

THE UNIVERSITY OF BURDWAN



Syllabus

For

B.A. /B.Sc. 3-Year (General) Degree Course in
Physical Education

w.e.f. 2015-16 onward

REVISED IN 2015 : TO BE EFFECTIVE FROM THE ACADEMIC SESSION 2015-2016 AND REALLOCATION OF PAPERS FOR PART I, PART II & PART III AS PER THE RESOLUTIONS ADOPTED IN THE MEETING OF THE U.G. BOARD OF STUDIES IN PHYSICAL EDUCATION HELD ON 01.06.2015 AT RAJBATI, THE UNIVERSITY OF BURDWAN.

**The University of Burdwan
Burdwan-713104, West Bengal**

B.A. / B.SC. 3-YEAR (GENERAL) DEGREE COURSE IN PHYSICAL EDUCATION

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Section 1: Course Structure

Exam Pattern	Type	Paper	Title of the Paper	Marks	Minimum No. of Lectures Required	Exam Time
Part- I	Theoretical	I	Unit- I: Principles and Foundation of Physical Education Unit- II: History of Physical Education Unit- III: Anatomy and Physiology Unit- IV: Organisation and Administration of Physical Education and Sports	100	100	3 Hours
Part- II	Theoretical	II	Unit- I: Health Education and Dietetics Unit- II: Exercise and Sports Physiology Unit- III: Sports Psychology Unit- IV: Test, Measurement and Evaluation in Physical Education	100	100	3 Hours
	Practical	III	Unit- I: Practical in Field Unit- II: Practical in Laboratory	100	-	5 Hours
Part- III	Theoretical	IV-A	Unit- I: Sports Training Unit- II: Therapeutic Aspect of Physical Education Unit- III: Recreation and Adapted Physical Education	65	65	3 Hours
	Practical	IV-B	Practical	35	-	3 Hours

Section 2: Syllabus with Details of Marks Division

PART- I

Paper- I

Full Marks: 100

Examination Time: 3 Hours

Unit- I: Principles and Foundation of Physical Education (25 Marks)

1. Meaning and definition of Physical Education. Aim and objectives of Physical Education. (6 Lectures)
2. Importance of Physical Education in modern society. (3 Lectures)
3. Biological basis of Physical Education (10 Lectures)
 - 3.1 Meaning and definition of growth and development. Factors affecting growth and development. Principles of growth and development.
 - 3.2 Chronological age, anatomical age, physiological age and mental age.
 - 3.3 Age and sex differences (Anatomical & Physiological) in relation to physical activities and sports.
 - 3.4 Somatotype- meaning and history, Sheldon and Heath & Carter's methods.
4. Sociological basis of Physical Education (6 Lectures)
 - 4.1 Meaning and definition of Sociology. Social values of sports in modern society. National and International integration through physical education and Sports.
 - 4.2 Leadership: Meaning, Definition and Type of leadership. Qualities of good leader.

Unit- II: History of Physical Education (25 Marks)

5. Historical development of Physical Education and Sports in India (7 Lectures)
 - 5.1 Pre-Independence period:
 - 5.1.1 Hindu Period (600 BC – 1000AD)
 - 5.1.2 Medieval Period (1000 AD – 1757 AD)
 - 5.1.3 British Period (1757 AD – 1946 AD)
 - 5.2 Post-Independence period
6. Olympic Movement (6 Lectures)
 - 6.1 Ancient Olympic Games
 - 6.2 Modern Olympic Games
7. Brief historical background of Asian Games and Commonwealth Games. (6 Lectures)
8. National Sports Awards (6 Lectures)
 - 8.1 Arjuna Award
 - 8.2 Rajiv Gandhi Khel Ratna Award
 - 8.3 Dronacharya Award

Unit- III: Anatomy and Physiology (25 Marks)

- 9. Introduction (2 Lectures)
 - 9.1 Meaning and definition of Anatomy and Physiology.
 - 9.2 Need for knowledge of Anatomy and Physiology in the field of Physical Education.
- 10. Levels of organisation of Human Body (3 Lectures)
 - 10.1 Concepts of Cell, Tissue, Organ and System
 - 10.2 Microscopic structure and function of cell
- 11. Skeletal System (5 Lectures)
 - 11.1 Different parts of human skeleton and their functions
 - 11.2 Type of bones.
 - 11.3 Nomenclature and classification of joints. Movements take place around different type of joints.
- 12. Muscular System (5 Lectures)
 - 12.1 Function and type of muscle
 - 12.2 Microscopic structure of skeletal muscle
 - 12.3 Name of major muscles of the human body
- 13. Circulatory System (5 Lectures)
 - 13.1 Anatomical position and gross structure of heart.
 - 13.2 Physiology of blood circulation.
- 14. Respiratory System (5 Lectures)
 - 14.1 Different organs associated with respiratory system.
 - 14.2 Structure and functions of Lungs.

Unite- IV: Organisation and Administration of Physical Education and Sports (25 Marks)

- 15. Organisation and Administration: Meaning and definition. (5 Lectures)
 - 15.1 Elements of Organisation and Administration in Physical Education
 - 15.2 Guiding principles of Organisation and Administration in Physical Education
 - 15.3 Method of organising Annual Athlete Meet and Play Day.
- 16. Tournaments: Meaning and definition. (16 Lectures)
 - 16.1 Types of tournaments
 - 16.1.1 Knock-out
 - 16.1.2 League
 - 16.1.3 Combination
 - 16.1.4 Challenge
 - 16.2 Procedure of drawing fixture
 - 16.3 Merits and demerits of Knock-out and League tournament
- 17. Importance and maintenance of play ground and gymnasium. (2 Lectures)
- 18. Care and maintenance of sports equipments. (2 Lectures)

PART- II

Paper- II

Full Marks: 100

Examination Time: 3 Hours

Unit- I: Health Education and Dietetics (25 Marks)

1. Meaning and definition of Health and Health Education. Principles of Health Education. Importance of Health Education. (3 Lectures)
2. Health Agencies (6 Lectures)
 - 2.1 World Health Organization (WHO)
 - 2.2 United Nations Educational Scientific and Cultural Organization (UNESCO)
 - 2.3 Indian Council of Medical Research (ICMR)
 - 2.4 Ministry of Health and Family Welfare (MHFW)
3. Meaning and definition of nutrition and food. Types of food: Proximate principle of food (carbohydrate, protein and fat) and Protective principle of food (vitamins, mineral salts and water) - sources of food (plants and animals), role in food and deficiency symptoms. (7 Lectures)
4. Diets (5 Lectures)
 - 4.1 Balance diet- Meaning, definition and characteristics.
 - 4.2 Factors affecting diet.
 - 4.3 Malnutrition: Definition, causes and effects.
5. Doping: Meaning and definition (4 Lectures)
 - 5.1 Anabolic Steroids
 - 5.2 Blood doping
 - 5.3 Beta-blockers

Unit- II: Exercise and Sports Physiology (25 Marks)

6. Meaning and definition of exercise and sports physiology. (3 Lectures)
7. Effect of exercise on muscular system. (6 Lectures)
8. Effect of exercise on cardiovascular system. (6 Lectures)
9. Effect of exercise on respiratory system. (6 Lectures)
10. Physical fitness: Health and Performance oriented physical fitness (4 Lectures)

Unit- III: Sports Psychology (25 Marks)

11. Introduction (3 Lectures)
 - 11.1 Meaning and definition of Sports Psychology.
 - 11.2 Need for knowledge of Sports Psychology in the field of Physical Education.
12. Learning (10 Lectures)
 - 12.1 Meaning, definition and nature of learning.
 - 12.2 Theories of learning
 - 12.3 Laws of learning
 - 12.4 Learning curve: Meaning, Type and Characteristics

- 12.5 Transfer of learning
 - 12.5.1 Meaning, Definition and Type
 - 12.5.2 Factors affecting transfer of learning
- 13. Motivation (4 Lectures)
 - 13.1 Meaning, Definition and Type
 - 13.2 Importance of Motivation in Physical Education and Sports
- 14. Emotion (4 Lectures)
 - 14.1 Meaning, Definition and Type
 - 14.2 Importance of Emotion in Physical Education and Sports
- 15. Personality (4 Lectures)
 - 15.1 Meaning, Definition and Type
 - 15.2 Personality traits
 - 15.3 Role of physical activities in the development of personality

Unit- IV: Test, Measurement and Evaluation in Physical Education (25 Marks)

- 16. Introduction (2 Lectures)
 - 16.1 Meaning and definition of test, measurement and evaluation
 - 16.2 Importance of test, measurement and evaluation in Physical Education and Sports
- 17. Criteria for selecting tests (4 Lectures)
- 18. Measurement of Cardio-vascular Endurance (4 Lectures)
 - 18.1 Harvard Step Test
 - 18.2 Cooper 12-minute Walking-Running Test
- 19. Measurement of Physical Fitness and Motor Fitness Test (6 Lectures)
 - 19.1 AAHPER Youth Physical Fitness Test
 - 19.2 Oregon Motor Fitness Test
- 20. Measurement of Body Composition: Method of measuring body density, % body fat, lean body mass (5 Lectures)
- 21. Measurement of Sports Skills (4 Lectures)
 - 21.1 Russel-Lange Volleyball Test
 - 21.2 McDonald Soccer Skill Test
 - 21.3 Lockhart and McPherson Badminton Skill Test

PART- II

Paper- III (Practical)

Full Marks: 100

Examination Time: 5 Hours

Unit- I: Practical in Field (Full Marks 80)

1. ATHLETICS (15 Marks)

1.1 Track Events

- 1.1.1 Starting techniques: Standing Start, Crouch Start and its variations, Use of Block.
- 1.1.2 Acceleration with proper running techniques.
- 1.1.3 Finishing technique: Run Through, Forward Lunging, Shoulder Shrug.

1.2 Field Events

- 1.2.1 Long Jump: Approach run, Take-off, Flight in the air (Hang Style/Hitch Kick) and Landing.
- 1.2.2 High Jump: Approach run, Take-off, Bar clearance (Straddle Role) and Landing.
- 1.2.3 Shot Put: Holding the Shot, Placement, Initial Stance, Glide, Delivery Stance and Recovery. (O'Brien technique)
- 1.2.4 Discus Throw: Holding the Discus, Initial Stance, Primary Swing, Turn, Release and Recovery.
- 1.2.5 Javelin Throw: Grip, Carry, Release and Recovery.

[Note: Track event is compulsory (5 Marks) and one Jumping event (5 Marks) and one Throwing event (5 Marks) from the Field events.]

2. GYMNASTICS (10 Marks)

2.1 Compulsory (5 Marks)

- 2.1.1 Forward Roll
- 2.1.2 T-Balance
- 2.1.3 Split
- 2.1.4 Backward Roll
- 2.1.5 Cart-Wheel

[Note: Perform the above Gymnastic skills continuously in the same sequence]

2.2 Optional any two (2.5+2.5=5 Marks)

- 2.2.1 Hand Spring
- 2.2.2 Neck Spring
- 2.2.3 Head Spring
- 2.2.4 Dive Roll
- 2.2.5 Hand Stand followed by Roll
- 2.2.6 Somersault

3. YOGASANA

(10 Marks)

3.1 Standing Position

3.1.1 Ardhachandrasana

3.1.2 Padahasthasana

3.1.3 Brikshasana

3.2 Sitting Position

3.2.1 Ardhakurmasana

3.2.2 Paschimottanasana

3.2.3 Gomukhasana

3.3 Supine Position

3.3.1 Setubandhasana

3.3.2 Halasana

3.3.3 Matsyasana

3.4 Prone Position

3.4.1 Bhujangasana

3.4.2 Salvasana

3.4.3 Dhanurasana

3.5 Inverted Position

3.5.1 Sarbangesana

3.5.2 Shirsasana

3.5.3 Bhagrasana

[Note: One Asana is compulsory from each position (2×5=10 Marks)]

4. MAJOR GAMES

(30 Marks)

4.1 Ball Games

(Any One- 10 Marks)

4.1.1 Basketball

- Passing Techniques: Two hand chest pass, Two hand bounce pass, Side arm pass, Over head pass, Hook pass.
- Receiving Techniques: Two hand receiving, One hand receiving, Receiving while running, Receiving while jumping.
- Dribbling: How to start dribble, How to stop dribble, Running with high and low dribble.
- Shooting: One hand set shot, One hand jump shot, Lay-up shot and its variations.
- Game practice with application of Rules and Regulations.

4.1.2 Football

- Kicking: Instep kick, Inside kick, Lifted kick, In-swing kick, Out-swing kick.
- Receiving: Sole receive, Inside receive, Instep receive, Thigh receive, Chest receive.
- Dribbling: Inside dribbling, Outside dribbling, Zig-zag dribbling.
- Heading and Throw-in: Short & Long.
- Goal Keeping
- Game practice with application of Rules and Regulations

4.1.3 Handball

- Gripping/Catching/Receiving Technique

- Passing Technique: Shoulder pass, Chest pass, Under hand pass, Over head pass, Bounce pass, Reverse pass.
- Goal Shooting: Side shot, Jump shot, Jump and fall shot, Bounce shot.
- Bouncing/Dribbling
- Blocking and Goal Keeping
- Game practice with application of Rules and Regulations

4.1.4 Volleyball

- Service: Under arm service, Side arm service, Tennis service, Floating service.
- Pass: Under arm pass, Over head pass.
- Spiking and Blocking
- Game practice with application of Rules and Regulations.

4.2 Indian Games

(Any One- 10 Marks)

4.2.1 Kho-Kho

- Attacker/Chaser's Skills: Sitting in the box (Bullet & Parallel Toe Method), Giving Kho (Early Kho, Late Kho, Judgment Kho), Pole Turning, Taping, Pole Dive, Monkey Style.
- Defender/Runner's Skills: Single Chain, Double Chain, Mixed Chain and Ring Play.
- Game practice with application of Rules and Regulations.

4.2.2 Kabaddi

- Attacker/Raider's Skills: Cant, Hand Touching, Toe Touching, Squat Leg Thrust, Side Kick, Mule Kick.
- Defender/Anti's skills: Ankle Catch, Knee Catch, Thigh Catch, Waist Catch, Hand Catch, Bear Hug.
- Game practice with application of Rules and Regulations.

4.3 Racket Games

(Any One- 10 Marks)

4.3.1 Badminton

- Racket parts, Racket grips, Shuttle grips.
- Service: Short service, Long service, Long-high service.
- Shots: Over head shot, Defensive clear shot, Attacking clear shot, Drop shot, Net shot, Smash.
- Game practice with application of Rules and Regulations.

4.3.2 Table Tennis

- Grip of the Racket: Shake Hand Grip, Pen Hold Grip
- Stance: Square, Parallel
- Push and Service: Backhand, Forehand
- Chop: Backhand, Forehand
- Receive: Push and Chop with both Backhand & Forehand
- Game practice with application of Rules and Regulations.

5. First-aid Practical

(5 Marks)

- 5.1 Triangular Bandage:
- Slings: Arm Sling, Collar & Cuff Sling
 - Bandaging: Scalp, Forehead, Chest
- 5.2 Roller Bandages: Simple Spiral, Reverse Spiral, Figure of Eight, Spica
For tying bandage 'REEF KNOT' must be always used.

[Note: One from each Bandage (2.5×2=5 Marks)]

6. Record Book and Viva-Voce

(8+2 = 10 Marks)

- 6.1 History
- 6.2 Field measurements with suitable diagram
- 6.3 Major tournaments
- 6.4 Name of 10 personalities (national & International)
- 6.5 Achievement of India in International level
- 6.6 Major skill with suitable diagram and part explanation

Unit- II: Practical in Laboratory

(20 Marks)

1. Practical in Physiological Laboratory

(10 Marks)

- 1.1 Measurement of pulse rate & respiratory rate in rest & exercise condition
- 1.2 Measurement of blood pressure
- 1.3 Measurement of:
- Strength- Grip Dynamometer Test
 - Power- Sargent Jump Test
 - Flexibility- Sit and Reach Test
- 1.4 Measurement of vital capacity
- 1.5 Measuring Physical Efficiency Index by Harvard Step Test

2. Practical in Kin-Anthropometry Laboratory

(10 Marks)

- 2.1 Body Mass Index
- 2.2 Body Density (Males: Jackson & Pollock- 1978 Seven Sites; Females: Jackson et al.- 1980 Seven Sites)
- 2.3 % Body Fat (Siri 1956)
- 2.4 Lean Body Mass
- 2.5 Somatotype (Heath-Carter- 1990)

PART- III
Paper- IV
Group- A (Theory)

Full Marks: 65

Examination Time: 3 Hours

Unit- I: Sports Training (25 Marks)

1. Introduction to Sports Training (5 Lectures)
 - 1.1 Meaning and definition of Sports Training
 - 1.2 Aim and Characteristics of Sports Training
 - 1.3 Principles of Sports Training
2. Training Load and Adaptation (7 Lectures)
 - 2.1 Meaning and Definition of load and adaptation
 - 2.2 Type and Components training load
 - 2.3 Causes and symptoms of over load
 - 2.4 Principles of load
 - 2.5 Relationship between load and adaptation
3. Training Methods (7 Lectures)
 - 3.1 Continuous training methods
 - 3.1.1 Slow Continuous method
 - 3.1.2 Fast Continuous method
 - 3.1.3 Variable Pace method
 - 3.1.4 Fart-lake training method
 - 3.2 Interval training method
 - 3.2.1 Intensive Interval training method
 - 3.2.2 Extensive Interval training method
 - 3.3 Circuit training method
4. Training Programming (6 Lectures)
 - 4.1 Meaning, Definition and types of Periodisation
 - 4.2 Aims and contents of different periods

Unit- II: Therapeutic Aspect of Physical Education (25 Marks)

5. Introduction (4 Lectures)
 - 5.1 Meaning and definition of physiotherapy
 - 5.2 Need for the knowledge of Physiotherapy in the field of Physical Education and Sports
6. Hydrotherapy- meaning and definition (4 Lectures)
 - 6.1 Cryo-therapy
 - 6.2 Contrast bath
7. Heat therapy (4 Lectures)
 - 7.1 Hot Pack
 - 7.2 Wax bath

- 8. Electro therapy (4 Lectures)
 - 8.1 TENS
 - 8.2 Ultra-sound wave
- 9. Yoga as a therapy (2 Lectures)
- 10. Massage therapy (4 Lectures)
 - 10.1 Meaning, definition and type of massage
 - 10.2 Principles and Contradictions of massage
- 11. Sports Injuries (3 Lectures)
 - 11.1 Meaning, Definition, Types, Symptoms and Treatment of common sports injuries
 - 11.1.1 Sprain
 - 11.1.2 Strain
 - 11.1.3 Fracture
 - 11.1.4 Dislocation
 - 11.2 Immediate care of Injuries- PRICE

Unit- III: Recreation and Adapted Physical Education (15 Marks)

- 12. Recreation (7 Lectures)
 - 12.1 Meaning, Definition and Type of recreation
 - 12.2 Importance of recreation in modern society
 - 12.3 Recreation providing agencies
- 13. Adapted Physical Education (8 Lectures)
 - 13.1 Meaning, Definition and Objectives of Adapted Physical Education
 - 13.2 Disability: Meaning, Definition and Type. Physical exercise programme for different type of disable.

PART- III
Paper- IV
Group- B (Practical)

Full Marks: 35

Examination Time: 3 Hours

1. Practical in Physiotherapy Laboratory (10 Marks)

1.1 Use of Hydrotherapy Modalities

1.1.1 Cryo-therapy

1.1.2 Contrast bath

1.2 Use of Heat therapy Modalities

1.2.1 Hot Pack

1.2.2 Wax bath

1.3 Use of Electro therapy Modalities

1.3.1 TENS

1.3.2 Ultra-sound wave

1.4 Massage technique

1.4.1 Effleurage

1.4.2 Kneading

1.4.3 Friction

1.4.4 Cupping

1.4.5 Beating

1.4.6 Vibration

[Note: One from each group (2.5×4=10 Marks)]

2. Practical in Psychological Laboratory (5 Marks)

2.1 Reaction Time

2.2 Mirror Drawing

2.3 Anticipatometer

2.4 Depth Perception

[Note: Any Two (2.5×2= 5 Marks)]

3. Project Work (Written Project Report: 6 + Viva-Voce: 4 = 10 Marks)

3.1 Subjects: Physical Fitness Components, Body composition and Somatotype, Educational Tour, Leadership Camp

3.2 Guidelines:

- Project Report is to be Hand-Written
- Text of the Report should not exceed 1500 words
- Diagrams and Photos should not exceed 10

3.3 Project Report Format:

- Introduction

- Procedure
- Results
- Conclusions
- References

4. Computer application in Physical Education and Sports

(10 Marks)

4.1 MS Word

4.2 MS Excel

4.3 MS Power Point

4.4 Information and Communication Technology

Section 3: References

PAPER- I

Principles and Foundation of Physical Education

1. Bucher, C. A. (n.d.) Foundation of physical education. St. Louis: The C.V. Mosby Co.
2. Deshpande, S. H. (2014). Physical Education in Ancient India. Amravati: Degree college of Physical Education.
3. Nixon, E. E. & Cozen, F.W. (1969). An introduction to physical education. Philadelphia: W.B. Saunders Co.
4. Obertuffer, (1970). Delbert physical education. New York: Harper & Brothers Publisher.
5. Sharman, J. R. (1964). Introduction to physical education. New York: A.S. Barnes & Co.
6. William, J. F. (1964). The principles of physical education. Philadelphia: W.B. Saunders Co.
7. Singh, A. et al. (2010) Essential of Physical Education. Kalyayani Publishers.

History of Physical Education

1. Osborne, M. P. (2004). Magictree house fact tracker: Ancient Greece and the Olympics: a nonfiction companion to magic tree house: hour of the Olympics. New York: Random House Books for Young Readers.
2. Burbank, J. M., Andranovich, G. D. & Heying Boulder, C. H. (2001). Olympic dreams: the impact of mega-events on local politics: Lynne Rienner.
3. Bucher, C. A. (n.d.) Foundation of physical education. St. Louis: The C.V. Mosby Co.
4. William, J. F. (1964). The principles of physical education. Philadelphia: W.B. Saunders Co.
8. Singh, A. et al. (2010) Essential of Physical Education. Kalyayani Publishers.

Anatomy and Physiology

1. Gupta, A. P. (2010). Anatomy and physiology. Agra: SumitPrakashan.
2. Gupta, M. and Gupta, M. C. (1980). Body and anatomical science. Delhi: Swaran Printing Press.
3. Guyton, A.C. (1996). Textbook of Medical Physiology, 9th edition. Philadelphia: W.B. Saunders.
4. Karpovich, P. V. (n.d.). Philosophy of muscular activity. London: W.B. Saunders Co.
5. Lamb, G. S. (1982). Essentials of exercise physiology. Delhi: Surjeet Publication.
6. Moorthy, A. M. (2014). Anatomy physiology and health education. Karaikudi: Madalayam Publications.
7. Morehouse, L. E. & Miller, J. (1967). Physiology of exercise. St. Louis: The C.V. Mosby Co.
8. Pearce, E. C. (1962). Anatomy and physiology for nurses. London: Faber & Faber Ltd.
9. Sharma, R. D. (1979). Health and physical education, Gupta Prakashan.
10. Singh, S. (1979). Anatomy of physiology and health education. Ropar: Jeet Publications.
11. Singh, A. et al. (2010) Essential of Physical Education. Kalyayani Publishers.

Organisation and Administration of Physical Education and Sports

1. Broyles, F. J. & Rober, H. D. (1979). Administration of sports, Athletic programme: A Managerial Approach. New York: Prentice hall Inc.
2. Bucher, C. A. (1983). Administration of Physical Education and Athletic programme. St. Louis: The C.V. Hosby Co.

3. Kozman, H.C. Cassidly, R. & Jackson, C. (1960).Methods in Physical Education. London: W.B. Saunders Co.
4. Pandy, L.K. (1977). Methods in Physical Education.Delhe: Metropolitan Book Depo.
5. Sharma, V.M. & Tiwari, R.H.: (1979). Teaching Methods in Physical Education. Amaravati: Shakti Publication.
6. Thomas, J. P.(1967). Organization & administration of Physical Education. Madras: Gyanodayal Press.
7. Tirunarayanan, C. & Hariharan, S. (1969). Methods in Physical Education.Karaikudi: South India Press.
8. Voltmer, E. F. & Esslinger, A. A. (1979).The organization and administration of Physical Education. New York: Prentice Hall Inc.
12. Singh, A. et al. (2010) Essential of Physical Education. Kalyayani Publishers.

PAPER- II

Health Education and Dietetics

1. Frank, H. & Walter, H., (1976). Turners school health education. Saint Louis: The C.V. Mosby Company.
2. Nemir, A. (n.d.). The school health education. New York:Harber and Brothers.
3. David, R. M. (2005).Drugs in sports, (4th Ed). Routledge Taylor and Francis Group.
4. Boyd-Eaton S. et al (1989) The Stone Age Health Programme: Diet and Exercise as Nature Intended. Angus and Robertson.
5. Terras S. (1994) Stress, How Your Diet can Help: The Practical Guide to Positive Health Using Diet, Vitamins, Minerals, Herbs and Amino Acids, Thorons.
6. Singh, A. et al. (2010) Essential of Physical Education. Kalyayani Publishers.

Exercise and Sports Physiology

1. Clarke, D.H. (1975). Exercise Physiology. New Jersey: Prentice Hall Inc., Englewood Cliffs.
2. David, L Costill. (2004). Physiology of Sports and Exercise. Human Kinetics.
3. Fox, E.L., and Mathews, D.K. (1981). The Physiological Basis of Physical Education and Athletics. Philadelphia: Sanders College Publishing.
4. Guyton, A.C. (1976). Textbook of Medical Physiology. Philadelphia: W.B. Sanders co.
5. Richard, W. Bowers. (1989). Sports Physiology. WMC: Brown Publishers.
6. Sandhya Tiwaji. (1999). Exercise Physiology. Sports Publishers.
7. Shaver, L. (1981). Essentials of Exercise Physiology. New Delhi: Subject Publications.
8. Vincent, T. Murche. (2007). Elementary Physiology. Hyderabad: Sports Publication.
9. William, D. Mc Aradle. (1996). Exercise Physiology, Energy, Nutrition and Human Performance. Philadelphia: Lippincott Williams and Wilkins Company.
10. Singh, A. et al. (2010) Essential of Physical Education. Kalyayani Publishers.

Sports Psychology

1. Cratty, B. J.(1968). Psychology and physical activity. Eaglewood Cliffs. Prentice Hall.
2. Kamlesh, M.L. (1998). Psychology inphysical education and sport. New Delhi:Metropolitan Book Co.
3. Mathur, S.S., (1962). Educational psychology. Agra.VinodPustakMandir.
4. Skinnner, C. E., (1984.). Education psychology. New Delhi: Prentice Hall of India.
5. Singh, A. et al. (2010) Essential of Physical Education. Kalyayani Publishers.

Test, Measurement and Evaluation in Physical Education

1. Barron, H. M., & Mchee, R. (1997). A practical approach to measurement in physical education. Philadelphia: Lea and Febiger.
2. Barron, H.M. & Mchee, R. (1997). A Practical approach to measurement in physical education. Philadelphia: Lea and Febiger.
3. Kansal, D.K. (1996). Test and measurement in sports and physical education. New Delhi: D.V.S. Publications.
4. Mathews, D.K., (1973). Measurement in physical education, Philadelphia: W.B. Saunders Compnay.
5. Pheasant, S. (1996). Body space: anthropometry, ergonomics and design of work. Taylor & Francis, New York.
6. Phillips, D. A., & Hornak, J. E. (1979). Measurement and evaluation in physical education. New York: John Willey and Sons.
7. Sodhi, H.S., & Sidhu, L.S. (1984). Physique and selection of sports- a kinanthropometric study. Patiala: Punjab Publishing House.

PAPER- IV

Sports Training

1. Dick, W. F. (1980). Sports training principles. London: Lepus Books.
2. Harre, D. (1982). Principles of sports training. Berlin: Sporulated.
3. Jensen, R. C. & Fisher, A.G. (1979). Scientific basis of athletic conditioning. Philadelphia: Lea and Fibiger, 2nd Edn.
4. Matvyew, L.P. (1981). Fundamental of sports training. Moscow: Progress Publishers.
5. Singh, H. (1984). Sports training, general theory and methods. Patials: NSNIS.
6. Uppal, A.K., (1999). Sports Training. New Delhi: Friends Publication.
7. Singh, A. et al. (2010) Essential of Physical Education. Kalyayani Publishers.

Therapeutic Aspect of Physical Education

1. Christine, M. D., (1999). Physiology of sports and exercise. USA: Human Kinetics.
2. Jeyaprakash, C. S., Sports Medicine, J.P. Brothers Pub., New Delhi, 2003.
3. Khanna, G.L., (1990). Exercise physiology & sports medicine. Delhi: Lucky Enterprises.
4. Pandey, P.K., (1987). Outline of sports medicine, New Delhi: J.P. Brothers Pub.
5. Williams, J. G. P. (1962). Sports medicine. London: Edward Arnold Ltd.
6. Singh, A. et al. (2010) Essential of Physical Education. Kalyayani Publishers.

Section 4: Guidelines for Practical Papers- III & IV B.

***** Practical Paper- III: Full Marks: 100**

Laboratory Practical will be consisting of Written and Practical Test (Question paper will be set by the University both for Field & Laboratory Practical, which will be evaluated by the External Examiner with the assistance of Internal examiner).

***** Practical Paper- IV-B: Full Marks: 35**

Laboratory Practical will be consisting of Written and Practical Test (Question paper will be set by the University, which will be evaluated by the Internal examiner).

N.B.: Maximum 20 examinees will be evaluated in a day in case of both of the Papers- III & IV B.

Section 5: List of Equipments for Practical (Filed & Laboratory)

Equipments Requirement for Field Practical

ATHLETIC SECTION

1. Starting Block
2. Starting Gun (Pistol)
3. Starting Clapper
4. Finishing Post
5. Javelin
6. Javelin Arc
7. Shot Put
8. Stop Board
9. Shot Put Circle
10. Discus
11. Discus Circle
12. High Jump Stand
13. Cross Bar
14. High Jump Mattress
15. Take off Board
16. Measuring Tape
17. Victory Stand
18. Judge Stand
19. Flag Stand
20. Flame Torch (Moshal)
21. Stop Watch
22. Ground Umbrella

FOOTBALL SECTION

1. Football
2. Football Goal Post
3. Football Goal Net
4. Corner Post & Flag
5. Player Chang Board
6. Cone

VOLLEYBALL SECTION

1. Volleyball
2. Volleyball Net
3. Volleyball Net Post
4. Volleyball Net Antennae
5. Volleyball Referee's Stand & Chair

BADMINTON SECTION

1. Badminton Racket
2. Badminton Net
3. Badminton Net Post
4. Badminton Shuttle Cock

BASKETBALL SECTION

1. Basketball
2. Basketball Goal Post Complete Set with Ring

Table Tennis Section

1. T.T. Table
2. T.T. Bat
3. T.T. Ball

HANDBALL SECTION

1. Handball
2. Handball Goal Post
3. Handball Goal Net

KHO-KHO SECTION

1. Kho-kho Post

GYMNASTIC SECTION

1. Gymnastic Mattress
2. Gymnastic Floor Exercise Mattress

YOGA SECTION

1. Yoga Mat
2. Cotton Floor Mat (Sataranchi)

Equipments Requirement for Laboratory Practical

PHYSIOLOGICAL LABORATORY

1. Stop Watch
2. Stethoscope
3. Sphygmomanometer
4. Dynamometer (Grip & Back)
5. Goniometer / Flexometer
6. Peak Expiratory Flow Meter
7. Spirometer
8. Douglas Bag
9. Metronome

KIN-ANTHROPOMETRY LABORATORY

1. Stadiometer / Anthropometer
2. Weighing Machine
3. Flexible Tape
4. Skinfold Calliper
5. Lange Calliper

PHYSIOTHERAPY LABORATORY

1. Contrast bath
2. Hot Pack
3. Ultra-violet Rays
4. Wax bath
5. TENS
6. Ultra-sound wave
7. Massage Table

PSYCHOLOGICAL LABORATORY

1. Reaction Time
2. Mirror Drawing
3. Anticipatometer
4. Depth Perception

COMPUTER LABORATORY

1. Computers
2. Printer
3. Scanner
4. Internet Connection