

FOOD AND NUTRITION

(P.G. std)

I. ADVANCED HUMAN PHYSIOLOGY

UNIT-I:

General Physiology and Blood

Blood – Composition – functions cell – functions

UNIT-2

Cardiovascular Physiology and Respiration:

Cardiovascular regulatory mechanism and homeostasis circulating body fluid - ECG interpretation, Angioplasty, Echocardiogram.

Respiration:

Respiratory organs, Pulmonary function, vital capacity, gaseous transport in lungs and tissues. Respiratory regulation.

UNIT-3:

Endocrine System and Gastrointestinal Physiology

Pituitary, Thyroid, Pancreas, adrenal Medulla, adrenal cortex – Enzymes – Hormones – functions.

Gastrointestinal Physiology : Digestion, absorption, regulation and functions.

UNIT:4

Renal Physiology and Reproductive System.

Kidney – Renal Function

Skin – Function

Development of reproductive organs

Reproductive Function – Male, Female – organs – Development of foetus.

UNIT:5

Nerve Muscle Physiology, Central Nervous system and Special Senses.

Function – types – Immune system antigen – antibody reaction, lymphocyte – role – cell mediated immunity, innate & acquired immunity.

Special senses – Functions & Physiology.

II. BIOCHEMISTRY

UNIT-1:

Carbohydrates:v

Classification, synthesis, structure, distribution & Characteristics Functions, digestion and absorption, metabolism.

Energy: BMR, direct & indirect calorimetry, energy pathways.

UNIT-2

Lipids: Composition, synthesis, Structure, Classification, Characteristics & Functions, digestion & absorption, Metabolism.

UNIT-3

Proteins and amino acids – Nucleic acids – Nucleotides, Composition, Synthesis, Structure, Classification, Functions, digestion & absorption, Metabolism genetic Code.

UNIT-4

Vitamins, Minerals and Water

Types – Water soluble, Fat Soluble absorption, Storage, Transportaion, Functions.

Requirement and dietary sources, Deficiency.

Water – Electrolytes – acid base balance – PH UNIT-5

Antioxidants, Enzymes and Coenzymes

Hormones – Hemoglobin – Bilirubin

Inborn Errors of metabolism

Phenylketonuria – Tyrosinuria – Homocystinuria etc.

III. FOOD SAFETY AND FOOD MICROBIOLOGY

UNIT-1

Microbiology of foods – Micro organisms important in food Microbiology – moulds, yeasts,

Bacteria, viruses, algae, Protozoa - Morphology Characteristics, Classification etc.

Contamination of foods – from plants, fruits, animals, sewage, soil, water, air during handling

and processing.

UNIT-2

Principles of Food Preparation.

Asepsis, removal of Microorganisms

Preservation: High temperature, Low temperature drying, by use of Food additives, radiation.

Sterilization:

i) Application of dry heat, burning, flaming and hot air oven.

ii) Application of Moist heat – boiling, Pasteurization, steam Sterilizer & autoclave.

Disinfection:

Methods of disinfection, natural, Physical and Chemical.

UNIT-3:

Contamination, Preservation and Spoilage of foods.

- Cereal grains and meals, flours, Bread, cakes etc.

- Sugar & Sugar Products

- Vegetables and fruits

- Meat and Meat Products

- Fish, Seafood, eggs, Poultry

- Milk & Milk Products & Miscellaneous Foods,

- Food fermentation.

UNIT-4

Food borne illness – Bacterial

Food borne Poisonings, injections, intoxicants – Non bacterial

Mycotoxins, Viruses, Rickettsia, Food borne parasites, seafood toxicants, poisoning by chemicals.

UNIT-5:

Food Sanitation and Hygiene

Bacteriology of water, Waste disposal, HACCP,

Health of Employees

Control Agencies – international, Federal, State agencies, and other NGOs.

Allergy & Hypersensitivity

Allergy types like idiosyncrasies, allergy of infection

Contact dermatitis and drug allergy.

Hypersensitivity – Definition – anaphylaxis and serum sickness. IV. Food facilities Layout and Equipment and Food Service Management.

UNIT-1

Planning of Food Services:

a) Consideration of location, building interiors, financial restrictions and space limitations.

Layout design depending on the type of Food service.

b) Installation of equipment – Planning according to different Food Service.

Noise Control – Ventilation – adequate water Supply.

Functional Equipment:

a) Insulation materials, energy sources for operation of equipment.

b) Design, selection, purchase, Principles of operation and care of major equipment, small equipment and tools in the food service institution.

UNIT-2

a) Kitchen Equipment

- For food storage (Coolers, refrigeration, walk in freezers, etc)

- Pre preparation Equipment

- Cooking utensils like steam boilers

- Food service equipments

- Dishwashing Equipments

- Cleaning equipment

a) Financial Investment on physical facilities

- Maintenance & repairing equipment – AMC

UNIT-3

a) Review of different types of Institutional Food Service operation – Classification based on function –

profit oriented & Service oriented.

b) Planning and setting up a food service unit.

c) Food Selecting purchasing, storage – Specification

d) Meal planning – Menu selection, types of menu principles.

UNIT-4

a) Quantity Food production – Planning & control - Kitchen production

b) Management and organization

- Leadership & its qualities, staff planning and Management.

- Hygiene and sanitation and safety

- Fuels types – advantages – disadvantages

UNIT-5

Personnel functions – work Productivity

Entrepreneurship and Food service management.

V. APPLIED STATISTICS AND RESEARCH METHODOLOGY

UNIT-1

a) Fundamentals and diagrammatic graphic representation of data.

Bar chart, pie diagram, Histogram, frequency polygon & curves, cumulative frequency curves – ogives etc.

Interpolation & Extrapolation

b) Measures of Central tendency & variability – mean, median, mode.

Measures of dispersion – Range, quartile deviation.

Variance and standard deviation

Relative measures of dispersion.

Concepts of skewness and kurtosis

UNIT-2:

a) Probability concepts – rules and correlation methods.

b) Association of attributes – meaning of correlation

c) Tests of significance

(Meaning and interpretation of coefficients) Shell hypothesis – Calculation of 't' test - critical ratio – chi-Square. Testing hypothesis – proportion

& means, Large samples – Small samples.

F distribution – testing and analysis of variance

UNIT-3

a) Basic concepts of Research methodology

Theory, hypothesis, purpose & techniques

b) Methods & tools of Research

c) collection of data.

Quantitative & Qualitative study by different techniques

UNIT-4

a) Sampling – Pilot study – concept of sampling – Relationship between sample size and standard error.

b) Sample designs – methods of sampling etc

c) classification and tabulation of data.

UNIT-5

a) Experimental and Quasi experimental research – principles of experimental research variables.

b) Research Ethics

ICMR guidelines for human subjects and animals.

VI. Advanced Food Science

UNIT-1:

a) Cereals and Pulses

Structure, composition, processing, nutritive value of raw and cooked products.

i) Rice and rice products, starch cookery.

ii) Wheat & Wheat products.

iii) Baked Products, other cereal food – corn oats, ragi.

iv) Pulses – toxic constituents

b) Sugar & Jaggery

Types, nutritive value, properties – Manufacture Sugar cookery.

UNIT-2

a) Vegetables and fruits

i) Composition – effect of cooking – on pigments, Polyphenols

ii) Vegetables and fruit products - picking processing, preservation and Nutritive value analysis

iii) Changes during cooking

iv) Cooking methods

b) Browning reactions in foods

Enzymatic and non-enzymatic

Enrichment & fortification - objectives & methods.

UNIT-3

a) Fleshy Foods

Meat & meat products

Egg & Poultry

Fish & Seafood

Selecting, processing, preservation, transportation Composition and nutritive value.

Changes during cooking and methods of hastening cooking.

UNIT-4

Nuts and oilseeds, Fats and Oils, Milk and Milk products.

- Types, Composition, properties, processing

- Toxin constituents and nutritive value

- Changes during cooking & storage

- Emulsions - role of fats in cookery UNIT-5

Post Harvest technology:

- Bio fertilizers – its importance in enhancing nutritive value.

- General methods of food grains, Vegetables, fruits

- Food Microbiology

- Sources of contamination of foods.

VII. Community Nutrition

UNIT-1

Nutrition and National Development

Human life cycle – RDA for Indians.

National organizations – state Nutrition councils

And Beaureaus concerned with food and nutrition.

Health Education Boards, Social Welfare Boards and NGOs.

UNIT-2:

Assessing the food and nutrition problems in the community – Dietary Survey, anthropometry, clinical Examinations, laboratory examinations.

International & Indian organizations concerned with foods and nutrition.

UNIT-3

Prevalence of malnutrition in India – Environmental and Socio – economic factors related to malnutrition, family size and composition.

Etiology of Malnutrition – dietary patterns, food losses, Food waste, customs, habits, prejudice ignorance nutrition and infections.

UNIT-4

Measures to overcome malnutrition

- Need for an integrated approach to solve the problems of nutrition

- The package program of immunization, nutrition and education

- Different feeding programs organized by the governments and NGOs specially for the vulnerable group like school children, pregnant women etc.

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UNIT-5

Nutrition education for the Community- By different education programs & methods.

Principles of planning, executing and evaluating nutrition education programs.

National Nutritional policy and nutritional food distribution during calamities

Nutrition during special tasks, expeditions, emergency, space nutrition

Food Production and distribution

VIII. Nutrition through Life cycle

UNIT-1

Role of nutrition – nutrients – nutritional needs importance of diet during life cycle.

Nutritional assessment – anthropometry biochemical, Clinical and dietary.

UNIT-2

a) Meal planning and Balanced diets.

b) Routine hospital diet – clear liquid, fullfluid diet, soft diet, Normal diet & Restricted diet etc.

c) Enteral and parenteral nutrition

UNIT-3

Nutrition during pregnancy and lactation

- Maternal malnutrition, other than normal cause like smoking & drinking.

- Complication during pregnancy

- Dietary modification

- Importance of breast milk and advantages - its basic value

- Nutrient requirements UNIT-4

Nutrition for infants and pre school children.

- Malnutrition - Vitamin A deficiency – anaemia – protein calorie malnutrition, protein energy malnutrition.

- Socio economic issues related to malnutrition

- Lactose intolerance, allergies and other factors influencing the nutritional status of the children.

- Immunization and nutrient requirements

b) Nutrition for School age children and Adolescents.

- School children

Iron deficiency anaemia, food patterns, prevention of nutrition and health problems, over weight, obesity, under weight, dental caries.

- Adolescents, eating pattern, influence from peer groups, anorexia, bulimia, obesity

Weight gain, adolescent pregnancy hazards.

- Nutrient requirements.

UNIT-5

a) Geriatric Nutrition

- Eating Problems, Physiological and Psychological aspects influencing nutritional intake.

- Diseased elderly, and invalids nutrition.

- RDA and food selection as per the individuals.

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IX. Clinical and Therapeutic Nutrition

UNIT-1

Introduction to Diet Therapy & Therapeutic Nutrition

Adaptations of Therapeutic diets.

UNIT-2

a) Dietary Management in the diseases of GI tract (Stomach and Intestine)

b) Diet in fevers and infection – types

c) Diet in disturbances of liver, gall bladder and pancreas.

UNIT-3

a) Diet in Diabetes Mellitus and cancer

b) Dietary Management in Renal diseases.

Types and etiology, Diagnosis, Treatment, dietary modification, Complications.

UNIT-4

a) Dietary management in cardiovascular disease – hypertension, hyperlipidemia, ischemic heart disease, Atherosclerosis, congestive cardiac failure, Acute and Chronic heart disease.

b) Diet in surgical conditions and Burns.

UNIT-5

a) Malabsorption syndrome – Restricted diets – Lactose, Sucrose, gluten etc.

b) Elimination diets – Diet in Allergy and Skin disorders.

c) Weight Management.

d) Sports Nutrition.

b) Nutrition Education

- Principles, methods, Individual Counselling, group counseling, Famil counseling, Teaching aids.

X. Financial and Marketing Management

UNIT-1

Financing of business – concepts, objectives & functions

Capital budgeting, cash budgets, break even analysis, Management of working Capital,

Financing of catering units. UNIT-2

Financial accounting

Single & Double entry book keeping

Management accounting, decision making.

UNIT-3

Pricing Policies

Importance of pricing, factors affecting, wholesale & retail pricing, Food and beverage costing and pricing.

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