheme.
- b. Mnemonics – concept only
- c. Space, Time and Language division (detail study is not expected)
- d. Standard subdivisions
- e. Specialities of Literature, linguistics and generalia main class
- f. Book No. (Three letters of the Author's surname)

In case of Colon Classification

- a. Facet and their sequence, use of ACI
- b. Mnemonics – concept only
- c. Space, Time and Language division (detailed study is not expected)
- d. Chronological, Geographical and Subject device
- e. Book No. (LYV only)

3.2 Relation between classification and cataloguing
(Symbiotic relation)

3.3 Study of Library Cataloguing

3.3.1 Entries and their arrangement

3.3.2 Kinds : Class Index Entries, Book Index Entries, Cross Reference Index entries, Analytical entries (concept only)

3.3.3 Types of catalogue :
Classified and Dictionary

4. Reference Service

4.1 Maintenance of various files in Reference Section

- (i) Clippings
- (ii) Pamphlets

4.2 Acquaintance of Reference books

- (i) Year books/Annuals
- (ii) Directories
- (iii) Dictionaries in Two languages

(iv) Biographical Dictionaries

4.3 Qualities and Role of Reference Librarian

4.4 User Study – Behavioural approach

4.5 Documentation – Introduction
(Concept only)

5. Library Automation – Theoretical introduction of Library Automation covering the activities of library which can be automated.

Practicals

1. Library Classification : (24 hours)

50 books to be classified covering the following :

In case of DDC

(i) Subject covered under the three summaries and in additions subjects from the schedule.

(ii) Subjects covered under -
Requiring the application at the principal Form Divisions (01 to 09) and in addition, the following Form divisions, 016 Bibliography, 058 Annuals, 092 Biography.

(iii) Book number

In case of CC

(i) Subjects covering the main classes and in addition subjects involving the application of Five Facets i.e.PMEST :

- (a) Bibliography
- (k) Encyclopedia
- (m) Periodical
- (w) Biography
- (n) Serial or annual
- (v) History

2. Library Cataloguing : (24 hours)

20 Books to be catalogued covering the following categories :



- (a) Simple book by one, two and three or more collaborators.
- (b) Types of books, covered in Std.XI and published in series.
- (c) Corporate author : Two categories
- (i) Institution
- (ii) Government with department or ministry only.
- 3. Reference Service : (6 hours)**
- 25 questions based on year book, directories, dictionaries (multilingual), biographical dictionaries.
 - Maintenance of clippings, file on one subject 50 entries with simple index.
- 4. Management : (2 hours)**
- Preparation of Accession Register – 20 books

Std.XII

Evaluation Pattern

Library Classification	– 40
Library Cataloguing	– 40
Reference Service	– 15
Management	– 05
<hr/>	
Total	100
<hr/>	

Average – Out of 10

Reference Books for Std.XI

1. Oxford Junior Encyclopedia
2. Marathi Vishwakosh : 16 Vols.
3. Oxford English Dictionary (Students Version)
4. Abhinav Marathi Shabdakosh : Agnihotri
5. Bharatiya Sanskriti Kosh.

Reference Books for Std. XII

1. Students Modern Dictionary : K.B.Dhawale
2. Hindi Marathi Shabdakosh
3. Marathi Se Hindi Shabdasangrah
4. India a Reference Annual
5. Maharashtra Varshik : Santosh Dastane
6. Bharat Varshiya Charittrakosh : Siddheshwarashastrri Chitrao
7. Railway Time-Table
8. Telephone Directory
9. Marathi Saraswat ed.by Anant Joshi
10. Marathi Grantha Suchi : S.G.Date
11. Bharateeya Samajvidnyan Kosh : Ed.S.M.Garge, 6 Vols.
12. India who's who
13. Who's who of Indian writers : Sahitya Academy.



(ii) Stenography : English, Marathi

Introduction

Day by day the demand for Office Secretary, Personal Secretary and Executive Secretary is increasing in commercial and business houses. So as to fulfil this need, it is necessary to produce personnel skilled with efficient typewriting and shorthand.

The present computer age has forced the introduction and use of personal computers (P.C.'s) in the office routine. The alphabetic and numerical keyboard of a computer and typewriter is one and the same. Typewriting skill will help the students to handle a computer speedily and efficiently.

At the same time the use of dictaphone has made a revolution. The knowledge of shorthand will also be helpful to the dictaphone operator. So the syllabus subject has been framed with the object of preparing the students to cater the needs of the modern commercial and business houses and industries. Emphasis is, therefore, given on the theoretical and practical aspects of typewriting and shorthand as well as so to enable the students to type the given matter speedily and accurately and display the matter in proper and attractive form, by using different technical devices. The students ought to be acquainted with all the methods of typing and working parts of the typewriter and enable them to use them effectively.

Objectives

To enable the students to

1. introduce the students with the knowledge of working parts and the use of different methods and/or devices of the typewriter.

2. introduce the students with the tabulation work like charts, statements etc. in business houses.
3. introduce the students with the knowledge of proof correction symbols, abbreviations, short forms, which frequently occur in the manuscript drafts given for typewriting.
4. train the students with the speed, accuracy and neatness in typewriting and shorthand and handle the equipment in proper manner.
5. acquaint the students with the method of taking notes in shorthand and to transcribe the same with accuracy in proper form and style.

Std.XI : Section I – Typewriting

Theory

1. Typewriter and its history, year of invention and name of inventor, etc.
2. Kinds of typewriters – Standard, portable, electronic and computer as a typewriter. Correct position at the typewriter.
3. Working knowledge of the following parts of the typewriter :
Space bar, Shift key, Shift lock, Back spacer, Warning bell, Top plate, Thumb wheels, Paper bails, Paper bail rod, necessity of Ribbon indicator, Ribbon reverse lever, Margin stopper left & right, Line space lever, Paper Releaser, Carriage. Type bars, Draw band, Paper injector.
4. Names of English type faces, knowledge of keyboard, its explanation, guideline of home keys, its importance care and



maintenances of typewriter, replacement of ribbon, position of copy, rhythm, even touch spacing between paragraphs, advantages of backing sheet blind fold system, kinds of addresses, punctuation marks and spacing before and after them, Roman figures, 1 to 50 (1 to L) for English Typewriting and not for Marathi Typewriting, Proof correction symbols.

Practicals

1. Practice of operating the 3 rows (4rows for Marathi T/W) of keyboard, excluding figures row.
2. Introduction of blind fold system. Practice of the same through exercise consisting of small and long words, sentences and paragraphs.
3. Typing of capital letters in English and half letters in Marathi
4. Punctuation marks, practice of correct typing, of address. Envelope addressing and Roman numerals (not for Marathi)
5. Typing the passage after correcting the same as per instructions shown by proof correction signs.

The speed skill expected at the end of the year is approximately @ 15 w.p.m.for English Typewriting and @ 12 w.p.m.for Marathi Typewriting.

Section II – Shorthand

Theory

1. Consonants, Vowels, vowel indication, difference between Chay & Ray, intervening/vowels, rules of position writing alternative forms, R & H.
2. Diphthongs, Abbreviated W. phraseography circle S & Z, strokes S &, large circle SW, SS or SZ loops ST and STR.

3. Hooks : initial and final hooks to straight and curve strokes, alternative forms of Fr, Vr, Thr, fl, vl in (Marathi टर, ठर, डर, ढर, शर, टल, ठल, डल, ढल, शल etc.).
4. Circles or loops preceding initial Hooks, circles and 3 loops to Final hooks, Shun Hook, Aspirate, Upward and downward R & L and SH.

Practicals

Reading and writing

1. of grammalogues and/or shortforms.
2. of exercises given at the end of each chapter.
3. practice of taking down notes of easy passages in shorthand and reproducing them in long hand. The vocabulary of such passages will mainly and in general be limited to words appeared in the chapters prescribed. The speed skill expected at the end of the year is about 30 w.p.m. for English Shorthand and 25 w.p.m.for Marathi Shorthand.

Std.XII : Section I – Typewriting

Theory

1. Working (not technical and / or mechanical) of the following parts : Line-space, Scale, Roller, Typeguide, Line-gauge, Card-holder, Variable line space or plunger, Ratchet releaser, Ribbon Carrier.
2. Feed rolls : kinds of, Carriage release lever, Type Bar buffer spring, Decimal tabulator keys.
3. Knowledge of : Different carriages and working of carriages, Use of carbon papers. Use of stencil, Use of correcting fluid and whitener.
4. Layout of commercial and business letters, Leader dots, Kinds of paragraphs, care to



- be taken while handling carbon papers, Proof correction symbols. Abbreviations and shortforms, Interchange in the typewriter, Different kinds of Rollers (platen-sheets) and their uses, Catch word.
5. Kinds of duplicators and their working, Fixed tabulator system, Difference between Ratcher releaser and plunger.
 6. Method of : Ruling the statement, Typing of signs not fitted to the typewriter. Typing of fractions. Typing of inferior and superior numbers.
 7. Erasing original and carbon copies on the typewriter.
 8. Typing of date, Typing of one & zero if not fitted to the English typewriter, Grafting, Combination of characters, Half-spacing correction on the typewriter, Typing shaded or double capitals with the help of plunger, Typing spaced letters with the use of = bicolor ribbon.
3. Agenda, Notice of Meeting.
 4. Balance Sheet and statement, using the carbon papers wherever and whenever asked to use them.
 5. Typing practice of passages in manuscript. The speed skill expected at the end of the year is 30 w.p.m. in English Typewriting and 25 w.p.m.in Marathi Typewriting.

Section II – Shorthand

Theory

1. Compound consonants, vowel indication.
2. Halving and doubling principles, diphonic signs, Medial Semicircle.
3. Prefixes and terminations, contraction, figures.
4. Essential vowels, special contractions.

Practicals

1. Reading and writing practice of short forms and exercises given at the end of each chapter.
2. Practice of taking down notes of easy passages of about 300 simple words and reproducing the same in long hand, either on typewriter or handwriting.

The speed expected at the end of the year should be 60 w.p.m.in English Shorthand and 50 w.p.m. in Marathi Shorthand.



Information Technology-Science (97)

Introduction

Government has to visualize Schools which will concentrate on a balanced development of students in intellectual, emotional and physical terms, with a view to developing a technology literate, creative, and critically thinking class of students to open the doors to the world of knowledge.

The curriculum has been devised to integrate a wide variety of knowledge, language, value elements and skills such as creative and critical thinking, personal, social, scientific, mathematical, and environmental and knowledge acquisition.

In order to execute these dreams we have to develop the relevant infrastructure. We should carry out a substantial reinvention and re-engineering of educational sector. Our existing curricula in educational institution in respect of computer courses have to be thoroughly revamped. Internet connectivity should be provided to all Schools. Recognized aided and unaided Educational Institutions should ensure that the entire student community, irrespective of subject chosen should become computer literate. IT should be the integral part of education system.

Objectives

The student should be able to

1. acquire basic knowledge of Computers.
2. acquire basic knowledge of Information Technology.
3. understand E-Commerce and related concepts.
4. understand concepts in Multimedia.
5. develop capabilities to access Information using Internet.
6. learn the basic concepts of Computer Networking.
7. develop an understanding of principles based on visual environment.
8. acquire skills for creation of Basic Web Pages.
9. acquaint with basic techniques and knowledge required for computing applications.
10. get aware about cyber laws and ethics.

Std. XI

1 Introduction to Information Technology

- 1.1 Information Technology: Definition, Introduction, Information Systems, Software, Data
- 1.2 IT in Business, Industry, Home, Play, Education, Training, Science and Engineering.
- 1.3 Computers in Hiding

2 Office Suite

- 2.1 Word Processor- Microsoft Word and its main features
- 2.2 Spreadsheets – Microsoft Excel and its main features
- 2.3 Presentations – Microsoft PowerPoint

3 Multimedia

- 3.1 Multimedia-Definition, Communication, Components, Building Blocks, Scope, Uses, Application purposes



- 3.2 Overview of Computer Images
- 3.3 Digital Audio
- 3.4 Overview of Video
- 3.5 Flash – Overview and Introduction
- 3.6 Multimedia Design and Future Directions
- 4 Web Browsers, E-mail Clients and Messenger Utilities**
 - 4.1 Overview, Working of the Internet and WWW
 - 4.2 Role of Web Servers, Clients
 - 4.3 Web Browsers and their use, Popular Web Browsers
 - 4.4 E-Mail Servers and Protocols
 - 4.5 E-mail Clients and Web Based Mail Access using Browser
 - 4.6 Messenger Services and Clients
 - 4.7 FTP
- 5 Introduction to Networking**
 - 5.1 Communication and Network Technologies
 - 5.2 Internet, Network Communication and Protocols
 - 5.3 Transmission Media, Communication over Wires and Cables, Wireless Communication and Standards
 - 5.4 Network Architecture, Relationships and Features
 - 5.5 Cable Topologies
 - 5.6 Network Hardware
- 6 Visual Basic.net**
 - 6.1 Introduction to .NET framework
 - 6.2 Introduction to the Visual Studio/ Visual Basic IDE
 - 6.3 Console and Windows applications
 - 6.4 Introduction to Visual Basic.net Syntax
 - 6.5 Selection and Iteration Statements
- 6.6 Arrays and enumerations
- 6.7 Introduction to Windows forms, MessageBox and InputBox
- 6.8 Handling keyboard and mouse events
- 6.9 The Control Class Controls
- 6.10 Library functions
- 6.11 Simple programs based on all the above
- 7 HTML**
 - 7.1 Uses, Features, Properties and Limitations.
 - 7.2 Tags and Attributes, Basic Tags Paragraph and Heading Tags, Comments
 - 7.3 Ordered and Unordered Lists and Related Tags, Nested Lists
 - 7.4 Anchor Tag and Hyperlinks in HTML
 - 7.5 Division and Physical Style Tags, working with Fonts, font types, sizes and colours.
 - 7.6 Body background colour, text colour and hyperlink colours, Pre-formatting, Line Break, and Horizontal Rules, Displaying special characters in HTML
 - 7.7 Images in HTML, related tags and attributes, features of BMP, JPG and GIF Raster image formats.
 - 7.8 Tables in HTML and related tags.
 - 7.9 Marquee
 - 7.10 Java Applets
- 8 Introduction to JavaScript**
 - 8.1 Limitations of plain HTML
 - 8.2 Difference between Java and JavaScript, JavaScript as a scripting language
 - 8.3 JavaScript Basic Syntax
 - 8.4 Insertion of JavaScript in HTML
 - 8.5 JavaScript built-in function



- 8.6 Selection and Iteration in JavaScript.
- 8.7 Built in Object Properties and methods related to Array
- 8.8 Strings Math and Date
- 8.9 Simple HTML programs using JavaScript

Std. XI

Practical List

1. Identification of Computer Systems and understanding LAB setup.
2. Exercise on Windows, Start Menu and Accessories.
3. Creating Documents, page formatting, use of fonts and colour and printing using Word
4. Mail merge and envelope printing using Word
5. Study of Spreadsheet using Excel
6. Microsoft Access: Creation of a Simple Table having at least 8 different types of fields and creation of Form to fill up data in the same.
7. Practical on simple Flash based animation
8. Study of a Web Browser for browsing different websites
9. Acquisition of e-mail ID on free web-based e-mail servers; sending and receiving emails with and without attachments.
10. Study and use of search engines and messengers.
11. Downloading and saving Web page content and images as files.
12. Simple Visual Basic. NET Program using Toolbox
13. Use of built in functions and event driven programming in Visual Basic. NET
14. Create a simple WEB page using basic

HTML tags.

15. Creation of WEB page containing graphics and table.
16. Use of Hyperlinks on WEB pages.
17. Simple Practical in JavaScript using Selection Structure
18. Simple Practical in JavaScript using Iteration Structures
19. Simple exercise in JavaScript– to create an interactive Web Page using JavaScript.

Std. XII

1 Web Publishing

- 1.1 HTML Page Frames
- 1.2 Image Mapping
- 1.3 Forms and Form Objects
- 1.4 Inserting Sound and Video
- 1.5 Use of Unicode and Indian Language Fonts
- 1.6 Cross-Browser Testing
- 1.7 Introduction to CSS
- 1.8 Web Server

2 Cyber Laws and Ethics

- 2.1 Moral, Ethics and Law
- 2.2 Ethics Culture and ethics for computer users, professionals and business
- 2.3 Information Service
- 2.4 Code and guidelines of ethics
- 2.5 Introduction to cyber laws and IT Act of India 2000
- 2.6 Digital Signature, Electronic Records- Attribution, acknowledgement and dispatch.
- 2.7 Ten Commandments of Computing
- 2.8 Security, Privacy and Control.
- 2.9 Intellectual Property Rights

3 E-Commerce

- 3.1 Electronic Commerce-Scope, Definition



- 3.2 Trade Cycle
- 3.3 Electronic market - Usage, Advantages and Disadvantages, Future
- 3.4 Electronic Data Interchange- Definition, Benefits
- 3.5 Internet Commerce, e-Commerce in Perspective
- 3.6 EDI Security
- 4 Client Side Scripting using JavaScript**
 - 4.1 Difference in Client and Server Side Scripting
 - 4.2 JavaScript as universal Client Side scripting language.
 - 4.3 The Document Object Model
 - 4.4 JavaScript events and event handling
 - 4.5 Simple JavaScript programs
- 5 ASP.NET (using Visual Basic.NET)**
 - 5.1 Introduction and Use of Web Applications, introduction to .net framework
 - 5.2 Introduction to ASP.net
 - 5.3 Introduction to the Visual Studio 2008/2010 IDE and Source View Control Class
 - 5.4 Web Server Controls
 - 5.5 HTML Server Controls
 - 5.6 Validation Server Controls
 - 5.7 Components and Applications
 - 5.8 Introduction to Applications and State Management.
- 6 Database Concepts and interaction with ASP.NET**
 - 6.1 Microsoft Access Table Relationships, Queries and Query types
 - 6.2 Introduction to Reports

- 6.3 Introduction to SQL and comparison with Access.
- 6.4 Introduction to data Access with ASP.NET
- 6.5 Connected Data Access and Disconnected Data Architecture, ADO.NET Objects
- 6.6 The AccessDataSource Control, its properties and use.

Std. XII - Practical List

1. Creation of a Website
2. Creation of a Website with Frames and CSS
3. Hyperlinks on a Web Page using Client Side Image Mapping
4. Hyperlinks on a Web Page using Server Side Image Mapping
5. Use of Audio and Animation on Web Pages
6. Use of Video on Web Pages
7. Creation and Publishing a Website using FTP
8. Cross Browser Testing and Differences in Rendering
9. Creation of Webpage in Devnagri Script (Marathi or Hindi) using UNICODE. Use MS-Word with BarahaIME and Save as html
10. ASP.NET code to display a report of client IP Address, Browser etc.
11. ASP.NET code to display Server Side Time along with client-side script to display Client Side Time.
12. ASP.NET code to calculate the number of days a person has lived on basis of the Date of Birth/the number of days left before the next occurrence of select dates



13. ASP.NET code to display contents from a Text File
14. ASP.NET code to display Hit Counter/ Number of Votes cast
15. ASP.NET code that accepts data, and puts the same into a Database/ that verifies username and password from a Database
16. Creation of a database and ASP.NET code that allows a user to view relevant information from the same/ Use of database and ASP.NET code that allows a user to view as well as edit information
17. Use of Event Driven Client Side JavaScript
18. Use of JavaScript for Validation of Amount and Pin code/Telephone number
19. Use of JavaScript for Validation of Username and Password
20. Use of JavaScript for Validation of Date/ E-mail address

Note:

The practicals mentioned above must be strictly carried out by students as per Practical Slips prepared and printed by the Board for the Subject of Information Technology – Science. Colleges must obtain a set of the slips from the Divisional Board Office.



Information Technology - Arts (98)

Introduction

Government has to visualize Schools which will concentrate on a balanced development of students in intellectual, emotional and physical terms, with a view to developing a technology literate, creative, and critically thinking class of students to open the doors to the world of knowledge.

The curriculum has been devised to integrate a wide variety of knowledge, language, value elements and skills such as creative and critical thinking, personal, social, scientific, mathematical environmental and knowledge acquisition.

In order to execute these dreams we have to develop the relevant infrastructure. We should carry out a substantial reinvention and re-engineering of educational sector. Our existing curricula in educational institution in respect of computer courses have to be thoroughly revamped. Internet connectivity should be provided to all Schools. Recognized aided and unaided Educational Institutions should ensure that the entire student community, irrespective of subject chosen should become computer literate. IT should be the integral part of education system.

Objectives

The student should be able to

1. acquire basic knowledge of Computers.
2. acquire basic knowledge of Information Technology.
3. understand E-Commerce and related concepts.
4. understand concepts in Multimedia.
5. develop capabilities to access Information

using Internet.

6. learn the basic concepts of Computer Networking.
7. develop an understanding of principles based on visual environment.
8. acquire skills for creation of Basic Web Pages.
9. acquaint with basic techniques and knowledge required for computing applications.
10. get aware about cyber laws and ethics.

Std. XI

1 Introduction to Information Technology

- 1.1 Information Technology: Definition, Introduction, Information Systems, Software, Data
- 1.2 IT in Business, Industry, Home, Play, Education, Training, Science and Engineering.
- 1.3 Computers in Hiding

2 Office Suite

- 2.1 Word Processor- Microsoft Word and its main features
- 2.2 Spreadsheets – Microsoft Excel and its main features
- 2.3 Presentations – Microsoft PowerPoint

3 Multimedia

- 3.1 Multimedia-Definition, Communication, Components, Building Blocks, Scope, Uses, Application purposes
- 3.2 Overview of Computer Images
- 3.3 Digital Audio
- 3.4 Overview of Video
- 3.5 Flash – Overview and Introduction



- 3.6 Multimedia Design and Future Directions
- 4 Web Browsers, E-mail Clients and Messenger Utilities**
- 4.1 Overview, Working of the Internet and WWW
- 4.2 Role of Web Servers, Clients
- 4.3 Web Browsers and their use, Popular Web Browsers
- 4.4 E-Mail Servers and Protocols
- 4.5 E-mail Clients and Web Based Mail Access using Browser
- 4.6 Messenger Services and Clients
- 4.7 FTP
- 5 File and Disk Utilities**
- 5.1 Concept of Files and directories
- 5.2 File Archival, compression and encryption
- 5.3 Disc Tools (Windows 7) Error-Checking and Defragmentation
- 5.4 Computer Security
- 6 GIF Animator**
- 6.1 GIF Animation, Image Count, Looping and Repeat Count
- 6.2 Colour palettes and Image dither methods
- 6.3 Image Parameters
- 6.4 Image Transparency
- 7 Vector Graphics using CorelDraw**
- 7.1 Introduction
- 7.2 Tools and menus
- 7.3 Basic drawing working with text-basic
- 7.4 Page Layout
- 7.5 Printing
- 8 HTML**
- 8.1 Uses, Features, Properties and Limitations
- 8.2 Tags and Attributes, Basic Tags, Paragraph and Heading Tags, Comments
- 8.3 Ordered and Unordered Lists and Related Tags, Nested Lists
- 8.4 Anchor Tag and Hyperlinks in HTML
- 8.5 Division and Physical Style Tags, working with Fonts, font types, sizes and colours
- 8.6 Body background colour, text colour and hyperlink colours, Pre-formatting, Line Break and Horizontal Rules, Displaying special characters in HTML
- 8.7 Images in HTML, related tags and attributes, features of BMP, JPG and GIF Raster image formats
- 8.8 Tables in HTML and related tags
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- Std. XI - Practical List**
1. Identification of Computer Systems and understanding LAB setup.
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 5. Study of Spreadsheet using Excel
 6. Create simple Presentation and Slideshow using PowerPoint
 7. Practical on simple Flash based animation
 8. Study of a Web Browser for browsing different websites
 9. Acquisition of e-mail ID on free web-based e-mail servers; sending and receiving emails with and without attachments.
 10. Study and use of search engines and



messengers.

11. Downloading and saving Web page content and images as files.
12. Creation of Compressed File Archives ZIP and RAR
13. Study of Disk Management Tools
14. Create a simple web page using basic HTML tags.
15. Creation of WEB page containing graphics and table.
16. Use of Hyperlinks on web pages.
17. Simple animation using GIF Animator Package
18. Creation of simple graphics using toolbox and menus in CorelDraw package.
19. Creation of a magazine cover using CorelDraw including title, subtitles, lead and sub-article info, coloured text, shapes etc, volume number and cost.

Std. XII

1 Web Publishing

- 1.1 HTML Page Frames
- 1.2 Image Mapping
- 1.3 Forms and Form Objects
- 1.4 Inserting Sound and Video
- 1.5 Use of Unicode and Indian Language Fonts
- 1.6 Cross-Browser Testing
- 1.7 Introduction to CSS
- 1.8 Web Server

2 Cyber Laws and Ethics

- 2.1 Moral, Ethics, and Law
- 2.2 Ethics Culture and ethics for computer users, professionals and business
- 2.3 Information Service
- 2.4 Code and guidelines of ethics
- 2.5 Introduction to cyber laws and IT Act

of India 2000

- 2.6 Digital Signature, Electronic Records-Attribution, acknowledgement and dispatch
- 2.7 Ten Commandments of Computing
- 2.8 Security, Privacy and Control
- 2.9 Intellectual Property Rights

3 E-Commerce

- 3.1 Electronic Commerce-Scope, Definition
- 3.2 Trade Cycle
- 3.3 Electronic markets-Usage, Advantages and Disadvantages, Future
- 3.4 Electronic Data Interchange-Definition, Benefits
- 3.5 Internet Commerce, e-Commerce in Perspective
- 3.6 EDI Security

4 Introduction to Networking

- 4.1 Communication and Network Technologies
- 4.2 Internet, Network Communication and Protocols
- 4.3 Transmission Media
Communication over Wires and Cables, Wireless Communication and Standards
- 4.4 Network Architecture
Relationships and Features
- 4.5 Cable Topologies
- 4.6 Network Hardware

5 DTP using Adobe InDesign

- 5.1 Document Setup and working environment
- 5.2 Creating Frames, Moving Objects, Selection Techniques
- 5.3 Working with Text
- 5.4 Character Settings
- 5.5 Paragraph Settings



5.6 Working with Images in InDesign

5.7 The Pages Panel

5.8 Working with tables

5.9 Exporting to PDF

6 Adobe Acrobat

6.1 Concept of PDF, applications, features, ability to embed images and fonts etc.

6.2 Adobe PDF Writer Printer and PDF Conversion Settings

6.3 The Adobe Acrobat Program, Features and Tools

6.4 Document Security Options

10. Conversion between Audio File Formats (based on Std XI syllabus)

11. Image Conversion between Image file formats (based on Std XI syllabus)

12. Conversion between Video file formats (based on Std XI syllabus)

13. InDesign - use of tool box and creation of simple letterhead or identity card of your institute

14. InDesign – Design of a commercial color newspaper advertisement related to the exhibition of educational books in the size 2 columns x 10 cm.

15. Conversion of a Microsoft Word Document into PDF using Adobe PDF Printer (with and without Images)

16. Conversion of a Microsoft PowerPoint Presentation into PDF using Adobe PDF Printer (with and without Images)

17. Conversion of an Adobe InDesign Document into PDF (with and without Images)

18. Creation of a PDF document with bookmarks/links within the same document

19. Study of Standard Security Features within a PDF Document

20. Conversion of a CorelDraw Image into PDF

Practical List

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5. Use of Audio and Animation on Web Pages
6. Use of Video on Web Pages
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8. Cross Browser Testing and Differences in Rendering
9. Creation of Webpage in Devnagri Script (Marathi or Hindi) using UNICODE. Use MS-Word with BarahaIME and Save as html

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Information Technology - Commerce (99)

Introduction

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8. acquire skills for creation of Basic Web Pages
9. acquaint with basic techniques and knowledge required for computing applications
10. get aware about cyber laws and ethics

Std. XI

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- 1.1 Information Technology: Definition, Introduction, Information Systems, Software, Data
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- 5 File and Disk Utilities**
 - 5.1 Concept of Files and directories
 - 5.2 File Archival, compression and encryption
 - 5.3 Disc Tools (Windows 7) Error-Checking and Defragmentation
 - 5.4 Computer Security
- 6. Basic Database Concepts**
 - 6.1 Definition of Database and database program
 - 6.2 Tables, Rows/Records, Columns/Fields, Differences between database and spreadsheet
 - 6.3 Relational abilities and meaning of Relational Database
 - 6.4 Basic Concepts of database and RDBMS
 - 6.5 Constraints to ensure data quality
 - 6.6 Database Administration, Software Development, Business Analysis
 - 6.7 SQL, History and Command Categories

7 Overview of Tally

- 7.1 Advantages of computerized accounting
- 7.2 Introduction to Tally and its features.

8 HTML

- 8.1 Uses, Features, Properties and Limitations.
- 8.2 Tags and Attributes, Basic Tags Paragraph and Heading Tags, Comments
- 8.3 Ordered and Unordered Lists and Related Tags, Nested Lists
- 8.4 Anchor Tag and Hyperlinks in HTML
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Std. XI - Practical List

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6. Create simple Presentation and Slideshow using PowerPoint
7. Practical on simple Flash based animation
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9. Acquisition of e-mail ID on free web-based e-mail servers; sending and receiving emails with and without attachments.
10. Study and use of search engines and messengers.
11. Downloading and saving Web page content and images as files.
12. Creation of Compressed File Archives ZIP and RAR
13. Study of Disk Management Tools
14. Create a simple web page using basic HTML tags.
15. Creation of WEB page containing graphics and table.
16. Use of Hyperlinks on web pages.
17. Creating simple database, table, forms and reports using Access.
18. Generating simple queries and verifying results. (Access).
19. Study of TALLY Package (GATEWAY)

Std. XII

1 Web Publishing

- 1.1 HTML Page Frames
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- 1.8 Web Server

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- 4.3 Transmission Media, Communication over Wires and Cables, Wireless Communication and Standards
- 4.4 Network Architecture, Relationships and Features
- 4.5 Cable Topologies
- 4.6 Network Hardware

5 Data Management using Access



- 5.1 Microsoft Access and its main features, Database Concepts
 - 5.2 Opening existing Databases
 - 5.3 Working with Tables
 - 5.4 Introduction to Forms and working with forms
 - 5.5 Table Relationships (one-to-one and many-to-many) Queries, Query types, creation of Query manually as well as using wizard, calculations using queries
 - 5.6 Introduction to Reports and working with Reports
- 6 Tally**
- 6.1 Creating and configuring Company Menus related to Accounts
 - 6.2 Working with Groups and Ledgers
 - 6.3 Study of Cost centers and Vouchers
 - 6.4 Printing Purchase orders, Sales orders and Invoice
 - 6.5 Study of Trial Balance, Balance Sheet and Profit and Loss Account

Practical List

1. Creation of a Website
2. Creation of a Website with Frames and CSS
3. Hyperlinks on a Web Page using Client Side Image Mapping
4. Hyperlinks on a Web Page using Server Side Image Mapping
5. Use of Audio and Animation on Web Pages



General Knowledge (32)

Introduction

General Knowledge has not become important only today but it occupied and retained its important position from the earliest times. General Knowledge is an inseparable part of competitive examinations.

With this view the Government of Maharashtra, through the resolution dated 5th July, 2002 has introduced 'General Knowledge' as a compulsory subject for the Sainiki Schools in Maharashtra at +2 stage. The students getting education in Sainiki School at the +2 stage are supposed to develop adequate general knowledge. The motto of introducing the subject is to empower the students to appear for the competitive examination in general and National Defence Academy (NDA) Exam in particular.

The syllabus is systematically structured by treating history, Geography, Defence studies and General Ability as a whole and organizing relevant information in such a way that it will cater to the specific needs of students for the Board examination in the subject at Std XII as well as National Defence Academy (NDA) exam and other competitive examinations.

Objectives

To enable the students to

1. Develop an ability to appear for National Defence Academy examinations and other competitive examinations.
2. Get acquainted with the Indian History, World Geography as well as Indian Geography, Indian Polity, Defence set up & its functioning.
3. Acquire the knowledge of recruitment in the Armed Forces and paramilitary forces as an officer.
4. Develop interest among the students to join armed forces.
5. Develop interest in Defence strategies.
6. Develop the general ability of the students regarding
 - i) The geographical aspects of India and the Earth.
 - ii) Major historical dates and events of India and World.
 - iii) Current affairs.
7. Inculcate the leadership qualities among students.
8. Develop reference skills and inculcate self study habits.
9. Acquaint the students with rich national culture and heritage.
10. Make aware the students, regarding national and international up-dates.



Section A : History - Std. XI

UNIT	SUB.UNITS
1. Ancient India	<ul style="list-style-type: none"> i) The Harappan Civilisation(2500 to 1800 BC) ii) Vedic Period, The Aryans (1500 BC to 1000 BC) Early Vedic age iii) Later Vedic age (1000 BC to 600 BC) iv) Rise of Jainism and Buddhism
2. Ancient Dynasties	<ul style="list-style-type: none"> i) Mahajanpadas ii) The Magdha Empire(600 to 400 BC) iii) The Maurya Dynasty(321 to 289 BC) iv) Post Mauryan period v) Gupta Dynasty(320 to 550 AD)
3. Medieval India	<p>The Sultanate of Delhi</p> <ul style="list-style-type: none"> i) The Slave Dynasty(1206 to 1290 AD) ii) The Khilji Dynasty(1290 to 1320 AD) iii) The Tughlaq Dynasty(1320 to 1414 AD)The Sayyad Dynasty(1414 to 1451 AD) iv) The Lodhi Dynasty(1451 to 1526 AD)
4. The Mughal Dynasty	<ul style="list-style-type: none"> i) Babur (1526 to 1531 AD) ii) Humayun (1530 to 1540 and 1555-56) iii) The Afghan Interregnum Sher Shah Suri (1540 to 1545) iv) Akbar (1556 to 1605) v) Jahangir (1605 to 1627) vi) Shahajahan (1628 to 1658) vii) Aurangzeb (1659 to 1707)
5. Modern India	<ul style="list-style-type: none"> i) Coming of the Europeans ii) India under the British rule of East India Company. iii) British Governors under company rule (1757 to 1857)



SECTION B : GEOGRAPHY
Std. XI

UNIT	SUB.UNITS
1. Astronomy	i) The Earth as a planet
2. Lithosphere	i) The Earth's crust, Rocks and Weathering
3. Atmosphere	i) Atmosphere and it's composition
4. Hydrosphere	i) Ocean currents and tides
5. Maps and Map Reading	i) Elements of Map ii) Methods of showing relief features on Map iii) Contours

SECTION C : DEFENCE STUDIES
Std. XI

UNIT	SUB.UNITS
1. Introduction to Defence Studies	i) Definition of Defence ii) Scope of Defence iii) Types of war iv) Utility of Defence
2. Higher Defence Organisation	i) Defence Committee of the Cabinet ii) Defence Minister's committee iii) Chief of the staff committee iv) National Defence Council
3. Organization of Indian Armed Forces	i) Army Organisation ii) Navy Organisation iii) Air Force Organisation
4. Training Institutions of Defence Services	i) Officer's Training Institutions of the Army ii) Officer's Training Institutions of the Navy iii) Officer's Training Institutions of the Air Force



SECTION D : GENERAL ABILITY
Std. XI

UNIT	SUB.UNITS
1. Fine Arts	i) Music ii) Dance iii) Painting
2. Sports and Literature	i) Famous books and their Authors ii) Sports
3. Constitution of India	i) Preamble, Salient features ii) Citizen and citizenship iii) Fundamental Rights and Duties iv) Directive Principles
4. Current Events	A) Who's Who in India B) The World we live in

(32) General Knowledge

Std. XII - A: History

Unit	Sub Unit
3. Freedom Movement in India(1857 to 1947)	i) The Revolt of 1857 ii) The Socio-cultural awakening. iii) Indian National Congress a) 1885 to 1905 b) 1905 to 1920
4. Mahatma Gandhi and Nationalist Movement	i) Non co-operation and Beyond.(1920 to 1947) ii) Implementation of Gandhian thoughts after Independence. a) Panchayati Raj b) Co-operatives c) Community Development d) Sarvodaya and Bhoodan Movement e) Secularism and Democracy



5. Post Independence India	<ul style="list-style-type: none"> i) Economic Planning in India ii) Five year plan. (First to Twelfth) iii) Foreign policy of India
6. National Integration	Necessity and History
7. Modern World	<ul style="list-style-type: none"> i) American War of Independence. ii) French Revolution. iii) Industrial Revolution. iv) Russian Revolution.
8. World During two World Wars	<ul style="list-style-type: none"> i) First World War (1914-1918) ii) League of Nations. iii) Rise of Dictatorship in Europe (Fascism and Nazism) iv) Second World War (1939-1945)
9. United Nations	<ul style="list-style-type: none"> i) Charter of UNO. ii) Principal Organs. iii) Flag, Membership and languages. iv) Specialized Agencies.

Std. XII

General Geography of India

B: Geography

Unit	Sub Unit
1. Location	Location, Dimensions and Boundaries.
2. Physiography	Relief Features
3. River Systems	Rivers and Lakes
4. Climate	Concept of Monsoon
5. Natural Vegetation	Forests
6. Mineral and Energy Resources	<ul style="list-style-type: none"> i) Mineral Resources ii) Energy Resources



7. Industries	i) Agro based ii) Mineral based.
8. Transportation, Communication and Trade	i) Transportation and Communication ii) International Trade
9. Map Reading	Topographical Sheets.

C : Defence Studies

Unit	Sub Unit
2. Entry into Armed Forces.	i) After std. 12 th ii) After Graduation iii) After Post Graduation and NCC 'C' Certificate.
3. India's Internal Security	i) Paramilitary forces & their role ii) Entry into paramilitary forces iii) Second line of Defence
4. Leadership	i) Leadership qualities ii) Leadership traits iii) Officer's like qualities.
5. Interview and Interview techniques	Interviews for Military Organisations.
6. Training Institutions for Civil Services	Training for Military Organisation



D: General Ability

Unit	Sub Unit
1. Days observed and Common Abbreviations	i) Well known days and their celebrations. ii) Abbreviations and short forms
2. Indian Polity	i) The Union Government of India a) Legislature b) Executive ii) The State Government a) Legislature b) Executive iii) The Judiciary
3. Major Inventions and Discoveries	i) Science ii) Technology iii) Geographical Discoveries
4. National Insignia	i) National Flag ii) National Emblem iii) National Anthem iv) National Song v) National Awards and Awardees vi) Gallantry Awards.



APPENDIX 'A'

Higher Secondary Certificate Examination at the end of Std. XII

Pune, Mumbai, Nagpur, Aurangabad, Kolhapur, Amravati, Nasik, Latur and Kokan Divisional Boards

Subjects and Number of Papers and Practicals for the Examination

- (i) in each of the two languages and Environment Education under the Compulsory Group carrying 50 marks each and
 (ii) in each of the four elective subjects from the Elective Group carrying 100 marks each.
- The names of the individual subjects to be taken according to the scheme are shown below alongwith the number of papers, duration of papers and maximum marks.

Sr. No	Subject	Theory		Practicals / Oral / Project			Maximum Marks	
		No.of Papers	Duration (Hours)	Marks	No.of Practicals	Duration (Hours)		Marks
1	2	3	4	5	6	7	8	9

A) Compulsory Subjects

(See Note No. 1 at the end)

- | | | | | | | | |
|--|-----|-----|----|-----|--|----|-----|
| 1. English | One | 3 | 80 | --- | --- | 20 | 100 |
| 2. Modern Indian Language or Modern Foreign Language or Classical Language | One | 3 | 80 | --- | --- | 20 | 100 |
| 3. Environment Education | | | | | Seminar or Journal
Assignment Project work
20 + 30 | 50 | 50 |
| 4. Health and Physical Education | One | 1.5 | 25 | --- | --- | 25 | 50 |





Sr. No.	Subject	Theory			Practicals / Oral / Project			Maximum Marks
		No. of Papers	Duration (Hours)	Marks	No. of Practical	Duration (Hours)	Marks	
1	2	3	4	5	6	7	8	9

B) Elective Subjects (Any four subjects under any one of the three streams of subjects viz. Arts, Commerce and Science-Vide classification of subjects under the three streams attached as Appendix 'b')

1.	Modern Indian Language (Other than the one offered under Compulsory Group)	One	3	80	---	---	20	100
2.	Modern Foreign Language (Other than the one offered under Compulsory Group)	One	3	80	---	---	20	100
3.	Sanskrit	One	3	80	---	---	20	100
4.	Ardhamagadhi	One	3	80	---	---	20	100
5.	Pali	One	3	80	---	---	20	100
6.	Arabic	One	3	80	---	---	20	100
7.	Persian	One	3	80	---	---	20	100
8.	Avesta-Pahlavi	One	3	80	---	---	20	100

Sr. No.	Subject	Theory			Practicals / Oral / Project			Maximum Marks
		No.of Papers	Duration (Hours)	Marks	No.of Practicals	Duration (Hours)	Marks	
1	2	3	4	5	6	7	8	9
9.	History	One	3	80	---	---	20	100
10.	Geography	One	3	80	---	---	20	100
11.	Mathematics & Statistics (for Arts and Science students)	One	3	80	One	1	20	100
12.	Mathematics & Statistics (for Commerce students)	One	3	80	One	1	20	100
13.	Geology	One	3	70	One	3	30	100
14.	Political Science	One	3	80	---	---	20	100
15.	Child Development	One	3	70	One	3	30	100
16.	Textiles	One	3	70	One	3	30	100
17.	Sociology	One	3	80	---	---	20	100
18.	Philosophy	One	3	80	---	---	20	100





Sr. No.	Subject	Theory			Practicals / Oral / Project			Maximum Marks
		No. of Papers	Duration (Hours)	Marks	No. of Practical	Duration (Hours)	Marks	
1	2	3	4	5	6	7	8	9
19.	Psychology	One	3	80	---	---	20	100
20.	Logic	One	3	80	---	---	20	100
21.	Economics	One	3	80	---	---	20	100
22.	Book-keeping & Accountancy	One	3	80	---	---	20	100
23.	Organisaoun of Commerce & Management	One	3	80	---	---	20	100
24.	Secretarial Practice	One	3	80	---	---	20	100
25.	Co-operation	One	3	80	---	---	20	100
26.	Physics	One	3	70	One	3	30	100
27.	Chemistry	One	3	70	One	3	30	100
28.	Biology	One	3	70	One	3	30	100
29.	Drawing	One	3	80	One	3	20	100

Sr. No.	Subject	Theory			Practicals / Oral / Project			Maximum Marks
		No. of Papers	Duration (Hours)	Marks	No. of Practical	Duration (Hours)	Marks	
1	2	3	4	5	6	7	8	9
30.	Design and Colour	---	3	80	---	---	20	100
31.	Pictorial Composition	---	3	80	---	---	20	100
32.	History of Art & Appreciation	One	3	80	---	---	20	100
33.	History & Development of Indian Music	One	3	100	---	---	---	100
34.	Vocal Light Music (Practical I)	---	---	---	One	3	100	100
35.	Vocal Classical Music (Practical II)	---	---	---	One	3	100	100
36.	Instrumental Light Musical (III) OR	---	---	---	One	3	100	100
37.	Percussion	One	2½	50	One	30 min.	50	100
38.	Agriculture Science and Technology	One	3	70	One	3	30	100
39.	Animal Science and Technology	One	3	70	One	3	30	100





Sr. No.	Subject	Theory			Practicals / Oral / Project			Maximum Marks
		No. of Papers	Duration (Hours)	Marks	No. of Practical	Duration (Hours)	Marks	
1	2	3	4	5	6	7	8	9
40.	Defence Studies	One	3	80	One	3	20	100
41.	Education	One	3	80	---	---	20	100
42.	Occupational Orientation							
	i) Stenography (English/Marathi)	---	---	---	One	3	100	100
	ii) Library and Information Science	One	2	50	One	3	50	100
43.	Information Technology (Science, Arts & Commerce)	One	2½	80	One	3	20	100
44.	General Knowledge (For Military Schools only)	One	2	100	---	---	---	100

Notes :

1. Students in Standards XI and XII will have to offer
 - i) English - as a compulsory language and
 - ii) A Modern Indian Language or A Modern Foreign Language or A Classical Language or Information Technology.
 - iii) Environment Education.
 - iv) Health and Physical Education (Grade Subject)
2. The cases arising out of the offering of wrong combinations of the subjects shall be decided by the State Board on the merits of each case.
3. The students selecting Agriculture subject may offer Biology as one more fifth additional subject under optional subjects, provided that:
 - i) Such students selecting Agriculture subject will be required to pass in Two Compulsory Languages, Environmental Education and Four out of the Five elective subjects.
 - ii) However, the percentage of marks obtained by them will be calculated on the total marks allotted for eight subjects offered at the Higher Secondary Certificate Examination.
4. A bonafide foreign national residing in India for a temporary period not exceeding two academic years and seeking admission in Std XI or Std. XII shall be permitted to offer Arabic or Persian under optional group, as Modern Foreign language, under compulsory group. Such permission shall be given after scrutiny of case on its merits by the concerned Divisional Board.



APPENDIX 'B'

Classification of Subjects under Arts, Commerce, Science

ARTS	COMMERCE	SCIENCE
<p>A) Compulsory Subjects</p> <ol style="list-style-type: none"> 1) English 2) Modern Indian Language or Modern Foreign Language or Classical Language 3) Environment Education 4) Health and Physical Education <p>Elective Subjects</p> <ol style="list-style-type: none"> 1) A Modern Indian Language 2) A Modern Foreign Language 3) Sanskrit 4) Ardhamagadhi 5) Pali 6) Arabic 7) Persian 8) Avesta-Pahlavi 9) History 10) Geography 11) Mathematics and Statistics 12) Political Science 13) Home Management (for Standard XI only) 14) Food Science (for Standard XI only) 15) Child Development (for Standard XII only) 16) Textile (for Standard XII:only) 17) Sociology 18) Philosophy 19) Logic 20) Psychology 21) Economics 22) Defence Studies 23) Drawing, 24) *Design and Colour 25) Composition 26) History of Art & Appreciation 27) History and Development of Indian Music 28) Vocal Light Music (Practical I) 29) Vocal Classical Music (Practical II) 30) Instrumental Music (Practical III) OR 31) Percussion 32) European Music 33) Historical Development of Indian Classical Dance 34) Book-Keeping & Accountancy 35) Co-operation 36) Education 37) Occupational Orientation 38) Information Technology 39) English Literature 	<p>A) Compulsory Subjects</p> <ol style="list-style-type: none"> 1) English 2) Modern Indian Language or Modern Foreign Language or Classical Language 3) Environment Education 4) Health and Physical Education <p>Elective Subjects</p> <ol style="list-style-type: none"> 1) Mathematics and Statistics 2) Economics 3) Geography 4) Book-keeping and Accountancy 5) Organisation of Commerce and Management 6) Secretarial Practice 7) Co-operation 8) Occupational Orientation 9) Defence Studies 10) Information Technology 11) English Literature 	<p>A) Compulsory Subjects</p> <ol style="list-style-type: none"> 1) English 2) Modern Indian Language or Modern Foreign Language or Classical Language 3) Environment Education 4) Health and Physical Education <p>Elective Subjects</p> <ol style="list-style-type: none"> 1) Mathematics and Statistics 2) Geology 3) Home Management (for Standard XI only) 4) Food Science (for Standard XI only) 5) Child Development (for Standard XII only). 6) Textile (for Std. XII only) 7) Psychology 8) Economics 9) Geography 10) Defence-Studies 11) Physics 12) Chemistry 13) Biology 14) Agriculture Science and Technology 15) Animal Science and Technology 16) Sociology 17) Sanskrit 18) Education 19) Information Technology 20) English literature.

