

University of Poona

Syllabi for the B.Ed. (Physical Education) Degree Course

1. Title :

The title of the degree should be Bachelor of Physical Education [B.Ed. (Phy. Ed.)]. The course of study shall mainly consist of theory and practical work pertaining to physical education and sports, and basic course in education with special methods in one school subject.

2. Admission requirements :

The candidate for admission to degree of Bachelor of Physical Education [B.Ed. (Phy. Ed.)] must fulfill the following conditions :—

- (i) He should be a graduate of a recognised University in any faculty.
- (ii) He should be in the age group of 19 to 30. The upper age limit may be relaxable in the case of candidates deputed by the recognised educational institutions. Exceptions can be made by the Principal in the case of candidates having meritorious record in sports and games with the permission of the University. In such cases age may be relaxed upto 35 years.
- (iii) He should have represented in University Sports or State Sports or Inter-College Sports or should have obtained atleast two stars in the National Physical Efficiency Drive tests. A candidate with two years' training in NCC will also be eligible. In case, a candidate does not fulfill any of the requirements laid down herein he will be given a chance to go through the National Physical Efficiency Drive tests for his age group and he can be considered for admission if he attains atleast a two star level.
- (iv) He should produce a certificate of medical fitness from Civil Surgeon / Registered Medical Practitioner.
- (v) He should achieve a minimum standard in the physical efficiency tests that will be conducted by the College before granting admission.

Both men and women candidates fulfilling the required conditions will be eligible for admission. At least 25 percent of the seats be reserved for women students.

3. Facilities :

It will be necessary to provide the following minimum facilities at a college starting this course :—

- (i) Administrative building for Principal's Office, and College Office.
- (ii) One class room to accommodate 120 candidates; additional rooms for staff, tutorials, guidance in methods, special methods' lecture rooms to accommodate at least 50 candidates, library room, reading room, equipment room, Medical Aid room, Gymnasium or indoor shed, ladies' room.

Toilet and other sanitary facilities should be adequately provided for male and female students and staff members separately.

- (iii) Hostel facilities should be provided wherever necessary for men and women students; separately.

(iv) Out-door facilities for items indicated below :—

- (a) 400 M track.
- (b) One football ground
- (c) One hockey ground
- (d) One cricket ground
- (e) Basketball grounds .. 2
- (f) Volleyball grounds .. 2
- (g) Kabaddi grounds .. 2
- (h) Kho-kho grounds .. 2

In course of time, facilities for badminton, tennis, table tennis, cricket and such other games may be developed.

A swimming pool is desirable for the College of Physical Education.

4. Syllabus :

The course of study at the College of Physical Education should consist of lectures, discussions, practical work, practice teaching and projects. The course will be divided in three parts as under :

- Part I .. Theory.
- Part II .. Practical work.
- Part III .. Practice teaching.

Part I—Theory (Written Examination) :

The theory part of this course shall comprise of six papers as given below :—

1. Foundations of Education, Physical Education and Recreation.
2. Psychological Foundations of Education and Physical Education.
3. Anatomy, Physiology and Physiology of Exercise; Kinesiology, Body Mechanics and Health Education.
4. Officiating and Coaching of sports and games; Evaluation procedures.
5. Organisation and Administration of Education and Physical Education; History and Recent Developments in Physical Education.
6. Methods of Instruction; Methodology of Physical Education; Methodology of School Subjects.

Each paper should have at least 3 periods per week in the time-table. It will be of 3 hours' duration with 100 marks. The syllabus for these six papers are given separately in Appendix I.

Part II—Practical Work :

The daily schedule of Practical work shall be of 4-5 periods. Practical work shall consist of the following :—

- (i) Athletics—Sprints, Runs, Jumps, Throws, Relays and Hurdles.
- (ii) Gymnastics—(for men & women)
 - Ground gymnastics—Pyramid, Mat Exercises.
 - In addition, Gymnastics for Women only : .. Balancing Beam, uneven parallel bars.
 - Gymnastics for Men only : .. Makhamb, Parallel bars, Vaulting horse and Horizontal bars.

- (iii) Developmental Exercises, Callisthenics and Individual Exercises.
- (iv) Drill and Marching.
- (v) Yoga-Asanas.
- (vi) Lezium.
- (vii) Combatives and Wrestling (for Men only) Rhythmics (for Women only);
- (viii) (A) Games—** Football, Hockey, Basketball, Volleyball, Kabaddi, Kho-Kho, Cricket and Soft-ball.
* Net ball, * Ring Tennis, Badminton (any six).
(* For Women only) (** For Men only)
- (B) Minor Games and Relays.
- (C) Tests.
- (ix) First-Aid Training course.
- (x) One week camp.

N.B. :—Details are shown in Appendix II.

Part III—Practice Teaching :

(a) *Experienced candidates will be required to give 20 lessons (10 in Physical Education and 10 in Academic Subject of the Candidate's Choice). Out of these, 3 lessons will be at the Primary level i.e. Std. I to IV and remaining at the Secondary level.

Inexperienced candidates will be required to give 40 lessons (20 lessons in Physical Education and 20 lessons in Academic Subject). Out of these, 5 lessons will be at the Primary level i.e. I to IV and the remaining at the Secondary level.

(b) Every experienced student should observe 20 lessons, while a fresh student should observe 40 lessons, in addition to the observation of demonstration and criticism lessons.

(c) In addition, five coaching and officiating assignments in athletics and games will have to be completed by a candidate.

(d) Facilities should be available for the Practice Teaching of at least six school subjects in addition to Physical Education.

**Note* :—An experienced teacher means :

(1) A Teacher who has served full-time in any recognised primary or secondary school for a minimum period of 200 working days.

And

(2) He has taught Physical Education and at least one school subject during that period. In case, he has not taught either Physical Education or a school subject, he should be considered in-experienced for that subject only.

5. *Attendance :*

Attendance will be marked for theory and practical classes separately. The minimum requirement will have to be completed by a candidate both in Part I and Part II work separately.

6. *Teaching Staff :*

The college conducting a course for the degree of B.Ed. (Phy. Ed.) shall have the following teaching staff for one division of 120 students.

The Principal should possess atleast II Class Master's Degree in Physical Education with 10 years' teaching experience in a degree College of Physical Education. For the time being the condition of experience may be relaxed upto five years.

Lecturers in Education should possess the qualifications as prescribed by Poona University for their counter parts working in a College of Education.

For Lecturers in physical education the following qualifications are recommended :—

1. Senior Lecturer (Physical Education) should possess at least II Class Master's Degree in Physical Education with at least 3 years' teaching experience in a college of education.

OR

Master's Degree in II Class with a Degree / Diploma in Physical Education or its equivalent in II Class with 3 years' teaching experience in a College of Physical Education or with at least 5 years' teaching experience in a college.

2. Lecturers (Physical Education) Senior Scale : should possess B.P.Ed. or its equivalent in II Class with five years' teaching experience in a school or college.

3. Lecturers (Physical Education) Junior Scale : should possess B. P. Ed. or its equivalent in II Class with three years' teaching experience in a school or college.

Specialists in Sports and Games should be either NIS qualified or outstanding sportsmen of Inter-University recognition or those possessing II class degree or diploma in physical education. They should be entitled for the scale of lecturers in the Junior Scale.

A Medical Officer should possess atleast M.B.B.S. Degree or its equivalent.

7. Administrative Staff :

In order to enable the College of Physical Education to carry out its office work and other duties, the following staff is essential :

1. Office Superintendent / Head Clerk	..	1
2. Accountant	..	1
3. Typist-cum-Clerks	..	2
4. Librarian	..	1
5. Peons	..	2
6. Groundsmen	..	2
7. Sweepers	..	2
8. Watchman	..	1

8. Scheme of Examination :

The examination for the Bachelor of Education (Physical Education) Degree will consist of two parts :—

	Marks
Part I—Written examination	600
Part II—Practical examination (including Practical work and Practice Teaching)	600
	1200

Part I : Written examination consisting of six papers each of three hours' duration and 100 marks.

Part II : Practical examination :

	Marks
(a) Year's Work	.. 500
(b) Examination Lessons	.. 100

In part I of the examination candidates will be tested in their skills in games, sports and physical activities, skill in class management and class teaching, and ability in officiating and coaching.

The Principal of the College in which the candidate is studying, shall assign upto a maximum of 500 marks in the following manner :

(A) <i>Academic Assignment :</i>	Marks .. 100
(i) Tutorials/Periodical Tests	.. 20 + 30
(ii) Preparation of improvised aids and projects	.. 10
(iii) Content knowledge (Academic subject)	.. 40

(B) <i>Practice Teaching :</i>	Marks .. 100
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For experienced teachers, 20 lessons (10 in physical education, 10 in academic subject of the candidate's choice), 3 lessons at the primary level i.e. I to IV and remaining at the Secondary level.

For inexperienced teachers 40 lessons (20 lessons in Physical Education and 20 lessons in Academic Subject) 5 lessons at the primary level i.e. I to IV and the remaining at the secondary level.

(C) Practical Work (300) :—

Practical examination in activity training :—

- (i) Athletics (60) : Sprints (10), Runs (10), Jumps (20), Throws (10), Distance-Running (0).
- (ii) (a) Gymnastics (Men) (30) :
Parallel Bars (5), Horizontal Bars (5), Vaulting horse (any two) (10), Mat Exercises (5), Malkhamb (5).
- (b) Gymnastics (Women) (20) :
Gymnastic positions (5), Balancing Beam (5), Uneven Parallel Bars (5), Mat Exercises (5).
- (iii) Developmental exercises, Calisthenics and individual exercises (30).
- (iv) Drill and Marching (15)
- (v) Yoga-Asanas (15)
- (vi) Combatives (Men) / Rhythmics (Women) (15/25)
- (vii) Lezim (15)
- (viii) Major Games (Any six to be chosen) :— (60)

Foot ball (Men) (10),	Cricket (Men) (10)
Net ball (Women) (10),	Throw ball (Women)
Hockey (10),	Basket ball (10)
Volley ball (10),	Soft ball (10)
Kabaddi (10),	Kho-Kho (10)
Tennis (10),	Tennicoit (10)
Badminton (10),	Swimming and Diving (10).

- (ix) First-aid training and Camping (30)
 (x) Coaching and Officiating assignments (30)

Note :—If a candidate fails to get atleast 40% marks in each of the sub-parts, A, B and C he shall not be sent up for the examination. In such a case the candidate concerned, shall put, in a minimum attendance of one term for the reassessment of his work.

(D) *For the remaining 100 marks :*

A candidate must submit a practical test of full period lessons :

	Marks
One in Physical Education	50
One in academic subjects	50

(Candidate's choice under Paper VI, Section 3 in Part I)

Standard of Passing the Examination :

To pass the examination in Part I, a candidate must obtain atleast 30% marks in each paper and 40% marks in the aggregate of all the papers taken together. To pass the examination in Part II a candidate must obtain atleast 40% marks in each of sub-parts A, B, C and D.

To pass the whole examination a candidate must pass in Part I and Part II.

Such of the successful candidates who have appeared for Part I and Part II at one and the same time and obtained atleast 65% of marks in each part and an aggregate of 70% or more shall be declared to have passed the examination with distinction. Those who have obtained atleast 55% of marks in each part and an aggregate of 60% or more shall be declared to have passed the examination in the First Class and those who obtained atleast 45% of marks in each part and aggregate of 50% marks or more shall be declared to have passed the examination in the Second Class.

APPENDIX I

The Syllabus for theory papers will be as follows :—

Paper I :—*Foundations of Education, Physical Education; and Recreation.*

1. Objectives.

1. To understand how education is related to Philosophy and Sociology.
2. To understand how various aims, ideals of life and education have been formulated in India and in the west.
3. To understand nature and importance of different factors—the educator, educand and the curriculum in the process of education.
4. To help them to develop dramatic attitudes and enable them to pay their proper roll in social groups like class room, school and community.
5. To understand the inter-relation of Philosophy and Physical Education.
6. To understand how different sciences such as Biology, Sociology and Physiology determine the scope of Physical Education.
7. To understand the place which Physical Education occupies in our developing society.

8. To understand the scope of recreation in providing leisure-time activities for youths.

SECTION I

Foundations of Education (Philosophical and Sociological)

- Unit I*—(a) Meaning and Scope of Educational Philosophy.
 (b) Education as Science and Art.
 (c) Modern ideals of education :—
 Formation of character, development of personality, education for culture, education for adjustment, education for vocation, education for citizenship.
- Unit II*—(a) Contribution of Rousseau, Pestalozzi, Dewey, Tagore and Gandhiji, to the development of educational thought.
 (b) The teacher and his place in education, teacher-pupil relationship (Educand his nature.)
- Unit III*—(a) The principles of curriculum construction; Types of curriculum; Content centred, Activity centred, Core curriculum, Peripheral curriculum.
 (b) Correlating and integrating the curriculum in Physical Education and General Education.
- Unit IV*—(a) Meaning, Scope and Need of Educational Sociology.
 (b) Education as a means of Social Control and Change.
 (c) Agencies of Education, formal and informal.
- Unit V*—(a) Functions of the school as a social institution.
 (b) The role of family, state and society in Education.

SECTION II

Foundations of Physical Education and Recreation

- Unit VI*—The Meaning and Scope of Physical Education.
 Different interpretations of Physical Education—past and present, Physical Education as an integral part of Education.
- Unit VII*—Philosophical.
 (a) Aims and objectives of Modern Physical Education.
 (b) Modern Physical Education—its basis for Health, Fitness and Recreation.
 (c) Physical Education and Nationalism. The Role of Physical Education and Sports in fostering international understanding.
- Unit VIII*—Biological.
 (a) Sex Differences in males and females.
 (b) Body types.
 (c) Principles of exercise, normal load, crest load, over load.
 (d) Athletic-heart.
 (e) Chronological, Physiological and Anatomical ages.
 (f) Practical suggestions from Biology.

Unit IX—Psychological.

- (a) The Psycho-physical unity of the human organism.
- (b) Reflex action, conditioned reflex.
- (c) Practical suggestions from Psychology.

Unit X—Sociological.

- (a) Social inheritance-traditions and their influence on behaviour patterns particularly games, dances and recreation.
- (b) Social values and development of different traits and ideas.
- (c) Physical Education as a socializing agency.

Unit XI—Recreation.

- (a) Meaning, significance and scope of Recreation.
- (b) Principles of Recreation, Programme planning according to age-groups.
- (c) Rural, Urban, Industrial Recreation.
- (d) Agencies of Recreation.
- (e) Leadership in Recreation.
- (f) Facilities and their use.

List of Books Recommended

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|---|--------------------|
| (1) Principles of Education | .. R. M. Marathe |
| (2) Educational Sociology | .. Francis Brown |
| (3) शिक्षणाची मूलतत्त्वे | .. रा. म. मराटे |
| (4) शैक्षणिक समाजशास्त्र | .. भंडारी |
| (5) Philosophical Foundations for Physical, Health and Recreation Education | .. Ziegler |
| (6) Principles of Physical Education | .. J. F. Williams |
| (7) शारीरिक शिक्षणाचे आधुनिक स्वरूप व अभ्यास | .. दि. गो. वाखारकर |

*PAPER II : Psychological Foundations of Education***Objectives :**

1. To acquaint the student-teacher with the knowledge of psychological facts on which effective teaching procedures are based.
2. To develop in him the ability to apply the principles of psychology to classroom situations.
3. To help him to appreciate the factors which influence and produce change in the child's behaviour.
4. To acquaint him with some of the Psychological features which influence the professional growth and mental health of the teacher.
5. To help him to understand the methods and tools with which he might assess the abilities of his pupils.

6. To help him to recognize the needs of children and their interests at different stages.
7. To help him to understand the process of learning and the factors that influence the process.
8. To understand the process of maturation, growth and development with particular reference to physical factors.
9. To understand how knowledge is built up and physical skills developed under outdoor situations.

SECTION I

Psychology of Development

- Unit 1*—(a) Psychology : Its meaning, scope and limitations. Its applications to Education and physical education.
 (b) Methods of psychological studies : introspection, observation, experimental and developmental (genetic).
- Unit 2*—Human Growth and Development.
 (a) Stages of growth and development : Infancy, childhood and adolescence (Social, emotional, physical and mental development in three stages),
 (b) Heredity and Environment.
- Unit 3*—Main Springs of Human Behaviour.
 (a) Innate bases of behaviour : drives, urges and instincts (old and modern views).
 (b) General innate tendencies : Routine, Sympathy, suggestion and imitation, Theories of play in physical education.
 (c) Acquired basis of human behaviour : sentiments, habits, attitudes, development of character and the will.
 (d) Social motivation : praise, blame, rewards, punishment, etc.
- Unit 4*—Personal Adjustment and Mental Health.
 (a) Personality : Its meaning and nature, development of personality, integrated personality.
 (b) Personal Adjustment & Mental Hygiene, psychology of the memories, mental conflict.
- Unit 5*—Psychology of the Group.
 (a) Characteristics of crowd, club and community.
 (b) School as a social group.

SECTION II

Psychology of Learning

- Unit 6*—Learning.
 (a) The process of learning, laws of learning, learning by trial and error, learning by imitation, classical conditioning and instrumental conditioning, learning by insight.
 (b) Measurement of learning : the learning curve, fatigue : psychological and physiological aspects.

Unit 7—Memory.

- (a) Remembering and forgetting, recall, retention and recognition, immediate memory span.
- (b) Effective methods of learning—whole and part method, spaced versus massed learning, recitation and review.

Unit 8—(a) Individual differences & their implications, tests of physical efficiency.

- (b) The problem child, backward child, the delinquent, Juvenile delinquency, the physically handicapped child.
- (c) Role of a teacher in their rehabilitation, child guidance.

Unit 9—Intelligence.

- (a) Concept of intelligence and its nature.
- (b) Measurement of intelligence : Individual and group tests, verbal-nonverbal and performance tests, uses and limitations of tests.
- (b) Results of intelligence testing : Concept of M. A. and I. Q. Distribution of I. Q., mental growth, the gifted and the slow learner.

List of Books Recommended

- (1) Elements of Educational Psychology—Bhatia (Orient Longman's).
- (2) Fundamentals of Experimental Psychology—Prof. W. N. Dandekar.
- (3) Level! K.—Educational Psychology & Children, Univ. of London. (Orient Longmans, Bombay)
- (4) V. V. Kamat—Measuring Intelligence of Indian Children.
- (5) Gupta and Mourya—Psychology applied to Education and Physical Education.
- (6) आकळे व बापट - शिक्षणाने मानसजास्वीय अधिष्ठान.
- (7) वा. ना. दंडेकर—शैक्षणिक व प्रयोगिक मानसशास्त्र.

*Paper III—Anatomy, Physiology and Physiology of Exercise; Kinesiology, Body Mechanics and Health Education.***1. Objectives**

- 1. To understand the structure and functions of the human body.
- 2. To understand the effect of exercise on the different systems of the human body.
- 3. To understand the basic principles underlying human motion.
- 4. To know the dietary requirements of children, athletes and sportsmen.
- 5. To understand the need of Health Education with reference to an individual, family and the community.
- 6. To understand the aspects of correct posture and remedial measures.
- 7. To understand the school health service programme.

SECTION I

Anatomy, Physiology and Physiology of Exercise

Unit I—(a) Introduction to the human body. Origin of life, Evolutionary adaptation of Man; Cells, tissues, organs and the systems.

Unit II—Structure of the Human Body.

- (a) The Skeleton—its study.
- (b) Bones—form and general structure of bones including important muscles.
- (c) Joints—kinds, flexibility and co-ordination.
- (d) Posture, good and bad postures; causes of postural defects, knock knees, flat foot, corrective exercises.

Unit III—Different Systems.

- (a) Muscular—structure of Muscles, Properties and development; effect of exercise on Muscular structure and function; muscle fatigue, muscle pull; spasm; conditioning, warming-up; training.
- (b) Circulatory System : Structure and function of the Heart; Blood vessels—arteries, veins and capillaries, blood circulation, blood pressure, blood constituents, Haemorrhage, Blood transfusion, Blood clotting, Effect of Exercise on the Heart and the circulatory system.
- (c) Respiratory system.
Organs of respiration, structure and function, Physiology of respiration, control of respiration; vital capacity, Oxygen debt, endurance, Second Wind, Effect of exercise on the Respiratory system.
- (d) Digestive System :
Organs of digestion, structure and function. Enzymes—Absorption and assimilation of Food. Metabolism, effect of exercise on digestion.
- (e) Excretory system.
Organs: structure and function, composition of normal urine, Fluid balance, Acid base balance; Skin, Structure and function, sweat glands; Heat regulation.
Effect of Exercise on the Excretory system.
- (f) Nervous System.
Organs; location and function, Brain and its parts, spinal cord; Reflex action, Autonomous nervous system; Neuro-Muscular Co-ordination.
- (g) Reproductive System.
Male, Female, Reproductive organs, structure and function, Family planning and methods of contraception, Sex and Exercise.
- (h) Endocrine System.
Ductless glands, location and functions, Role in growth; normal functioning of the body and emotional make up of an individual.

SECTION II

Kinesiology, Body Mechanics and Health Education**Kinesiology***Unit IV*—General idea of muscle action in the

- (i) Trunk.
- (ii) Shoulder.
- (iii) Elbow joint.
- (iv) Hip joint.
- (v) Knee joint and
- (vi) Ankle.

Unit V—Body Mechanics

- (a) Physical principles concerning Motion : Force—Energy, work and its measurements—Efficiency—Motion—Velocity—Projectiles—laws of Motion—Gravity—Force of Gravity—Centre of Gravity—Centre of Gravity Equilibrium—Centrifugal Force—Centripetal Force—Friction—Levers—Density—Specific Gravity.
- (b) Physiological Principles concerning Human Motion :
 - (i) Types of muscular contraction—Concentric—Eccentric—Static and Pale (White) Muscles—The stretch reflexes and its fundamental significance—The extensor reflexor and its practical applications—The balance reflexes—Reciprocal Innervation and Inhibition and its effect on controlled muscular action, essential for true muscular movements—Warming up—Viscosity as muscles resistance Fatigue and performance.
- (c) Basic Mechanical Principles underlying Efficient Movement :
 - What is efficient movement education, kinds or pattern of movement of objects—Linear—Rotatory—Curvilinear—Reciprocation—Pendulum—Ballistic Movements.
 - Equilibrium—Motion—Leverage—Force—Angle of rebound and spin—Projectiles.
 - Application of the basic mechanical principles to fundamental physical skills. Running, Hopping, Jumping, Leaping and Landing—Throwing and Catching, Striking, Hanging, Swimming and Vaulting.
- (d) Physiological Principles involved in the Development of Motor Skills.
 - What is skill learning? Characteristics of a skillfull, performance pre-requisite to an effective skill : learning (Physical, emotional and mental), Practice and Skills, Physical and mental practice, specific training kinesthetic feeling—Techniques of teaching motor skills.

Unit VI—Health Education :

- (a) Definition of Health Education—Factors influencing Health, Heredity, Habits and Environment.
- (b) General principles in administration of health education.
- (c) Physical Health, Mental Health.
Personal Hygiene, skin, mouth, teeth, nails, clothing, shoes, rest, sleep, food, exercise, relaxation etc.

Unit VII—Nutrition : Food :—Constituents of Food,

- Caloric value of food (daily),
- Quantity of food :—daily requirement
- Balanced diet and vegetarianism,
- Under-nutrition and nutrition.
- Food habits, constipation and indigestion.

Unit VIII—Health of the Family :—

- (a) Economic status :—standard of living, food, water supply, housing cleanness, disposal of refuse, prevention of infection and immunity.
- (b) Maternal mortality—Infantile mortality—spacing of birth.
- (c) Sex, marriage among blood relatives.

Unit IX—Health of the community and Nation :—

- (a) An analysis of the Health Problems in India.
- (b) Role of Government in Health Education.
- (c) Communicable diseases—their causes, spread and prevention, etc.

Unit X—Co-ordinated School Health Programme :

- 1. Health Service :—
 - (a) Appraisal aspect including morning health inspection.
 - (b) Preventive aspect including safety, emergency, care and first-aid.
 - (c) Supervision of Health Education, Medical examination and follow-up work.
 - (d) Posture, malposture—values of good posture; Remedial aspect including corrective measures.

List of books Recommended

(1) Anatomy and Physiology	.. J. F. Williams.
(2) Anatomy and Physiology	.. Dr. L. K. Govindarajulu.
(3) शरीरशास्त्र	.. व्ही. एन्. भावे.
(4) मुलम शरीरशास्त्र	.. एम्. एन्. देशपांडे
(5) Physiology of Exercise	.. Dr. F. A. Achmidt
(6) शरीर व व्यायाम	.. एच्. व्ही. पटवर्धन
(7) Good Health Personal and Community	.. Miller and Miller.
(8) School Health Education	.. Kilander.
(9) Diatetics and Nutrition	.. A. Z. Brakar.
(10) Health in India	.. Grant.
(11) Kinesiology	.. K. Wells.

*Paper IV—Coaching and Officiating of Sports and Games : Evaluation Procedures.***1. Objectives :**

1. To understand the methods of coaching.
2. To understand the skills necessary for Officiating and Coaching for Games and Sports.
3. To understand rules and technique of games and Sports.
4. To acquaint the student-teacher with the theory of evaluation and various tools of evaluation.
5. To develop in him the ability to apply knowledge in planning achievement tests, in scoring them and in tabulating and interpreting tests scores.
6. To develop in him skills necessary for—
 - (i) Constructing items according to specifications; and
 - (ii) Preparing blue-prints of tests.
7. To develop in him skills necessary for computing important statistical estimates employed in the analysis of test scores.

SECTION I**Coaching and Officiating**

Unit I—1. Origin; development and rules of following games and sports :

- | | |
|-----------------------|-------------------------------------|
| (i) Track and field | (ix) Kho kho |
| (ii) Cricket | (x) Tennis |
| (iii) Foot ball | (xi) Badminton (Ball & Shuttle) |
| (iv) Hockey | (xii) Tennicoit |
| (v) Basketball | (xiii) Aquatics |
| (vi) Volley ball | (xiv) Combatives |
| (vii) Soft ball | (xv) Net ball |
| (viii) Kabaddi | (xvi) Throwball. |

Unit II—Coaching :

- (a) Principles and Philosophy of Coaching.
- (b) Qualifications and responsibilities of a coach.
- (c) Coaching of individuals in activities with reference to :—
 - (i) Fundamental Skills
 - (ii) Keadup Games.
 - (iii) Positional Play.
 - (iv) Team Techniques.
 - (v) Selection of a team.
 - (vi) Discipline, control and management of teams.
 - (vii) Coaching Camps.

Unit III—Officiating.

- (a) Ground and equipment (construction and maintenance of all play areas including sports track).
- (b) Marking.
- (c) Officiating system—positioning—hand signals.
- (d) Score sheets and Method of scoring.
- (e) Field Work, officiating in local meets under supervision; Evaluation of work charts.

SECTION II

Evaluation Procedures

(All units should be discussed with due reference to Physical Education.)

Paper IV—Theory of Education.

- (a) The concept of Evaluation.
- (b) Taxonomy of educational objectives (only introduction).
- (c) Objectives and learning outcomes.
- (d) Learning experiences.

Unit V—Preparing different plans.

- (a) Analysis of content—dividing the content into units.
- (b) Preparing year's plan, Unit plan and lesson plan.

Unit VI—Planning and preparing a unit test :

- (a) Definition and designs (Weight—age to objectives—content and forms of questions of a Unit.)
- (b) Blue—print.
- (c) Preparing a unit test, marking scheme and scoring key.
- (d) Questionwise analysis.

Unit VII—Tools of Evaluation :

- (a) Characteristics of a good measuring instrument—validity, reliability, objectivity and practicability.
- (b) Examinations (i) Written, (ii) Oral and (iii) Practical, their merits and limitations. Measures for their improvement, maxims for writing various types of objectives test items.
- (c) Other tools of Evaluation : (i) Interview (ii) Anecdotal (iii) Checklists (iv) Rating scales (v) Sociometric techniques (vi) Cumulative records; Characteristics and limitations of these tools. Use of these tools for internal assessment.
- (d) Tests and Measurements in Physical Education.

Unit VIII - Statistical Methods :-

- (a) Tabulation of data, graphical representation of scores, histogram and frequency polygon, frequency curve, Normal probability curve and its properties, skewness, Bi-modal curve and skewed curve.
- (b) Measures of central tendency—Mean, Median and Mode.
- (c) Measures of variability—Range, Quartile Deviation and Standard Deviation.

Unit IX—

- (a) Percentiles and Percentile Ranks.
- (b) Co-efficient of correlation (Spearman's Rank Rule-Method only)

Unit X— Analysis and interpretation of test scores, raw scores, derived scores, standard scores, Age and Grade norms.

N. B.—While discussing Units XI and XIII emphasis should be laid on the application of statistical measures for interpreting test scores. Students are expected to work out only simple examples.

Books Recommended

- (1) A Practical Introduction of Measurement and Evaluation by—H. H. Remmers, N. L. Gage, J. Francis Rummel, Universal Book Stall, Delhi, Chapters 1 to 9.
- (2) Statistics in Psychology and Education by Garrett, H. E. Vakils-Feffler & Simons Pvt. Ltd. Bombay-1, Chapters 1, 2, 3, 4, 6.
- (3) शैक्षणिक मूल्यमापन तंत्र आणि मंत्र--डॉ. ना. के. उपासनी, जॉशी, बडो, नवमहाराष्ट्र प्रकाशन, पुणे
- (4) शैक्षणिक संख्याशास्त्र --मराठे, जॉशी, स्वाध्याय महाविद्यालय, पुणे.
- (5) Mathews : Tests & Measurements in Physical Education
- (6) शैक्षणिक मूल्यमापन व संख्याशास्त्र--वा. ना. दांडेकर
- (7) मूल्यमापन व संख्याशास्त्र--डॉ. भा. गं. बापट.
- (8) शारीरिक शिक्षणाच्या परीक्षेचे स्वरूप दि. गो. बाबुलकर.
- (9) Rules of Games and Sports—H. C. Buck.
- (10) Manual of Athletic Competition—Jai D. Pardiwala.
- (11) Rules books of various Sports & Games by different National Federations in India.
- (12) Modern Track and Field ...Doherty.
- (13) Skills in Sports ..Kucpp.
- (14) Scientific Principles of Coaching ..John Brown.
- (15) Basketball ..Jagger.
- (16) Volleyball ..Dhanraj, V. Hubert.
- (17) Tennis for Beginners . Murphy.
- (18) Science for Swimming . Dr. Counsilmen.

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| (19) Football | .. Caswell |
| (20) Cricket | .. Jardine. |
| (21) Netball | .. Bulloch. |
| (22) Kabaddi | .. D. G. Wakharkar |
| (23) Kho-kho | .. Prof. Jogesh Jadhav. |
| (24) Code of points in Gymnastic | .. International Gymnastic Federation. |
| (25) A Guide to Gymnastics | .. Frank M. Musker; Donald R. Casady, L. W. Erwin. |
| (26) Gymnastic for Girls and Women | .. Alison. |
| (27) Softball | .. Noren. |

Paper V—Organisation and Administration of Education and Physical Education; History and Recent Developments in Physical Education.

Objectives

1. To understand the general principles of organisation and school practice with special reference to Physical Education in Secondary School.
2. To know how to plan and adjust the programme of physical education with the academic programme in the school.
3. To understand that the school as a social institutions has duties and responsibilities to the society and community.
4. To know administrative aspects of work in physical education and general education.
5. To understand the historical background of physical education and to develop democratic attitudes which enable the teacher to be a leader on the playground, in the class room, in the school, and the community.
6. To understand the current developments in physical education, sports and games in the country.
7. To acquaint with the various Youth Organisations and Youth Services.

SECTION I

Organisation and Administration of Education & Physical Education

Unit I—(a) Meaning and scope of organisation and administration of Physical Education.

(b) Organisation at different levels :—The Physical Education—Department set up in (i) School, (ii) College and (iii) University.

(c) Scheme of organisation at National, State, District, Taluka and Village levels for non school going population.

Unit II—Facilities and standards :—Physical Education Plant—

(i) Phaygrounds, Gymnasium, Swimming pools, Construction and maintenance.

(ii) Equipment—purchase, supplies, care and upkeep,

(iii) Leadership—trained and class teacher, pupil leaders.

- Unit III*—(a) Programme :—Elementary school programme, High School Programme.
- (b) The Time Table : Principles and factors influencing time table types of Physical Education periods and time allotment for them.
- (c) Classification—Objectives of Classification, Classification of students for routine physical education activities.
- (d) Public relations—exhibitions, demonstrations, Physical education days, displays, playdays, publicity-media radio, television, newspapers, bulletins & film shows.
- Unit IV*—Tournaments and Competitions.
- (a) Importance and their place in the programme.
- (b) Types of tournaments, (i) Simple elimination, (ii) Double elimination for consolidation, (iii) League types, (iv) Ladder, (v) Spider, (vi) Kings etc.
- (c) Types of Competitions, (i) Athletics types, (ii) Group, (iii) Gymnastic type.
- (d) Awards and incentives : Awards, Crests, Honour boards, trophies, Certificates, ribbons & badges.
- (e) Intramurals and extramurals : Need and importance place, types of organisation, Methods of grouping fixtures.
- Unit V*—(a) Maintenance of records and registers.
- (b) Finance : Budget income and expenditure- Rules regarding expenditure, preparation and administration of budgets, accounting, auditing.
- Unit VI*—Supervision : Meaning and scope of supervision—objectives and essential features of good supervision.
- Unit VII*—The School plant : (Education)
- (a) The school plant, location, site, environment, minimum essential requirements, sanitary arrangements.
- (b) The School Building, Class-room, functional utility
- (c) Equipment and its maintenance : subject-wise requirements, equipment for co-curricular activities.
- (d) Furniture : Suitability and utility.
- (e) Library, Laboratories, Workshop, Museum, Garden and Gymnasium
- Unit VIII*— Role of the school personal involved in the school organisation :—
- (a) The headmaster, his duties and responsibilities to management, teachers, education department, Community and parents.
- (b) Staff-meetings—Their importance and purpose.
- (c) Physical education teachers—qualities and qualifications, Conditions of Service, load of work, his status, need for improvement in the status, his relations with the head-master, colleagues, students and society: facilities for training teachers in physical education, ethics of profession.

Unit IX—Administrative machinery for secondary education:—

- (a) Maharashtra State Board of Secondary Education—its powers, functions and responsibilities.
- (b) Divisional Boards—Powers, functions and responsibilities.
- (c) Study of the code recognition to schools with reference to grant-in-aid, inspection of secondary schools.

SECTION II

History and Recent Developments in Physical Education

Unit X—(a) Physical Education in ancient civilizations—Greek, Roman, Indian.

(b) Evolution of Physical Education on the continent and in America with Special reference to aims, programmes and methods.

(c) Contributions of (i) Germany, (ii) Sweden, (iii) Denmark, (iv) Britain, (v) U.S.S.R., (vi) U.S.A., to Physical Education.

Unit XI—International sports events and their influence. The Olympic games; Asian Games; Commonwealth Games.

Unit XII—Physical Education and sports in a changing world with particular reference to.

U.S.A.; U.S.S.R.; JAPAN, GERMANY.

Unit XIII—Modern trends in Physical Education, Games and Sports in India :—

(a) (i) Central Government and its efforts in promoting Physical Education, Games and Sports,

(ii) All India Council of Sports : Its constitution, function and its role in promoting sports.

(iii) All India Institutes—The National Institute of Sports; The Laxmibai College of Physical Education.

(b) A study of the development of Physical Education, sports and games in Maharashtra with reference to :—

(i) The present organisation set up in the state.

(ii) Important schemes and activities including Yoga-Education and indigenous activities.

(iii) Role of voluntary Physical Education and sports bodies in the State.

(c) All India Federations of different games and sports. The school Games' Federation, The Inter University Sports Board.

Unit XIV—Youth Welfare and Youth Services :—

(a) Concept of Youth Welfare and Youth Work.

(b) Youth organisations in India.

(c) Programmes under Youth development.

(d) Youth Services such as Scouting and Guiding, NCC, NSS, Civil Defence and the like.

Books Recommended

(1) School organisation	.. Kochher.
(2) शाळेय संघटन प्रशासन	.. डॉ. मा. गो. बापट.
(3) Organisation and Administration of Physical Education	.. E. F. Walford, A. A. E. Eslinger.
(4) Manual of Physical Education in India	.. D. G. Wakharkar.
(5) A World History of Physical Education	.. Van Dalen Mitchel Bennett
(6) History of Physical Education	.. C. W. Hyn Smith.
(7) महाराष्ट्रातील शारीरिक शिक्षणाची वाटचाल	.. वि. गो. बाबुरकर.
(8) शारीरिक शिक्षणाचा विकास भाग २	.. डी. बी. कोटीवाले.
(9) A Brief History of Physical Education	.. Emmell A Rice & John L. Hutchigson.

Paper VI—Methods of Instruction, Methodology of Physical Education School Subjects.

Paper VI will be divided into three sections as shown below :—

Section I	Methods of Instruction	.. 30 marks
Section II	Methodology of Physical Education	.. 35 marks
Section III	Methodology of School Subjects	.. 35 marks
Total		.. 100 marks

Objectives :

1. To acquaint the student-teacher with the methods of organisation of curriculum and planning of teaching work.
2. To help him to understand the need of framing of instructional objectives.
3. To develop in him skills necessary for :—
 - (i) Formation of instructional objectives and
 - (ii) Definin specific behavioural changes.
4. To familiarise him with different types of lessons and to develop skills in planning and conducting these lessons.
5. To acquaint him with the broad principles underlying modern educational developments in respect of methods of instruction and evaluation procedures.
6. To develop in him skills in the preparation and use of appropriate teaching aids.

SECTION I**Methods of Instruction**

Unit I—Nature of the teaching process : relationship of teaching with the learning process, characteristics of good teaching, general principles and maxims of teaching, objective based teaching, principle of correlation.

Unit II—Methods of Teaching.

- (a) Lecture, demonstration, questioning and discussion, project method, Dalton plan, Montessori methods, Kindergarten method, programmed learning.
- (b) Group procedures : Seminar, Workshop and Symposium.
- (c) Assignments, supervised study, remedial teaching.

Unit III—Type of Lessons :

- (a) Knowledge lesson . . . for acquisition of knowledge.
- (b) Skill lesson . . . for acquisition of skills.
- (c) Problem solving lesson . . . for critical thinking.
- (d) Appreciation lesson . . . for aesthetic development.
- (e) Drill and Review lesson . . . for fixing behaviour patterns.

Unit IV—Teaching aids and devices of teaching :—

- (a) Different types of instructional material : text-books, hand-books, etc.
- (b) Illustrations—verbal and non-verbal; audio-visual aids such as radio, taperecorder, films, charts, maps, models etc. ; chalkboard.

Unit V—Planning and observation of lessons :—

- (a) Importance of planning.
- (b) Preparation of lesson plan : Objectives, learning experience teaching points etc.
- (c) Observation of lessons and evaluation of the same.

Books Recommended

- (1) General Methods of Classroom Teaching by P. K. Chhatre, East and West, Book house, Baroda 1961. Chapters : 3, 6, 7, 9, 11 to 18.
- (2) Principles and Methods of teaching by Bhatia and Bhatia. Doaba House, Nai Sarak, Delhi. Chapters 3 to 12.
- (3) Methods and Techniques of teaching by S. K. Kocchar. Sterling Publishers Pvt. Ltd. Jullunder 1967. Chapters : 2, 3, 4, 5, 6.
- (4) अध्यापन पद्धतीची मूलतत्त्वे—गो. प्र. सोहनी, नीलकंठ प्रकाशन, पुणे.
- (5) अध्यापनशास्त्र व पद्धती—म. वा. कुंडले, व्हीनस प्रकाशन, पुणे.
- (6) सर्वसामान्य अध्यापन पद्धती—रु. रा. गद्रे, मॉडर्न बुक डेपो, पुणे

SECTION II**Methodology of Physical Education****Objectives :**

1. To develop skills necessary for :—
 - (a) understanding the movements involved in different activities.
 - (b) and specific physical and behavioural changes.
2. To develop skills necessary for making preparations for organising sports-meets and conducting them.
3. To plan different types of lessons for different physical activities major games and athletics.

Unit VI—

- (a) Place of P.E. in the curriculum,
- (b) Objectives of teaching Physical Education and their specifications.

Unit VII—

(a) Method of Teaching :—

Orientation, Verbal explanation, Demonstration, Exploration, Formal and informal, whole-part-whole method.

(b) Presentation Techniques in relation to Physical Education :—

Personal preparation, Technical preparation—presentation of subject matter, class management.

Unit VIII—Teaching of Physical activities :—

Games of high organisation (Major Games). Individual, dual, team games. Track and Field—Running, Jumping, Throwing, Gymnastics—Calisthenics. Rhythmic activities

*Unit IX—Lesson planning : important types of lessons—preparation, parts of a lesson.**Unit X—Methods of organising camps, hikes and varied programmes for different age groups.**Books Recommended*

1. Methods in Physical Education—Kozman, Cassidy and Jackson.
2. Method in Physical Education—C. Tirunaryanan and H. Hariharen.
3. Physical Education Lessons—J. P. Thomas.
4. Teaching of Physical Education in Secondary Schools—Fait.
5. Physical Education for Teachers—Barbara Churchur.

SECTION III

MARATHI

Objectives :

1. To enable the student-teacher to acquire a knowledge of :
 - (a) The importance of mothertongue in the education of a child.
 - (b) The objectives of teaching the mothertongue in schools.
 - (c) The effective means and methods worked out to achieve the goals.
2. To develop in the student-teacher the skills required for effective teaching of the mothertongue in secondary schools.
3. To develop among the student-teachers a favourable attitude towards the subject.

Unit 1—Present position of the Mother-tongue and its importance. Some cardinal principles of language learning.

Unit 2—Language learning oral work, writing, reading and introduction to literature; stages of pupil's development.

- Unit* 3—Objectives of teaching mother-tongue and standard aimed at in schools—comprehension, appreciation, expression, Understanding the form and construction of the language, planning of lesson in Prose, Poetry, Composition, Grammar, Dictation, etc.
- Unit* 4—Text-books as the chief means of instruction,
- Unit* 5—Reading—its types, model, oral, silent, intensive, extensive, supplementary and library reading.
- Unit* 6—Composition—its various types and their suitability to different stages. Correction.
- Unit* 7—Functional Grammar—and Formal Grammar—their place in schools.
- Unit* 8—Dictation and its importance. Correct spelling and Good-hand-writing.
- Unit* 9—Purpose of poetry. Methods of teaching Poetry. Recitation.

Books Recommended

1. Suggestions for the teaching of Mother-Tongue in India. (W. M. Ryburn) (POUF).
2. मराठीचे अध्यापन—अकोलकर-पाटणकर (व्हीनस प्रकाशन, पुणे),
3. मराठी भाषेचे अध्यापन—साठे (ठाकूर आणि कंपनी, अमरावती).
4. मातृभाषेचे अध्यापन—चंद्रकुमार डांगे (चित्रशाळा प्रकाशन, पुणे).
5. मराठी कवितांचे अध्यापन—फाटक (मॉडर्न बुक स्टॉल, पुणे).

HINDI

Objectives :

1. To enable the Student-teachers to understand the place of Hindi in Indian Life and culture.
2. To understand the objectives of teaching Hindi in our secondary schools.
3. To get familiarized with various methods of teaching to realise the objectives and to develop skills for efficient teaching.
4. To develop knowledge, skills and interests to become a competent teacher of Hindi.

Unit 1—The place of Hindi as a National Language. Its place in the curriculum and in life. Three language formula. Objectives of teaching Hindi in our secondary schools. The standards to be achieved at each class.

Unit 2—General Principles of language learning, Natural methods of learning a language—listening, understanding, conversation, writing, oral work, types of oral work.

Unit 3—Methods of teaching and Learning. Grammar-Translation method, direct method, West method, structural approach, co-operation of different methods, suitable method to be adopted.

- Unit 4*—The organisation of Hindi teaching in Schools. The stage at which it is to begin, time to be devoted, equipment necessary for the teaching of Hindi, Co-curricular activities with reference to Hindi.
- Unit 5*—Lesson Planning. Introductory lessons, prose lesson, poetry lesson, composition lesson (story through pictures, story from given outline, essay, letter, comprehension, etc.), grammar lesson.
- Unit 6*—Teaching of prose. Importance and objectives, selection of prose lessons, teaching points, methods to be used.
- Unit 7*—Teaching of poetry. Importance and objectives, criteria for selection of poems to various classes, teaching points, methods to be used.
- Unit 8*—Teaching of grammar. Place of Grammar in the teaching of a language, formal grammar, functional grammar, relation between Hindi Grammar and grammar of the mothertongue, different methods of teaching grammar.
- Unit 9*—Teaching of composition. Importance of oral and written composition, their relation, defects found in composition work and remedies to remove them, different methods of teaching composition (picture composition, story, essay, dialogue).
- Unit 10*—Reading. Reading-its types and importance, oral and silent, intensive and extensive, supplementary and collateral, Reading for pleasure-methods of teaching reading-rapid readers.

पुस्तकाली यादी :—

- (१) राष्ट्रभाषा की शिक्षा डॉ. श्री. ना. मुकर्जी
- (२) हिंदी की अध्यापन पद्धति—केपी. कुलकर्णी
- (३) राष्ट्रभाषा का अध्यापन ग. न. साठे.

ENGLISH

Objectives :

1. To enable the student-teacher to acquire a knowledge of
 - (a) The present position of English in the Indian school curriculum.
 - (b) The objectives of teaching English in Secondary Schools.
 - (c) the effective means, methods worked out, to reach goals.
2. To develop in the student-teacher the skills required for effective teaching of English in secondary schools.
3. To develop among the student-teacher a favourable attitudes towards the subject.

- Unit 1*—The place of English in school curriculum; objectives of teaching English in secondary schools, the stage at which to begin study, the time to be devoted, the standard of attainment.
- Unit 2*—Principles of foreign language study.
- Unit 3*—English speech, sound, accent and intonation, difficulties in pronunciation, standards of pronunciation and measures to achieve them.
- Unit 4*—Methods of teaching : 1. The Grammar Translation method, 2. Dr. West's new method; 3. The Direct method; 4. Structural approach, 5. The Eclectic method.
- Unit 5*—The initial stage, oral work, vocabulary, sentence patterns; handwriting, reading, composition.
- Unit 6*—Prose : Text-books, the reader as centre, oral and silent reading.
- Unit 7*—Poetry : Place of poetry teaching; objectives of teaching poetry; Selection of poems, the Approach to teaching of poetry.
- Unit 8*—Grammar : Place of Grammar teaching; formal & functional grammar, methods of teaching grammar, the difficulties of English structure, word order, sentence patterns, articles, prepositions, interrogation, negation, tenses, the passive voice, indirect speech.
- Unit 9*—Composition : Oral, written, forms of composition, correction of composition.
- Unit 10*—Supplementary Reading : objectives, content, procedure, the use of Library.
- Unit 11*—Place of Translation and paraphrase.
- Unit 12*—Teaching Aids : pictures, charts, filmstrips, the gramophone, the radio, the cinema, tape-recorder.
- Unit 13*—The place of language laboratory in Teaching of English.
- Unit 14*—Devices of Teaching : dramatization, debates, lectures, story-telling, games.

List of Books Recommended

- (1) The teaching of English in India—Thomson & Wyatt.
- (2) The teaching of English as a foreign language—Menon & Patel.
- (3) The teaching of English Abroad, I, II, III—F. G. French.
- (4) Teaching English—Frisby.
- (5) Techniques of language teaching—Willows.
- (6) English as a foreign language—Gatenby.
- (7) Lectures on Teaching English in India—Champion.
- (8) Structural approach to the teaching of English—B. D. Shriwastava.
- (9) The Principles of Language Study—Plamer.

MATHEMATICS

Objectives :

To enable the student-teacher.

1. To understand various concepts in Modern Mathematics.
2. To use various methods of teaching Mathematics effectively.
3. To understand the objectives of teaching Mathematics (with specifications).
4. To develop adequate skills in the preparation and use of teaching aids.
5. To use various tools of Evaluation.
6. To correlate Mathematics with other subjects.
7. To develop a Mathematical outlook.

Unit 1—Place of Mathematics in the school curriculum.
 (a) Nature and scope.
 (b) Importance.

Unit 2—Objectives of teaching Mathematics.
 (a) At the primary level.
 (b) At the Secondary level.

Unit 3—Methods of teaching Mathematics.
 (a) Deductive and inductive method.
 (b) Experimental method.
 (c) Analytical and synthetical method.
 (d) Heuristic method.

Unit 4—Instructional material.
 Planning learning experiences and preparing instructional material for the teaching of
 (a) Arithmetic.
 (b) Algebra.
 (c) Geometry and Trigonometry.
 (d) Modern Mathematics.

Unit 5—Planning for teaching of Mathematics.
 (a) Unit planning.
 (b) Year's planning.
 (c) Planning for day to-day teaching.

Unit 6—Teaching of certain topics.
 1. Arithmetic :
 (a) Developing the following concepts in Arithmetic.
 (1) Numbers and numerals.
 (2) Four fundamental operations.
 (3) Areas and volumes.
 (4) Weight and time.

- (5) Directed numbers.
 - (6) Graphical representation.
 - (7) Fractions-vulgar, Decimal & Percentages etc.
 - (8) Ratio, Proportion & variation.
 - (9) Sets, addition of sets & sub-sets.
- (b) Oral work in Arithmetic.
2. Algebra :-
- (a) Developing following concepts.
 - (1) Algebra as generalised Arithmetic.
 - (2) Function.
 - (b) Teaching of various topics.
 - (1) Brackets.
 - (2) Simple & Simultaneous equations.
 - (3) Graphs.
 - (4) Fractions.
3. Geometry :-
- (a) Three stages of the teaching of Geometry.
 - (1) Experimental.
 - (2) Deductive.
 - (3) Logical.
 - (b) Concepts of Similarity, congruency, equivalence and parallelism.
 - (c) Teaching of problems (riders) & construction in Geometry.
4. Trigonometry :-
Introducing ratios, problems in heights and distances.
5. Modern Mathematics.
- (a) Fundamental concepts in set theory.
 - (b) The use of number line.

Books Recommended

- (1) The teaching of Mathematics in new Education—Aiyangar.
- (2) The teaching of Arithmetic, Algebra and Geometry in Schools—Mathematics Association.
- (3) The teaching of Modern Mathematics—Fletcher.
- (4) गणिताचे अध्यापन—व. पां. देशमुख (मॉडर्न बुक डेपो, पुणे)
- (5) गणित कसे शिकवावे—ल. रा. मट्रे (लोकन्ठ प्रकाशन, पुणे).

SCIENCE

Objectives :

1. To make the student teacher familiar with the objectives of teaching Science.
2. To enable him to use various methods and techniques of teaching Science effectively.
3. To develop in him adequate in the preparation and use of suitable teaching aids.
4. To help him to organize co-curricular activities in Science.

Unit 1—Place of Science in life. Science in the present-set up in India. Place of Science in the school curriculum at various levels of education. Values of teaching the subject.

Unit 2—Objectives of teaching Science and their specifications.

Unit 3—(a) Approaches to teaching of Science—Historical, Biographical, Concentric, The Todic and Unit Plan Method.
 (b) Methods of teaching—Heuristic Method, Demonstration Method, Laboratory Method, Project Method.
 (c) Co-curricular activities such as Science club, Science fair etc.

Unit 4—(a) Laboratory : Equipment, Maintenance and Improvised apparatus.
 (b) Musium, aquarium, botanical garden, audiovisual aids, magazines, and bulletins.
 (c) Observation of the sky, visits to workshop, factories and fields.

Unit 5—Preparation of the Year's plan, the unit plan and daily lesson plan

Unit 6—Introduction of various concepts.
 (a) Friction, Density, Sp. Gravity, Pressure, Equilibrium, Centre of Gravity, Boiling point etc.
 (b) Hard and soft waters, atomic and molecular weight, periodic table, oxidation, reduction etc.
 (c) Germination, Osmosis, Photo-synthesis, etc.

Unit 7—Correlation of science subjects with one another and with other school subjects.

Books Recommended

1. The teaching of Science in Secondary School by Science Master's Association.
2. Hand book for Science Teachers in Secondary School by Gorden Nunn.
3. The Teaching of Physics and Chemistry in India by Ghanashamdas.
4. Source book of Science by UNESCO.
5. शास्त्र कैसे शिक्षावाचे—गो. प्र. सोहोनी.
6. शास्त्राचे अध्यापन—रु. रा. मन्ने.

GEOGRAPHY

General Objectives

1. To understand the aims and objectives of teaching Geography at the primary and secondary levels.
2. To understand the Geographic control on human life.
3. To acquire proficiency in using various methods of teaching Geography.
4. To develop adequate skills in preparation and use of educational aids in Teaching Geography.
5. To correlate Geography with other school subjects.
6. To promote National Integration and International Understanding.

Unit 1—Meaning and scope of Geography.

- (a) Development of the present concept of Geography.
- (b) The place of Geography in the school curriculum.

Unit 2—Objectives of teaching Geography and their specifications.*Unit 3*—Concepts of Geography : Geography as a—

- (a) Description of the Earth.
- (b) Study of Landscape—Physical and cultural.
- (c) Science of distribution on earth.
- (d) Study of casual relationship.
- (e) Study of spatial relationship.
- (f) Earth as the home of man and the interaction between man and his environment.

Unit 4—Correlation of Geography with other school subjects.

- (a) Importance of correlations.
- (b) Geography and History.
- (c) Geography and Science.
- (d) Geography and Arts and Crafts.

Unit 5—Selection of subject matter to suit pupils' interest at various stages.

- (a) Grammar of Geography.
- (b) Importance of Local Geography.

Unit 6—Planning for teaching.

- (i) Unit planning.
- (ii) Year's planning.
- (iii) Lesson planning.

Unit 7—Methods of Teaching Geography.

- (a) The Observation method.
- (b) The Story telling method.
- (c) The Journey method.
- (d) The Object method.
- (e) The Project method.
- (f) The Regional method.
- (g) The Laboratory method.

Unit 8—Equipment and Aids for learning Geography.

(a) (1) Black Board, (2) Globes, (3) Maps, (4) Atlases, (5) Charts, Models, (6) Pictures, (7) Specimens, (8) Epidiascope (9) Projector, (10) Radio, (11) Books, (12) Meteorological instruments, (13) Newspaper-Magazines.

(b) Equiping and using the Geography room.

Unit 9—(a) To understand the symbols and use them.

(b) To understand scale.

(c) To correctly imagine the actual geographic (condition).

Books recommended

(1) Geography in School—Fairgrive (U.L.P.)

(2) Hand-book of Suggestion on the Teaching of Geography (UNESCO)

(३) भूगोलाचे अध्यापन—प्रा. पाठनकर (मंडळने बुक हूपो, पुणे).

(४) भूगोल : अध्ययन आणि अध्यापन—डाॅ. बा. गो. वापट (अहीनस प्रकाशन, पुणे).

SECTION III

Methodology of School Subjects

HISTORY

Objectives :—

- (1) To help the student-teachers to acquire the basic understanding of the scope of History.
- (2) To develop in the student-teachers the ability to present the subject matter in the proper perspective.
- (3) To develop in the student-teachers the ability to have a realistic approach to the teaching of History.
- (4) To inculcate in the student-teachers the spirit of National Integration and International Understanding.
- (5) To help the student-teachers to develop in their students a broader and progressive outlook.

Unit 1—History : Its meaning and scope, Kinds of History.

Unit 2— Objectives of teaching History in Schools and their specifications.

Unit 3—Principles of curriculum construction and their application to History:

(a) Selection of historical fact,

(b) Organization of content : concentric, chronological, topical, regressive, biographical, source.

(c) Patterns of History-syllabus in India.

(d) The study of the syllabus for schools in Maharashtra State.

Unit 4—Methods of teaching History.

- (a) Verbal story telling, Dramatisation, Discussion, Lecture.
- (b) Project method.
- (c) Source method.
- (d) Problem method.
- (e) Text-book method.

Unit 5—Use of instructional material and other teaching aids.

- (a) (i) Booklets (ii) Source books (iii) Text books (iv) Historical source books.
- (b) Diagrams, models, charts, maps, puppets mobiles and graphs.
- (c) Films, filmstrips epidiascope.
- (d) Monuments, forts.
- (e) Time-line, time sense.

Unit 6—Planning for Teaching.

- (i) Unit plan, (ii) Year's plan. (iii) Lesson plan.

Unit 7—History and its correlation with other subjects.

- (a) History and Geography.
- (b) History and Civics and Administration.
- (c) History and Community Living.
- (d) History and Language.

Books Recommended

- (1) The Teaching of History—V. D. Ghate (Oxford Uni. Press).
- (2) The Teaching of History—Johnson (Macmillan Company).
- (3) इतिहासाचे अध्यापन—बोकोल (चित्रशाळा, पुणे).

COMMERCE

Objectives :

1. To acquaint the student-teachers with the objectives of teaching commercial subjects.
2. To develop necessary skills in the use and preparation of teaching aids.
3. To initiate the student-teachers to the various methods of teaching commercial subjects.

Unit 1—The scope and place of commercial subjects in the school curriculum.

Unit 2—Aims and objects of teaching commercial subjects in secondary schools.

Unit 3—Methods of teaching commercial subjects with emphasis on

- (a) Single commodity analysis.
- (b) Historical approach.
- (c) Occupational approach.
- (d) Applied economics approach.
- (e) Problem approach.

Unit 4—Different types of lessons in Elements of Commerce, Book-keeping, Shorthand and Typewriting.

Unit 5—Aids to teaching of commercial subjects.

- (a) Text-books.
- (b) Films and filmstrips.
- (c) Pictures, charts and maps.
- (d) Visits and Tours.
- (e) Actual illustrations from the field of business.
- (f) Commercial news reported in news papers.

Unit 6—Correlation of commercial subjects among themselves and with other school subjects, with emphasis on the following :—

- (a) Geography,
- (b) Arithmetic,
- (c) Civics.

Books Recommended

1. Teaching of Commerce—Lulla (Faculty of Edn. & Psy., Baroda.)
2. Principles of Business Education—Tolle.
3. Methods of Teaching Business subjects—Tolle and others.

APPENDIX II

Details of Practical Work (Part II)

(1) ATHELETICS

1. *Running Events :*
 100M. Run. 200M. Run. 400M. (for Men and Women)
 800M. Run. 1500M. Run, (For men only)
 (a) Starts; acceleration and finish of sprints.
 (b) Techniques of distance running.
2. *Jumps :*
 (a) Long-Jump—approach, take off, flight and landing.
 (b) High Jump—approach, take off, flight and landing.
 (c) Triple Jump (For men only).
3. *Throws :*
 (a) Javelin throw :—grip—carry—approach gather throw and Reverse.
 (b) Shot-put—Stance glide. Release—Reverse.
 (c) Discus throw grasp, Running-rotation.

4. Hurdles 110m. hurdles-start-take off, clearance, landing-speed between successive barriers :—
5. 4 × 100m Relay, baton-hold, running order, method of exchange and finish.

(2) GYMNASTICS FOR MEN AND WOMEN

Ground Gymnastics.

- (a) Simple Forward Roll; Double Roll; Through Vault Knee Mark; Long Reach; Heel Click; Skin and Snake through the legs; Dive and Roll; Camel Walk; Frog Balance; Frog leap, Novelty walk, Balance-bend, Knee-deep, Acro-drive, Strong-arm-hang, Cork-Screw, Horse hop.
- (b) Floor Exercises :—Forward roll and variations, back-roll and variations; forward-roll to squat, sit; Jump-up with arms to the basic stand. Jump and various turns; horizontal standing, sack on left leg; two three steps round off to track roll; dive roll; cartwheel, hand-stand hand-spring; simple leg-circle.

Pyramids :—Different formations to be practised for which suitable books may be referred to.

Gymnastics for Men

(a) Parallel bars

(A) Basic positions :

- (i) Straight arm support.
- (ii) Bent arm support.
- (iii) Straddle seat.
- (iv) Shoulder stand.
- (v) Forearm support.

(B) Exercises :

- (i) Swing in support.
- (ii) Swinging Dips.
- (iii) Straddle travel.
- (iv) Front dismount.
- (v) Uprise from forearm.
- (vi) ' J ' Support.
- (vii) Shoulder Roll.
- (viii) Rear dismount.
- (ix) Straddle of dismount at the end of bar.
- (x) Simple combination.

(b) Horizontal Bar**(A) Positions**

- (i) Simple hang.
- (ii) Front support.
- (iii) Knee hang.
- (iv) Piked inverted hang.
- (v) Back support.
- (vi) Various grasps: over, under combined etc.

(B) Exercises

- (i) Simple swing.
- (ii) Cast to a swing
- (iii) Upward circle.
- (iv) Hip circle.
- (v) Rear dismount.
- (vi) Knee upstart.
- (vii) Knee and split circle
- (viii) Upstart
- (ix) Simple combinations.

(c) Vaulting Horse

- (i) Sequential stages i.e. the Run, the take off, the flight, the landing.
- (ii) Straddle vault
- (iii) Cat Spring
- (iv) Squat vault
- (v) Stoop vault
- (vi) Head spring
- (vii) Neck spring.

(d) Rope Climbing

- (i) Chin up Rope.
- (ii) Climbing the rope using Foot and Leg lock.
- (iii) Climbing the rope using Stirrup.
- (iv) Cross leg climbing.
- (v) Climbing the rope about 15' to 20' high using hands only.

Exercises

- (i) Crouch, Seat, mount.
- (ii) Walk, half skips, jumps.
- (iii) Turns.
- (iv) V Seat

- (v) Seat
- (vi) One leg Squat.
- (vii) Leap and dismount.
- (viii) Forward Roll.
- (ix) Backward Roll.

(e) **Maikhamb**

- (i) Adhi (Leg holds) (Ascending).
- (ii) Jumps, Sadhi, Bagli, Supli, Khadi, Katar, Tabale Phad.
- (iii) Salami
- (iv) Tedhi (Leg holds course legged), Bagli, Sadhi, Gurupakkad, Nakikas.
- (v) Dasarang (Performing various exercises without coming on the floor).
- (vi) Firki (Rotating movements around the Malkhamb), firki of leg.
- (vii) Ghoda Udi—Ek-hati, Madhala.
- (viii) Wel (Inter circling around the Malkhamb)
- (ix) Sui Dora (Passing the legs through the middle of the hand grip)
- (x) Balances and ferare, Sadhicha, Bandar Pakad, Hanuman pakad, Baglichu.

GYMNASTICS FOR WOMEN only

(I) *Balancing beam :*

- (A) Basic positions—basic stand, basic sit, front-support-hang,
- (B) Exercises—(i) Crouch, Seat, mount,
- (ii) Walks, half-skip, skip.
- (iii) Turns
- (iv) V-Seat
- (v) Scale
- (vi) One-leg-squat
- (vii) Leap-off-dismount
- (viii) Forward Roll
- (ix) Backward Roll

(II) *Ballet-Exercises*

- (i) First, second, third and fourth positions.
- (ii) Lunge
- (iii) Turns

(III) *Uneven parallel bars*

Basic positions and simple exercises.

(3) **DEVELOPMENTAL EXERCISES; CALISTHENICS AND INDIVIDUAL EXERCISES**

As given in the NFC hand book and Handbook of Physical Activities for school boys—Ministry of Education, Other Suitable books may be referred to.

(4) DRILL AND MARCHING

Savdhan, Vishram: Aram Se, Jaise The; Line Ban; Dahine Saj; Baen Saj; Samne Dekh; Ginti Kar; Saj Ja; Qadam Tal; Dahine Mur; Baen Mur; Tej Chal, Tham; Swasthan (Break-Off).

Baith Jac; Khare Ho; Pichhe Mur (Dahine/Baen Mur); Adha Dahine / Baen Mur; Samne Siloot; Ek Line Ban; Do Tin Line Ban; Ginti Kar; Tartib Ho; Ek Line Men Kadwar Jama ho

Dhire Chal; Dhire Chalmen Tham; Dhire Chalmen; Kadam Tal; Dhire Kadam Tal se Age Barh; Dhire Chalmen Kadam Tal; Dhire Chal-se Tej Chal; Daur Ke Chal; Tej Chalmen Kadam Tal; Tej Chalmen Tham; Tej Kadam Tal Se Age Barh; Daur Chalmen Kadam Tal; Daur Chalmen Tham; Dhire Chalmen Dahine Mur; Dhire Chalmen Baen Mur; Dhire Chalmen Pichhe Mur; Tej Chalmen Dahine Mur; Tej Chalmen Baen Mur; Tej Chalmen Pichhe Mur.

Chhota Quadam; Lamba Quadam; Quadam Badal; Khuli Line Chal/Nikat Line Chal; Age Chal/Pichhe Chal; Do Quadam Dahine/Baen Chal; Dahine Aur Baen Ghoom; Tin Tinmen Tej Chal (Dahine/Baen se); Dahine Dekh/Baen Dekh; Dahine Silloot-Siloot; Baen Siloot-Siloot; Samne Siloot-Siloot.

Dhire Chal se Tej Chalmen Aa; Tej Chal se Dhire Chalmen Aa; Dahine aur Baen Disha Badal.

(5) YOGASANA

- | | |
|---------------|------------------|
| 1. Yogasana. | 3. Bandha Mudra. |
| 2. Prarayama. | 4. Prakriya. |
1. *Yogasana* :
- | | |
|-----------------------|---------------------------|
| (a) Sarvangasana. | (h) Matsyasana. |
| (c) Bhujangasana. | (d) Ardha Shalabhasana. |
| (e) Dhanurasana. | (f) Vajrasana. |
| (g) Paschimotanasang. | (h) Chakrasana. |
| (i) Mayurasana. | (j) Halasana. |
| (k) Vrikshasana. | (l) Bhadrasana. |
| (m) Shavasana. | (n) Shirishasana. |
| (o) Baddha Padmasana. | (p) Gomukhasana. |
| (q) Bakasana. | (r) Ardha Matsyendrasana. |
| (s) Supta-Vajrasana. | (t) Dhanurakarshan. |
| (u) Kukutasana. | (v) Uttan Kurmaasana. |
| (w) Sinhasan. | (x) Tolangulasan. |
2. *Prarayama* :
- | | |
|-----------------------------------|---------------|
| (a) Ujjayi | (b) Bhasrika. |
| (c) Anulomaviloma (अनुलोमविलोम) | |
3. *Bandha Mudra* :
- | | |
|---------------|-------------------|
| (a) Uddiyana | (b) Yoga Mudra. |
| (c) Jalandhar | (d) Ashwini Mudra |

4 *Prakriya :*

1. Presentation of entire technique or Asana.
2. Holding position for a specified time.

(6) LEZIM

Fundamental Position; Char Awaz; Ek Jaghye Adhi Lagaon; Pavitra; Do Rukh; Age Phalang; Pichhe Phalang.

Lezim Fakad; Lezim Ke Liye Hushayar; Dahine Baen Hath Harkat; Dahine Baen Pawa Harkat.

Age ki Harkat; Jhukna Harkat, Age Jhukna Harkat; Harkat Blarat Mata; Chakkar Aur Baithane Uthane Ki Harkat.

Morchal; Morchal-Age ki; Morchal Dahine aur Baen.

(7) COMBATIVES (For men only)

Compulsory. (A) Simple contests—Back to Back lift; Back to Back Push; Back to Back Stick Pull Away; Back to Back single stick pull; Back to Back Tug; Drake Fight; Elbow struggle, Hand Push, Hand Wrestle.

(B) Simple Contests (in pairs)—Knee Slap; Knock Over Club; Lame Duck Fight; Lifting Contest; Stool Tilting; Tyre Wrestling. Ring Wrestling; Fight for Lathi; Wand Pull.

Hold the neck; Slap the hand; Fight on beam, Standing Pull; Horse and Rider, Leg Typing; Squat Tug; Swatter Boxing; Individual Tug of War; Stick Wrestle; Cock Fight,

Take off the Tail; Push off the Bench; Push off the Stool; Push into pit; Neck pull and similar exercises.

(C) Mass Combats. King of the circle; Conversion Tag; Master of Ring; Mass Horse and Rider; Keep Them In; Keep Them Out; Snatch the Mat; Cane Rush; Storming the fort; King of the land; Tug of War; Rush-Tug of war.

Forcing the Gate : Break the wall; Smuggling; Prison Break.

(7) WRESTLING (For men)

1. Fundamental Techniques :

(i) Holds—Freestyle/Greco-Roman.

(ii) Techniques of—

(a) Break down.

(b) Reversals.

(c) Escapes.

(d) Pining holds.

(iii) Plan movements and approach for attack and defence.

(iv) Take down from standing positions.

II. Exercises

- (i) Exercises for co-ordination, strength, endurance speed, stamina, Agility.
- (ii) Exercises for various offensive and defensive and deceptive techniques.

(7) RHYTHMICS (for women only)

I. Simple Rhythmic Movements :

- (i) Walk, Run, leap, Hop, Jump, Skip, Slide, Gallop.
- (ii) Step hop
- (iii) Run 4 steps, walk 4 steps.
- (iv) Hop on right foot, 4 times; hop on left, 4 times.
- (v) Hop, 4 times in place, hop forward, 4 times.
- (vi) Left foot step, hop, slide to the left.
- (vii) Right foot step hop, slide to the right.

(II) Axial Movements

- (i) Flexion and extension; Bending and stretching.
- (ii) Twisting and turning.
- (iii) Swinging-Arms and torso movement.

(III) Motion

- (i) Arm and torso movement.
- (ii) Sitting stride position; raise slowly, to knee; support weight on knee and one hand.
- (iii) Vibratory.
- (iv) Back fall—recovery to knees, to feet.
- (v) Side fall—recovery to knees.
- (vi) Moving forward, backward, sideward, in a circle, zig-zag etc.
- (vii) Change of direction.

(IV) Various gestures (*Mudras*)

Various expressions.
Physical Expositions.

- (V) *Folk dances*—Indigenous festival dances suitable for women; Garba, Tipri dance, Koli nritya, Kisan nritya, Thakkarnrityy, Holi nritya, Guajrathi Nritya, Dances from different states of the country.

(8) (A) MAJOR GAMES

Foot Ball

(1) Fundamental Techniques :

- (1) Players' stance and Ball Controlling.
- (2) Dribbling.

7. *Passing :*
 (i) Passing practices in twos (ii) Through pass
 (iii) Direct pass (iv) Return pass
 (v) Back pass (vi) Overhead pass
 (vii) Deflection pass.
8. *Dodging :*
 (i) Dodging to the right (li) Dodging to the left
 (iii) Double dodging.
9. *Shooting :*
 From various angles.
10. *Corner, Penalty Corner, Penalty Strokes :*

BASKET BALL

1. *Fundamental Techniques :*
 (a) Player's stance and ball handling (b) Catching
 (c) Dribbling (d) Shooting
 (e) Rebounding (f) Foot work
 (g) Individual Defence (h) Individual Offence.
2. *Strategy :*
 (1) One-on-one situation (Offence & Defence)
 (2) Combined Defence :—
 (a) Slides and Switches (b) Out numbering
 (c) Sandwiching (d) Rebound Organisations
 (e) Man-to-man defence (f) Zone Defence
 (g) Combination.
3. *Combined Offence :*
 (a) Screens (b) Give and go
 (c) Criss Cross (d) Splitting the post
 (e) Out numbering (f) Offence against Man to Man
 (g) Offence against zone (h) Fast break
 (i) Auxillary plays (j) Set plays.

VOLLEY BALL

1. *Fundamental techniques :*
 (1) Player's stance—Receiving the ball and
 passing to team-mates—volleying over the net,
 (2) Foot work.
 (3) Blocking (single)
 (4) Smashing
 (5) Serving - Underhand - tennis-spin service—round hand.
 (6) Individual defence.
 (7) Individual Offence.

2. *Strategy :*

- (1) Blocking - Single - Double & Triple
- (2) Formation - W-System - forward & backward angle (Defensive)
- (3) Attacking formation.

KABADDI

1. *Fundamental Techniques :*

- (1) Raiders : use of hands in touching.
use of legs in touching.

- | | |
|--------------------------|-----------------------|
| (a) Touching with toe | (b) Sudden leg thrust |
| (c) Squat leg thrust | (d) Side kick |
| (e) Front kick | (f) Mule kick |
| (g) Aero or fly kick | (h) Cross kick |
| (i) Curve or circle kick | (j) Role kick. |

- (2) Jumping over an anti
- (3) Diving through the cover of anti.
- (4) Pushing aside an anti
- (5) Development of Cant.

2. *Anti's Techniques :*

- | | |
|-----------------------|---|
| (a) Ankle catch | (b) Ankle hold with spider spring |
| (c) Double ankle hold | (d) Knee catch |
| (e) Thigh catch | (f) Double thigh catch |
| (g) Trunk catch | (h) Bear Hug |
| (i) Fingers hold | (j) Back lift and Double arm hold |
| (k) Wrist hold | (l) The arm pit hold (kaichi not allowed) |
| (m) Cross leg hold | (n) Shoulder catch. |

3. *Strategy :*

- (1) Back line game
- (2) Baulk line game
- (3) Single chain.
- (4) Double chain
- (5) Defence formations.

KHO-KHO

1. *Fundamental Techniques :*

- (1) Chaser's Stance : Chasing and touching the opponent
- (2) Chaser's footwork - diving
- (3) Clockwise or anticlockwise movements around the pole.
- (4) Defenders dodging and feining movements.

2. *Strategy :*

- (1) Single chain
- (2) Double chain
- (3) Round play
- (4) Double chain and round play (combination)
- (5) Pole to pole running
- (6) Parallel chain
- (7) Selecting the ordering of sitting.

CRICKET

1. *Fundamental Techniques*
 - (i) Stance, grip and back lift.
 - (ii) Drives of the front foot.
 - (iii) Hook and pull shots.
 - (iv) The cuts of the front foot and back foot.
 - (v) Leg glance (front foot and back foot).
2. *Balling*
 - (i) Run-up, basic action and follow through.
 - (ii) Spin balling.
 - (iii) Swing-balling.
3. *Fielding in various positions*

(i) In defence	(ii) In attack
(iii) Interception	(iv) Catching
4. *Wicket-keeping*
 - (i) Stance.
 - (ii) Taking the ball on, off, overhead and leg side etc.
 - (iii) Taking returns from fielders.
5. *Batting*
 - (i) Drives of front and back-foot.
 - (ii) Square cuts.
 - (iii) Pull strokes.
 - (iv) Defensive and offensive strokes.
6. *Strategy*
 - (i) Offensive placement of fielders.
 - (ii) Defensive placement of fielders.
 - (iii) Use of fast and spin ballers.

SOFT BALL

- | | |
|-------------------|------------------|
| (i) Running, | (ii) throwing, |
| (iii) pitching, | (iv) batting, |
| (v) catching. | |

RING TENNIS

- | | |
|-------------------------|---------------------------|
| (i) Holding the ring, | (ii) Service. |
| (iii) Catching, | (iv) Throwing the ring. |

NET BALL

- | | |
|--------------------------------|------------------|
| (i) Stance and ball handing, | (ii) Catching, |
| (iii) Shooting, | (iv) Footwork, |
| (v) Defence, | (vi) Passing. |

BADMINTON

Fundamental Techniques :

- (1) Holding the racket.
 (a) Fore hand grip. (b) Back hand grip.
- (2) Holding the shuttle cock.
 (a) Mid grip. (b) Base grip.
- (3) Footwork for various strokes.
 (a) Basic strokes. (b) Fore hand stroke.
 (c) Back hand stroke. (d) Over hand stroke.
 (e) Round the hand stroke.
- (4) Basic shots.
 (a) Smash. (b) Lob Toss or clear.
 (c) Net shot. (d) Drive.
- (5) Single Service.
 (a) High Lob Service. (b) Low service.
 (c) Medium service.
- (6) Double service.
 (a) Low or short service (b) Drive or shooting service.
 (c) High flick service.
- (7) Receiving.
 (a) Short service. (b) High service.
 (c) Drive service (d) Flick service.
- (8) (B) *Minor Games and Relays* :—
 As given in N.F.C. hand-book. Other suitable books may also be referred to.
- (8) (C) *Tests* :—
 As given in the National Physical Efficiency Drive pamphlet of the Union Ministry of Education and Social Welfare.

First Aid Training

As per St. John Ambulance Ass. Certificate Course.

Camps

A seven days camp should be organised to enable the student-teachers to organise and conduct camps for school children.

Recommended Books for Practical work

The following Books should be used in addition to those recommended under Paper IV.

- (1) First-aid. (St John Ambulance Ass. Book).
 (2) Camping and Education—Dr. L. K. Govindarajulu.
 (3) The National Fitness Corps—Syllabus } Ministry of Education.
 for secondary schools.

- (4) Guide to 666 Games for Boys—Thomas M. Hawtin.
- (5) National Physical Efficiency Drive—Ministry of Education.
- (6) All Publications of the Netaji Subhash—National Institute of Sports, Patiala.
- (7) Games contest and relays—Staley, H. C
- (8) सचित्र शालेय योगाभ्यासक्रम महाराष्ट्र शासन.
- (9) आरोग्य शिक्षण (शिक्षकांसाठी)—महाराष्ट्र राज्य पाठ्य पुस्तक मंडळ.
- (10) Syllabus for Std. VIII to XI—Maharashtra State Board of Secondary Education.
- (11) Hand-book of Physical Activities for Schools by the Ministry of Education.

APPENDIX III

List of Equipment (Recommended)

1. Athletic Equipment :—

1. High jump stands—one pair—cross bar—12, bamboo bar—12.
2. Takeoff boards (wooden)—2 Nos.
(one for long jump, one for triple jump)
3. Polevault box-1, 6 Pole vault poles -Pole vault Stand—One pair.
Cross bar 12, 1 levelling rack and 1 spade.
4. Starting pistol and clappers.
5. Measuring tapes 30 mts.-4, 50 mts.-1, and 3 mts.-1.
6. One link chain for marking the track, one rope marking.
7. Stop watches (1/10 second—atleast-9 Nos. 1/5 second 2 watches).
8. Starting blocks (8 Nos) Hammer for fixing blocks—2 Nos.
9. Hammer for Hammer throw (16 lbs—2 Nos)
(12 lbs—2 Nos)
One iron ring for fixing in the ground.
10. Stopboard for shotput (1 No. 1 iron ring for fixing in the ground)
Shot put—16 lbs—6
8 lbs—6
6 lbs—4
4 lbs—2
11. One ring for Discus
Discus (Men size)—6 Nos.
Discus (Boys' size)—6 Nos.
Discus (Women size)—6 Nos.
12. Javelin bamboo (Male)—12 Nos.
(Female)—12 Nos.
13. Relay batons—8 Nos.

14. Magaphone, 24 flags for track and flag sticks, **chunam**.
15. Chest Nos—and badges for officials, Victory stand, Finish posts—2 Nos. Finish yarn, score boards.
16. Hurdles (at least 10 Nos.).

2. *Games* :—

1. Foot Ball : Goal posts with Nets (2), Foot balls 12, corner flags.
2. Hockey : Hockey goal post with Nets (2) and back boards 4, leg guards for Gollies—Hockey balls, Hockey sticks as per requirements.
3. Basket ball : Basket ball post—boards & rings (complete set) 2 Nets, 12 Basket balls, 1 stop & go watch, scoring books—2.
4. Volley ball : Volley ball posts with nets (2 sets)
12 Volley balls, two referee's chairs.
5. Badminton : Badminton posts—2 Net—2 sets, Badminton Rackets & shuttlecocks as per requirement.
6. Cricket : Cricket Mat, Stumps (6 nos.)—Bats 8 to 10, Balls 6 dozen, batsmens gloves 1 dozen, wicketkeepers gloves Nails for Fixing Mats—Scoring books Cricket Net.
7. Tennis : Tennis Net at least 2 sets, Rackets, Tennis balls.
8. Kho—kho : 4 posts.
9. Table Tennis : Tables & nets 2 sets, rackets as per requirement.
10. Kabaddi : Nil.

Equipment—for other games as per requirements.

3. *Gymnastics* :—

- Double bar, Single bar, Vaulting Horse, unequal parallel bars,
Balancing beam—1 Mattresses, 15 Nos.
Medicine balls—12 lbs—1 dozen
8 lbs—1 dozen
10 lbs—1 dozen
10 lbs—1 dozen
- Climbing rope (25 ft. ht) (4)
Roman Rings—1 set.
Magnesium carbonate—6 packets,
Sand Paper—1 dozen.
Buck horse, spring board, Beat board.
Wall bars set.
Weight lifting set.
Malkhamb poles of two standard size at least 3, of each.
Stands for D (12 pairs)
Mirrors of different sizes (6).

4. *Cultural Activities* :—

Front Curtain, Back Curtain, Wings, Ghungree, Spot light (Flood light), Foot light equipment, Uniforms for Community Songs, Custumes for Folk—Dances (men

and Women. Harmonium, Tabla, Dhol, Flute, Jhanj, Violin, Halgies, One set of Band, Khanjiri, Cymbal with a stand, Steel Tringle.

5. *Health Education and Dispensary Equipment* :--

Spirometer, Blood Pressure apparatus, First-aid boxes, weighing machine and other equipment for medical inspection and Physical Efficiency Tests, Height Measuring stand, Plumb Line for posture, well equipped physiotherapy room.

6. *Band Equipment* :--

Flutes-9, Cymbal-1, Steel Triangle-1, Base Drum Small-1, Tenner Drums-2, Side Drums-3, Bugles-3, Base Drum small sticks-1 pair, Tenner Drums Sticks-2 pairs, Side Drum Sticks-3 pairs, Practice Stick-6 pairs, Drum measuring stick small No. 1, Base Drum Ceiling No. 2, Side Drum Ceiling No. 3.

7. *Playground Accessories* :

Shovels, Pick axes, Ghamelas, Levelling rakes, spades, Garies Axes, Watering cans, Buckets, Rope, Wheel barrow, Roller, Khurpas.

8. *Other requirements for Athletics* :--(Recommended)

Hammer Cage, Line-marking machine, Pegs and Nails, Megamike, Levelling rake and spade, etc.

9. *Miscellaneous* : -

Wooden potatoes, stands for Dands, wall hangers, Weighing balance, Weight-lifting set, Chest numbers, Cong:bell, Knee Caps, anklets, Water-bottles, Haversacks, Tubes for Swimming, Field Bandages, etc.

Printed at : THE POONA UNIVERSITY PRESS, GANESHKHIND, PUNE-411 007;

Printed & Published by : Shri S. P. Bhosale, Registrar,
University of Poona, Ganeshkhind, Pune-411 007.

[500-8-83 (512)]