Government of Bihar
Department of Sports
Syllabus for Recruitment of Sports Trainer in Bihar

Part-A (General Knowledge) **Total Marks-30**

1. **Current Affairs and History:-**

   Freedom Fighters and Important Personalities Regarding Bihar.

2. **Sports History of Bihar.**

3. **Olympic, Commonwealth, Asian Games & National Games**
   - (i) Historical Background & Significance.
   - (ii) Ancient/Modern Olympic Games
   - (iii) Commonwealth & Asian Games
   - (iv) Functions of IOC
   - (v) Organization & Conduct of Games.
   - (vi) Brief Introduction about winter and Para Olympic.

4. **Sports Association/ Federation/Awards in India.**
   - (i) Introduction to sports governing bodies at National and International level.
   - (ii) Indian Olympic Association-Objective & Functions.
   - (iii) Sports Schemes (Central and state).
   - (iv) National and State Sports award.

5. **Terminology used in all Sports.**

Part-B Total Marks-120

I. General/ Scientific Principles, Conditioning and Methods of Sports Training.

1. Scientific Sports Training.

(i) Meaning and Definition of Sports Training, Physical Fitness, health related fitness and performance related fitness.
(ii) Aim, Characteristics Principles of Sports Training.
(iii) Definition of Load and Overload, Symptoms of Overload, Remedial Measures.
(iv) Super Compensation- Altitude Training, Cross Training.
(v) Classification of Physical Exercise (General and Specific)
(iv) Warm up, definition types, importance of warm up and Method of conditioning.
(vii) Strength Training modalities and strength training for different population (children, females and senior citizens)
(viii) Exercise techniques for alternative modes and non-traditional implement training.

2. Sports Performance

(i) Nature and definition of sports performance.
(ii) Exercise prescription, steps and Per iodization of strength training.
(iii) Model of sports Perforce & Performance factor
(iv) Programme design for resistance training.
(v) Inter relationship among performance, capacity and training structure
(iv) Methods of fitness development:- Aerobic and Anaerobic Exercises.

(vii) Programme design for aerobic endurance training.

3. Motor abilities

(i) Introduction to Motor abilities & their Classification.
(ii) Structure of fitness/ condition.
(iii) Strength-Means and Methods of Strength Development:- Weight Training, Isometric, Isotonic, Circuit Training etc.
(iv) Speed- Means and Methods of Speed Development:- Repetition Method, Downhill Run, Parachute Running, Wind Sprints.
(v) Endurance- Means and Methods of Endurance Development:- Continuous Method, Interval Method, Repetition Method, Cross Country, Fartlek Training.
(iv) Flexibility:- Means and Methods of Flexibility Development:- Stretch and Hold Method, Ballistic Method, Special Type Training- Polymetric Training.
(vii) Coordinative ability:- Means and Methods of Coordinative ability Development- Sensory Method, Variation in External Condition Method, Combination of Movement Method, Type of Stretching Exercises.

4. Training Process

(i) Concept of Training Load- Definition of and Types of Training Load, Factor of Load, Function of Load, Load monitoring, recovery.
(ii) Principles of Intensity and Volume of stimulus.
(iii) Technical Training- Meaning and Methods of Technique Training
(iv) Tactical Training- Meaning and Methods of Tactical Training.
(v) Training Principles (Overload, individualization).

5. Periodisation

(i) General concepts related to per iodization and definition.
(ii) Types of Per iodisation- Single, Double, and Multiple Per iodisation.
(iii) Preparatory Period, Competition Period and Transition Period.
(iv) Per iodisation models.
(v) Top form of Per iodisation.

6. Training Plan

(i) Training Plan- Macro Cycle, Meso- Cycle, Short term Plan and Long Term Plans.
(ii) Planning- Training Session
(iii) Programme design and techniques for flexibility, quickness and balance training.
(iv) Evaluation of Physical fitness components (Test, measurements & evaluation of motor ability)

7. Talent Identification

(i) Meaning & Definition of sports talent.
(ii) Principles of Talent Identification.
(iii) Physical Fitness Test- Health Related Fitness Battery Test. Health Related Physical Fitness Test.
(iv) Anthropometric- Measurement: Method of Measuring Height, Standing Height, Sitting Height, Method of Measuring.
(v) Skill Test-Types Specific Sports Skill Test.

II. Anatomy and Exercise Physiology

1. Introduction of Anatomy, Systems of organization in the human body and Exercise Physiology
2. Skeletal Muscles and Exercise-
   (i) Function of Skeleton-Ribs and Vertebral Column, Joints of body and their Types. Structure of the Skeletal Muscle, Muscular Contraction, Type of Muscle fiber, Muscle Tone.
   (ii) Gender Differences in the Skeleton.
   (iii) Effect of exercises and Training on the Muscular system and Bone.
   (iv) Physiology of Strength training and Performance and Physiological basis of fatigue and recovery.

3. Cardio Vascular System and Exercise.

(i) Structure and function of heart, Blood Circulation and Cardiac cycle at rest and during exercise Cardiac cycle & Stroke Volume- Cardiac Output.

(ii) Cardiovascular control during exercise- acute response and long-term adaptations in cardiovascular system Determination of target heart rate.

(iii) Bioenergetics- aerobic and anaerobic energy metabolism during exercise, contributions of different energy systems to various sports and games, Lactic acid and its relevance in sports.

(iv) Physiology of training-effect of VO2 max performance homeostasis and strength.

4. Respiratory System, High Altitude training and Exercise.

(i) Basic anatomy of respiratory system. Internal & External respiration lung volumes and capacities. Respiration at rest and during exercise, second wind and stitch.

(ii) Ventilation and The Anaerobic Threshold. Effect of exercises and training on the respiratory system.

(iii) Environment, age gender and sports performance.

(iv) High altitude training- Immediate Physiological changes in high altitude, long term adaptations, importance of high altitude training.

(v) Body temperature regulation in hot and cold environments.

5. Energy Metabolism

(i) Metabolism- ATP-CP, Anaerobic Metabolism- Aerobic Metabolism- Aerobic and Anaerobic energy production during rest and Exercise.

(ii) Lactic acid and its relevance in sports.

(iii) Ingestion to energy metabolism (Carbohydrate, Protein and Fat), Glycogen Loading.

6. Sports Biochemistry, Nutrition and Physical Performance

(i) Sports Biochemistry, Definition, Aim and importance. Exercise Metabolism (Anabolism and catabolism).

(ii) Storage of fuels in the body, relevance of carbohydrates and lipid for sports and exercise.

(iii) Glycolysis (aerobic and anaerobic) glycogen and lactic acid metabolism, factor affecting fuel utilization during the exercise.

(iv) Biochemical basis of fatigue and recovery modes.

(v) Importance of Biochemical monitoring of athletes during Sports training.

(vi) Transportation of Proteins, store oxygen Haemoglobin and Myoglobin.

(vii) Biochemical adaptations during sports training, overtraining and biochemical marks of overtraining.

(viii) Basic Components of food, sources & function, Balance Diet.

(ix) Nutrients- Role of Carbohydrate, Fat, Protein, minerals, vitamins and water during Exercise. Digestive System Hydration. Weight management.

(x) Pre competition, during competition and post competition diet.

(xi) Hygiene and Health- Meaning of Hygiene: Types of Hygiene and Management of Sports Nutrition, Role of Nutrition in Sports, Nutritional supplements for performance enhancement.

III Sports Anthropometry

(i) Nature and scope in sports. Body composition.

(ii) Concept of physique- Physique in different sports and Games Stomata type- Different components, importance and scope in sports.

(iii) Human growth. Physical growth and development changes in relation to age. Adolescent growth spurt-Effect on training.

(iv) Adolescent growth spurt-its effect on training.

(v) Role of Anthropometry in Talent Identification for Sports.

IV Sports Psychology

1. Introduction to Sports Psychology- Concept and importance of Sports Psychology. Scope of Sports Psychology, Effect of Personality on Sports Performance.

2. Emotional Processes and Sports performance

(i) Definition of Emotions, Stress, Fear, anxiety and Aggression in Sports.
(ii) Role of Thinking and Sport Performance.
(iii) Emotional stability, regulation in Sports.
(iv) Arousal- Performance relationship in Sports.

3. Motivation of Sports

(i) Meaning of Sports motivation, Type of Motivation, Techniques of Motivational enhancement, Achievement Motivation.
(ii) Psychological basis of sports motivation.
(iii) Interest, attitude, aptitude
(iv) Principles and Process of Goal Setting in Sports, Benefits of goal setting.

4. Psychological Preparation in Sports

(i) Meaning, Importance and concepts of Psychological Preparation.
(ii) Pre Competition Period (Long term and short term preparation)
(iii) Competition period.
(iv) Optimizing Team Behaviour and Performance- Difference between team and Group.
(v) Application of positive psychology for Excellence in Sports.

(vi) Mental Toughness Training- Ideal Performance State.

5. Sociological Issues for optimizing Behaviour and Performance

(i) Social characteristics of sports performance.
(ii) Group and Team Work.
(iii) Basic approaches of Leadership
(iv) Concept characteristics and application of Flow State in Sports

V. Sports Medicine

(i) Meaning, definition and importance of Sports Medicine.
(ii) Basic Anatomy of Musculo skeletal system.
(iii) Sports Emergencies and First Aid.
(iv) Injuries in Sports, Management of Sports injuries and its Rehabilitation- Strapping/ Tapping, RICE Therapy.
(v) Major Sports Injuries- Classification of Injuries, skin, Ligament, Bone, Soft tissues and Muscular skeleton problems prevention, Treatment and Rehabilitation.
(vi) Risk factor, preventive measures and Prevention of Illnesses in Sports.
(vii) Overuse Injuries, Prevention, Treatment and Principal and Phases of Rehabilitation.
(viii) Recovery in Sports, Electrotherapy, manual therapy Exercise therapy.

VI. Role of Bio Mechanics and its contribution in the field of sports.

(i) Basic of Kinesiology and its importance in Coaching, Mechanical axis anatomical and standard standing position, Types of Plans and Axis.
(ii) Major muscles, joint and their actions, Types of joints, Types of muscles actions. Major muscles acting at important part of body, Posture Structure of motor action.
(iii) Form of Motion- Linear motion and Angular motion, Displacement, speed, velocity, Acceleration, Distance and Newton's law and projectile motions.
(iv) Type of Force- Internal and External forces, Centripetal and Centrifugal force, Principles of force, Friction, Gravitational force.
(v) Lever, Equilibrium and Stability- Definition, Types of levers, Anatomical levers of body, principles of leverage, Centre of gravity and its implication, Factor affecting stability and equilibrium and their implication.

VII. World/ National Anti Doping agency and Anti Doping rule (2010).

(i) Introduction of WADA and NADA, IOC Rules.
(ii) Role of WADA and NADA in Fair Play.
(iii) Doping- Definition, Classification, Hazards of Doping, Short and long term, IOC rules & Role of Coach and athlete
(iv) Prohibited Substance.
(v) Testing Procedure.

VIII. Qualities of a successful Coach

(i) Philosophy of Coaching
(ii) Qualities & abilities of Coach
(iii) Method of teaching and coaching.

IX . Technique/ Skill/Tactic

(i) Importance and classification of technique.
(ii) Description of technical/Skill of games.
(iii) Means for evaluation of progress and learning and performance of technique (Skill test, Statistics and Observation).

X. Planning and training for elite sports persons.

(i) Long term Plan.
(ii) Yearly Plan (Periodisation)
(iii) Training Plans (schedule/ Programmers)
(iv) Meaning and need for evaluation techniques in physical fitness variable (speed, strength, Agility, Endurance and Flexibility etc.)

XI. Inspection, Observation and Supervision of Sports Planning/ Coaching of Players.

(i) Importance, Principle and technique of supervision and inspection of a Sports Planning or Coaching of Players.
(ii) Qualities of good supervisor and inspector.