

SYLLABUS FOR PHD ENTRANCE EXAM 2023- SJRI

Bio-Statistics

Paper-I

1. Research method

Basic concept of confounding and effect modification; Measures of disease frequency and association; study design; research protocol

2. Basic Biostatistics

Descriptive statistics; visualization of data; vector and matrix; inferential statistics-parametric & nonparametric.

Paper-II

1. Quantitative metrics in nutrition

Application of probability in statistical inference, Linear models, Linear mixed effects model, generalized linear model, generalized additive model, measurement error and its consequence; forms of measurement error models; methods for estimation.

2. Statistical Methods for Survey data analysis

Survey sampling techniques, sampling weights calculation, Regression models for continuous and categorical data, random effects models

Human Nutrition

1. Nutrition through life cycle

Growth and development from conception to elderly
Nutritional needs and dietary guidelines for adequate nutrition throughout the life cycle
Methods for assessing nutritional requirements
Factors affecting the nutritional requirements

2. Carbohydrates

Classification/Types
Metabolism, Utilization & Absorption
Functions

3. Proteins

Classification/Types
Metabolism, Utilization & Absorption
Functions

4. Lipids

Classification/Types
Metabolism, Utilization & Absorption
Functions

5. Water

Compartments of body water and water balance
Disturbances of water balance

6. Micronutrients

Sources, Functions
Requirements, Absorption, Utilization, Bioavailability and Toxicity

7. Energy

Computing energy expenditure and energy balance
Estimation of energy requirements
Factors affecting Energy expenditure & requirement

8. Nutritional Assessment

Methods of nutritional assessment
Growth standards
Impact of altered nutrition on growth & development
Changes in body composition through lifecycle
Techniques in the assessment of body composition

9. Use of Stable isotopes and nuclear techniques in nutrition research

10. Medical nutrition therapy in clinical conditions

Etiology, pathophysiology of clinical conditions
Nutritional requirements and nutritional therapy plan

Mental Health And Neurosciences

1. Principles of Psychology

Historical origins of psychology as a science; Beginnings of experimental tradition and emergence of Schools in Psychology; Emotion; Motivation; Personality

2. Psychology of life span development

Definition, nature and evolution of the field; Beginning of Life ; Development in middle childhood and adolescence; Development in young and middle adulthood; Late Adulthood : Old Age

3. Physiological Psychology

Introduction to physiological psychology; Hormones and Behavior; Physiological basis of perception; Physiological basis of Emotions and Learning and Amygdala

4. Research methodology

Basic concepts of experimental method; Methods of data collection; Statistics; Designs; Writing a research report

5. Cognitive Psychology

Definition and domain of cognitive psychology; Perception; Learning; Memory and forgetting; Thinking and Language

6. Psychopathology

Definition and criteria of psychological abnormality; Causes of abnormal behavior; Clinical picture of disorders

7. Psychological assessment

Behavioral Interview; Psychological testing

8. Clinical Psychology

Basic Concepts; Nature and scope of clinical psychology; Cultural and social aspects of mental illness; Behavioural assessment, analysis and formulations; Intervention Techniques

9. Rehabilitation Psychology

Nature and Scope of Rehabilitation psychology; Disabilities; Personality Development of Disabled Persons; Intervention; Psychological Intervention; Organization & Management

Molecular Medicine

Cell & molecular biology

DNA-RNA replication, Cell division, Protein sorting into major organelles, Protein secretion, Vesicular transport, Signalling pathways etc.