

SYLLABUS OF RESEARCH METHODOLOGY FOR Ph.D. IN FOOD PROCESSING AND TECHNOLOGY ENTRANCE EXAMINATION

Nature and Purpose of Research: Meaning of research, aim, Nature and scope of research, Prerequisites of research, Types of research: Exploratory, Descriptive and Experimental.

Research Problem: Types of research problems, Characteristics of a good research problem, Hypothesis: Meaning and types of hypothesis, Research proposal or synopsis.

Research Methods: Qualitative and Quantitative

Review of Literature: Purpose of the review, Identification of the literature, organizing the literature.

Data Collection and Analysis: Types of data, Methods of data collection, Sample and Population, Sampling Techniques, Characteristics of a good sample, Tools of Data Collection: Observation method, Interview, Questionnaire, various rating scales, Characteristics of good research tools.

Descriptive Statistics: Tabulation, Organization, and Tabulation and Graphical Representation of Quantitative data, Measures of Central Tendencies: Mean, Median, Mode Measures of Variability: Range, Quartile Deviation, Standard Deviation, and Coefficient of variation. Normal Probability Distribution: Properties of normal probability curve, Skewness and Kurtosis, Data analysis with Statistical Packages (MS-Excel, SPSS), Hypothesis Testing, Generalization and Interpretation.

Research Report: Structure and Components of Research Report, Types of Report, Characteristics of Good Research Report, Bibliographical Entries, Research Ethics

SYLLABUS OF SUBJECT AWARENESS FOR Ph.D. IN FOOD PROCESSING AND TECHNOLOGY ENTRANCE EXAMINATION

UNIT 1

Introduction to Food Technology: - Food attributes (colour, texture, flavour etc.), Nutritive value and consumer preferences.

Food Spoilage: Sources of microbial contamination of foods, food borne illnesses, water activity and its relation to spoilage of foods, Spoilage of processed products and their detection. Principles and methods of food Preservation: such as heat processing, pasteurization, canning, dehydration, freezing, freeze-drying, fermentation, microwave, irradiation and chemical additives, aseptic preservation, hurdle technology, hydrostatic pressure technology and microwave processing. Use of non-thermal technologies (microfiltration, bacteriofugation, ultra-high voltage electric fields, pulse electric fields, high pressure processing, irradiation, thermosonication).

UNIT 2

Fruits and Vegetable Processing: Post harvest handling and storage of fresh fruits and vegetables. Preparation of fruits and vegetables for processing. ZECC (Zero Energy Cool Chambers), Thermal processing and process time evaluation for canned products, aseptic canning, and methods for canning of different fruits & vegetables; Dehydration and associated quality changes during drying and storage of dehydrated products. Intermediate moisture foods. Preparation and utilization of fruits and vegetables

UNIT 3

Processing for Milk/Meat / Fish / Poultry Products: Processing industries in India, Milk products processing, Ante mortem inspection, Post mortem examination, Rigor mortis, Factors affecting meat quality. Curing, smoking, freezing, canning and dehydration of meat, poultry and their products. Sausage making. Microbial factors influencing keeping quality of meat, Scope of meat, fish and poultry.

UNIT 4

Food grain Processing: Structure, composition of different grains like wheat, rice, barley, oat, maize and millets. Anti-nutritional factors in food grains and oilseeds. Milling of grains.

Food Quality and Regulation: Quality systems and tools used for quality assurance including control charts, acceptance and auditing inspections, critical control points, reliability, safety, recall and liability. The principles and practices of food plant sanitation. Food and hygiene regulations. Environment and waste management. Total quality management, good management practices, HACCP and codex in food.