# Paper I

**Human Physiology Biochemistry**

**Physiologic and Metabolic Changes in Disease Food Microbiology, Sanitation and Hygiene**

# HUMAN PHYSIOLOGY

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| **1. General principles of Physiology.** |  |
| **2. The Skeleton – General Account** |  |
| **3. The Muscular System – General Account -Types of muscles, characteristics of each, Similarities and Differences.** |  |
| **4. Blood and Circulatory System – Blood and its composition, Functions of each constituent of blood, Blood groups, Blood transfusion and its importance, Coagulation of blood, Blood vessels, Structure and functions of heart, Blood pressure, heart rate, Cardiac output and their regulation.** |  |
| **5. Lymphatic System – Lymph, Lymph glands and functions, Spleen – Structure and Functions.** |  |
| **6. Respiratory System – Organs, Structure and Functions, Mechanism of Respiration, Chemical Respiration.** |  |
| **7. Digestive System – Structure and Functions of Alimentary tract. Functions of various secretions and juices – Saliva, Gastric, Bile, Intestinal, Pancreatic. Functions of enzymes in digestion. Digestion of nutrients – Proteins, Fats, Carbohydrates. Common problems of Digestive tract – Vomiting, Constipation, Diarrhea.** |  |
| **8. Excretory System – Structure and Functions of (a) Kidney (b) Ureter (c) Bladder (d) Skin. Urine -Formation of urine, Composition of normal and abnormal urine. Role of excretory system in homeostasis, fluid balance, Regulation of body temperature.** |  |
| **9. Nervous System – Structure of Nerve Cell, Fibre, Classification of Nervous System, Central Nervous System – Brain, Lobes of brain, Cerebrum, Cerebellum, Medulla oblongata, Hypothalamus. Pituitary** |  |

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| **Gland – structure, Functions, Spinal Cord – structure and functions, Autonomic and Sympathetic nervous system.** |  |
| **10. Reproductive System – Female reproductive system – organs, structure and functions Male reproductive system – structure and functions, Menstruation, menstrual cycle, Puberty, Menarche, Menopause, Fertilization of ovum, Conception, Implantation.** |  |
| **11. Sense Organs – Eye – structure and function, Ear – structure and function, Skin -structure and function** |  |
| **12. Glands and Endocrine System –** |  |
| o **Liver – structure and function** |
| o **Gall Bladder – structure and function** |
| o **Enterohepatic circulation** |
| o **Pancreas – structure and function** |
| o **Endocrine system** |
| o **Endocrine glands – structure and function. Hormone – types and functions, role in metabolism. Endocrine disorders** |
| o **Regulation of Hormone Secretion** |

# BIOCHEMISTRY

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| **1. Introduction to Biochemistry – Significance of pH, Acid-Base Balance, Cell Structure, Composition, Organelles, Membrane and Function-****Alterations and Significance.** |  |
| **2. Carbohydrates – Structure and properties of Mono-saccharides, Di- saccharides, Poly-saccharides. Study of intermediary metabolism of carbohydrates, Glycolysis, Aerobic, Anaerobic, Tricarboxylic acid****cycle, Significance of TCA cycle integrating metabolism of carbohydrates protein and lipid, Gluconeogenesis, Glycogenesis,****Glycogenolysis, Hexose monophosphate shunt.** |  |

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| **3. Proteins – Structure, composition Classification and Function, Structure of important proteins with special reference to Insulin,****myoglobin, and hemoglobin, Binding proteins and their functions – nutritional implications, Chemistry of amino acids, Metabolism of Proteins and amino acids – Build up of amino acid pool. Urea Cycle, Creatinine and Creatine Synthesis, Biochemical parameters and alterations in disease states and Protein malnutrition, Pregnancy,****Inborn errors of metabolism.** |  |
| **4. Lipids – Definition, Composition, Classification, Structure and Properties, Lipoproteins, Metabolism of Lipids, Oxidation of fatty acids, Unsaturated fatty acids, Metabolism of ketone bodies,****Biosynthesis of fatty acids, Phosphoglycerides, Biosynthesis of cholesterol and regulation, Bile acids and their metabolism, Plasma lipoproteins – Synthesis and Metabolism, Biochemical profile,****alterations and significance, Prostaglandins.** |  |
| **5. Enzymes – Definition, Classification specificity of enzymes - Intracellular distribution, kinetics, inhibition, Factors affecting enzyme activity, Enzymes in clinical diagnosis.** |  |
| **6. Nucleic Acids – Composition, Functions, Classification, Structure and properties of DNA and RNA, Replication and transcription of genetic information, Mechanics of DNA replication, transcription, translation, Genetic code – Protein biosynthesis, Regulation of biosynthesis recombinant DNA Technology. Breakdown of purine and pyrimidine****nucleotides.** |  |
| **7. Biological Oxidation, Electron Transport Chain, Oxidative Phophorylation.** |  |
| **8. Hormones – Mode of Action, Regulation of Metabolism Biochemical parameters. Endocrinological abnormalities and clinical diagnosis.** |  |

# PHYSIOLOGIC AND METABOLIC CHANGES IN DISEASE

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| **1. Normal cellular processes, Injury and response of cells to injurious agents, Cellular adaptations** |  |
| **2. Stress and Physiologic effects.** |  |
| **3. Drug, Food and Nutrient Interaction.** |  |
| **4. Regulation of Food intake and Pathogenesis of Obesity and Malnutrition and Starvation.** |  |
| **5. Pathophysiology of GI tract diseases – anatomic, physiologic and functional changes, impact on nutritional status and nutritional implications, post surgical complications and management, malabsorption syndrome.** |  |
| **6. Pathophysiology of liver diseases – Progression of liver disease metabolic and nutritional implications, role of specific nutrients and alcohol.** |  |
| **7. Diseases of the Gall Bladder and Pancreas – Pathophysiologic changes****– metabolic and nutritional implications, Dyslipidemias.** |  |
| **8. Cardio-vascular Diseases – Pathogenesis, role of nutrients in****prevention – metabolic and nutritional implications, Dyslipidemias.** |  |
| **9. Diseases of the renal system – etiology and pathogenesis – changes in function with progression of diseases, metabolic and nutritional implications, water and electrolyte balance.** |  |
| **10. Metabolic Disorders, Diseases of Endocrine Glands and Inborn Errors of Metabolism. Diabetes, Hyper and Hypothyroidism, Inborn errors of****carbohydrate and protein metabolism.** |  |
| **11. Cancer – carcinogenesis – pathogenesis and progression of cancer, role of nutrients, foodstuffs and food additives in cancer. Therapies and their clinical and metabolic implications.** |  |
| **12. Immunity and infection – diarrhea, AIDS, Respiratory problems.** |  |
| **13. Musculo-skeletal problems, arthritis, osteoporosis.** |  |

**FOOD MICROBIOLOGY, SANITATION AND HYGIENE**

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| **1. Introduction to Microbiology – Mold, Yeast, Bacteria, Viruses, Protozoa, General Classification Family, Genus, Species. Study of their morphology, cultural characteristics and biochemical activities.****Important microorganisms in foods, general.** |  |
| **2. Growth curve of a typical bacterial cell – Effect of intrinsic and extrinsic factors on growth of organisms, pH, water activity, 0- R potential, nutritional requirements, temperature, relative humidity and gaseous environment.** |  |
| **3. Primary sources of micro-organisms in foods – Physical and chemical methods used in the destruction of micro-organisms, pasteurization,****sterilization.** |  |
| **4. Fundamentals of control of micro-organisms in foods – Extrinsic and intrinsic parameters affecting growth and survival of organisms. Use of high and low temperature, controlling moisture as water content, freezing, freezing-drying, irradiation, and use of preservatives in food. Storage of food-correct handling and techniques of correct storage, Temperatures at which growth is retarded and bacteria are killed, Storage temperatures for different commodities to prevent growth or contamination and spoilage.** |  |
| **5. Food spoilage and contamination in different kinds of foods and their prevention – Cereal and cereal products, pulses and legumes, Vegetables and fruits, Meat and meat products, Eggs and poultry, Milk and milk products.** |  |
| **6. Public health hazards due to contaminated foods – Food poisoning and infections -Causative agents, symptoms, sources and mode of transmission, foods involved, Method of prevention, Fungal toxins, Investigation and detection of food-borne disease outbreak.** |  |
| **7. Microbes used in biotechnology – Useful micro-organisms, Fermented****foods – raw material used, organisms and the product obtained, Benefits of fermentation.** |  |
| **8. Indices of food, milk and water sanitary quality. Microbiological criteria of food, water and milk testing. Food standards, PFA, FPO, BNS, MPO, Agmark, Codex Alimentarius.** |  |

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| **9. Hygiene and its importance and application – Personal hygiene – care of skin, hair, hands, feet, teeth, Use of cosmetics and jewellery, Grooming, Uniform, Evaluation of personal hygiene, Training staff.** |  |
| **10. Safe handling of food – Control measures to prevent food borne diseases and precautions to be taken by food handlers. Reporting of cold, sickness, boils, septic wounds etc.** |  |
| **11. Rodents and Insects as carriers of food-borne diseases. Control techniques.** |  |
| **12. Disinfectants, sanitizers, antiseptic and germicide. Common disinfectants used on working surfaces, kitchen equipment, dish****washing, hand washing etc. Care of premises and equipment, cleaning****of equipment and personal tools immediately after use, use of hot wat er in the washing process.** |  |
| **13. Waste disposal, collection, storage and proper disposal from the premises.** |  |
| **14. Legal administration and quality control, laws relating to food hygiene.** |  |

# Paper II –

**Human Nutrition and Meal Management Community Nutrition**

**Diet Therapy (Theory)**

**Nutrition Education and Dietetic Counseling Food Services Management**

# HUMAN NUTRITION AND MEAL MANAGEMENT

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| **1. Concept and Definition of terms – Nutrition, Malnutrition, Health, Brief history of Nutritional Science. Scope of Nutrition.** |  |
| **2. Minimum Nutritional Requirements and RDA. Formulation of RDA and Dietary Guidelines – Reference Man and Reference Woman.** |  |
| **3. Body Composition and Changes through the Life Cycle.** |  |
| **4. Energy in Human Nutrition – Energy Balance, Assessment of Energy Requirements.** |  |
| **5. Proteins – Protein Quality (BV, PER, NPU), Digestion and Absorption, Factors affecting protein bio-availability including Anti nutritional factors. Requirements.** |  |
| **6. Lipids – Digestion and Absorption, Intestinal resynthesis of****triglycerides – Types of fatty acids, Role and nutritional significance (SFA, MUFA, PUFA, W-3)** |  |
| **7. Carbohydrates – Digestion and Absorption. Blood glucose and Effects of different carbohydrates on blood glucose, glycemic index.** |  |
| **8. Dietary Fibre – Classification, Composition, Properties and Nutritional status significance.** |  |
| **9. Minerals and Trace Elements – Physiological role, Bioavailability and Requirements.** |  |
| **10. Vitamins – Physiological role, Bioavailability and Requirements.** |  |
| **11. Water – Functions, Requirements.** |  |
| **12. Nutritional requirements for different age groups with rationale. Factors affecting these requirements.** |  |

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| **13. Effect of cooking and home processing on digestibility and nutritive value of foods.** |  |
| **14. Improving nutritional value through different methods – germination, fermentation, combination of foods.** |  |
| **15. Basic principles of meal planning.** |  |
| **16. Nutritional considerations for planning meals for** |  |
| o **Adults – male and female, different levels of physical activity.** |
| o **Pregnancy and Lactation** |
| o **Feeding of young children 0 -3 years** |
| o **Old age** |
| o **Athletes** |
| **17. Nutritional considerations in brief for the following:** |  |
| o **Military, naval personnel** |
| o **Astronauts and food for space travel** |
| o **Emergencies such as drought, famine, floods etc.** |

# COMMUNITY NUTRITION

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| **1. Concept and Scope of Community Nutrition.** |  |
| **2. Food availability and factors affecting food availability and intake. Agricultural production, post harvest handling (storage & treatment), marketing and distribution, industrialization, population, economic, regional and socio-cultural factors. Strategies for augmenting food production.** |  |
| **3.** |  |
| o **Assessment of Nutritional status – meaning, need, objectives and importance. Use of clinical signs, anthropometry, biochemical tests, and biophysical methods. Assessment of food and nutrient intake through****recall, record, weighment.** |
| o **Food security and adequacy of diets.** |
| **4. Use of other sources of information for assessment.** |  |
| o **Sources of relevant statistics.** |
| o **Infant, child and maternal mortality rates.** |
| o **Epidemiology of nutritionally related diseases.** |
| **5. Nutritional problems of communities and implications for public health. Common Nutritional Problems in India. Incidence – National, Regional.****Causes: Nutritional and Non-Nutritional signs, symptoms, effect of deficiency and treatment** |  |
| o **PEM** |
| o **Micronutrient Deficiencies** |
| o **Fluorosis** |
| o **Correction/Improvements in Diets** |
| **6. Schemes and Programs in India to combat Nutritional Problems in India. Role of International, National and Voluntary agencies and Government****departments.** |  |
| **7. Hazards to Community Health and Nutritional status** |  |
| o **Adulteration in food** |
| o **Pollution of water, air** |
| o **Waste management** |
| o **Industrial effluents, sewage** |

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| o **Pesticide residue in food** |  |
| o **Toxins present in food – mycotoxins etc.** |
| **8. Nutrition Policy of India and Plan of Action.** |  |
| **9. Health and Nutrition Education – Steps in planning, implementation, and evaluations. Use of educational aids – visual, audio, audio-visual, traditional media etc.** |  |

# DIET THERAPY (THEORY)

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| **1. Diet Therapy and Nutritional Care in Disease** |  |
| * **The Nutritional Care Process**
 |
| * **Nutritional Care Plan**
 |
| * **Assessment and Therapy in Patient Care**
 |
| * **Implementation of Nutritional Care**
 |
| **2. Nutritional Intervention – Diet Modifications** |
| * **Adequate normal diet as a basis for therapeutic diets**
 |
| * **Diet Prescription**
 |
| * **Modification of Normal Diet**
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| * **Nomenclature of Diet Adequacy of Standard Hospital Diets**
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| * **Psychological factors in feeding the sick person**
 |
| **3. Interactions between Drugs, Food Nutrients and Nutritional Status** |
| * **Effect of drugs on Food and Intake, Nutrient Absorption, Metabolism, and Requirements.**
 |
| * **Drugs affecting intake of food and nutrients**
 |
| * **Absorption**
 |
| * **Metabolism and excretion**
 |
| * **Nutritional status**
 |
| * **Summary of action of some common drugs**
 |
| * **Effect of food, nutrients and nutritional status on absorption a nd metabolism of drugs**
 |
| **4. Disease of the G. I. System – Nutritional Assessment** |
| * **Pathogenesis of G.I. Disease with special reference to upper G. I. Tract and ulcers.**
 |
| * **Diseases of esophagus and dietary care**
 |
| * **Diseases of stomach and dietary care**
 |
| * **Gastric and duodenal ulcers**
 |
| * **Predisposing factors and Treatment**
 |
| * **Brief medical therapy, rest, antacids, other drugs and dietary care**
 |
| * **Food acidity, foods that cause flatulence, factors that damage G. I. Mucosa**
 |
| * **Foods stimulating G. I. Secretion**
 |
| * **Diet and Eating Pattern**
 |
| * **Diet Recommendations**
 |
| * **Liberal Approach Vs Traditional Approach**
 |
| * **Possible nutritional and dietary inadequacies**
 |
| * **Gastrectomy**
 |
| * **Intestinal Diseases**
 |
| * **Flatulence, Constipation, Irritable Bowel, Hemorrhoids,. Diarrhoea, Steatorrhoea, Diverticular disease, Inflammatory Bowel Disease, Ulcerative Colitis.**
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| * **Treatment and Dietary Care in the above mentioned conditions.**
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| * **Malabsorption Syndrome**
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| * **Celiac Sprue, Tropical Sprue**
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| * **Intestinal Brush border deficiencies ( Acquired Disaccharide Intolerance)**
 |
| * **Protein Losing Enteropathy**
 |
| * **Dietary Care Process**
 |
| **5. Diet in Diseases of the Liver, Pancreas and Biliary System** |
| * **Nutritional care in Liver disease in the context of results of specific Liver Function Tests.**
 |
| * **Dietary Care & Management in Viral Hepatitis, Cirrhosis of Liver, Hepatic Encephalophathy, Wilson’s disease.**
 |
| * **Dietary care and management in diseases of Gall Bladder and Pancreas.**
 |
| * **Biliary Dyskinesia, Cholelithiasis, Cholecystitis,**

**Cholecystectomy, Pancreatitis, Zollinger- Ellison Syndrome.** |
| **6. Diet in Disease of the Endocrine Pancreas Diabetes Mellitus and Hypoglycemia** |
| * **Classification**
 |
| * **Physiological symptoms and disturbances, diagnosis (FBG and OGTT)**
 |
| * **Management of Diabetes Mellitus**
 |
| * **Clinical Vs Chemical control**
 |
| * **Hormonal Therapy**
 |
| * **Oral Hypoglycemic Agents**
 |
| * **Home Glucose Monitoring**
 |
| * **Glycosylated Hemoglobin**
 |
| * **Urine Testing**
 |
| * **Exercise**
 |
| * **Dietary care and Nutritional Therapy – The Diet Plan, Meal planning with and without Insulin, Special Dietetic Foods, Sweeteners and Sugar Substitutes**
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| * **Diabetes in Pregnancy, Elderly, Surgery, Diabetic diets in Emergency, Illness, Diabetic coma, Insulin reaction, Juvenile diabetes, Patient Education in Diabetes**
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| * **Hypoglycemia -classification, symptoms, fasting state**

**hypoglycemia, Postprandial or reactive hypoglycemia, Early alimentary and late reactive hypoglycemia, Idiopathic****hypoglycemia, Dietary treatment in reactive hypoglycemia.** |
| **7. Dietary care in diseases of the Adrenal Cortex, Thyroid gland and Parathyroid gland.** |
| * **Functions of the gland and hormones and their insufficiency, metabolic implications, clinical symptoms.**
 |
| * **Dietary treatment as supportive to other forms of therapy**
 |
| * **Adrenal cortex insufficiency, Hyper and Hypothyroidism (goitre), Hypoglycemia.**
 |
| * **Nutritional care for Weight Management**
 |
| * **Regulation of energy intake and balance of body weight**
 |
| * **Control of appetite and food intake – Neural control, hormonal control, insulin, estrogen and other peptides and hormones.**
 |
| * **Identifying the obese**
 |
| * **Types of obesity, Health risks**
 |
| * **Causes, Psychology of obesity, Theories of obesity, Physiology of the obese state**
 |
| * **Thermogenesis, Thyroid hormones**
 |
| * **Treatment of Obesity**
 |
| * **Diets in Obesity – Starvation, Fasting**
 |
| * **Evaluation of some common diets, Protein-sparing modified fast, High protein diets**
 |
| * **Balanced Energy Reduction**
 |
| * **Foods to include, fibre foods allowed as desired, alcohol, snacks and beverages**
 |
| * **Psychology of weight reduction**
 |  |
| * **Behavioural Modification – Psychotherapy, pharmacology, exercise & physical activity, Surgery, prevention of weight gain & obesity.**
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| * **Underweight – Etiology and Assessment, High calorie diets for**

**weight gain, Diet plan, Suggestions for increasing calories in the diet, Anorexia Nervosa and Bulimia** |  |
| **8. Diseases of the Circulatory System** |  |
| * **Atherosclerosis – Etiology, risk factors, diet**
 |
| * **Hyperlipidemias**
 |
| * **Brief review of Lipoproteins and their metabolism**
 |
| * **Clinical and nutritional aspects of Hyperlipidemias**
 |
| * **Classification and Dietary care of Hyperlipidemias**
 |
| * **Nutritional care in Cardiovascular disease**
 |
| * **(Ischemic heart disease Pathogenesis of sodium and water retention in Congestive Heart Disease. Acute and Chronic Cardiac Disease, Acute – Stimulants, food & consistency, Chronic – Compensated and decompensated states, Sodium Restriction in Cardiac Diseases, Diet in Hypertension – Etiology,**

**Prevalence, Renin- Angiotensin mechanism, Salt and Blood pressure, Drugs and Hypertension, Cerebrovascular diseases and****diet in brief).** |
| **9. Anemia** |  |
| * **Resulting from Acute Hemorrhage**
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| * **Nutritional anemia**
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| * **Sickle cell anemia**
 |
| * **Thalassemia**
 |
| * **Pathogenesis and dietary management in the above conditions**
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| **10. Renal Disease** |  |
| * **Physiology & function of normal kidney – a brief review**
 |  |
| * **Diseases of the kidney, classification**
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| * **Glomerulo nephritis – Acute and Chronic – Etiology, Characteristics, Objectives, Principles of Dietary Treatment and Management**
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| * **Nephrotic syndrome – objectives, principles of Dietary Treatment and Management.**
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| * **Uremia and Renal Failure**
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| * **History, General Principles of Protein Nutrition in Renal Failure and Uremia.**
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| * **Acute Renal Failure – Causes, dietary management fluid, sodium and potassium balance, protein and energy requirements**
 |  |
| * **Chronic renal failure medical treatment, Renal transplants. Dialysis and types hemodialysis, Peritoneal Dialysis & Continuous Ambulatory Peritoneal Dialysis (CAPD). Dietary Management in conservative treatment, dialysis and after renal transplantation.**
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| * **Use of Sodium and Potassium Exchange lists in Renal (diet planning).**
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| * **Chronic renal failure in patients with diabetes mellitus**
 |  |
| * **Chronic renal failure in children**
 |
| * **Nephrolithiases – Etiology, types of stones, Nutritional care, alkaline-ash diets**
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| **10. Allergy** |  |
| * **Definitions, symptoms, mechanism of food allergy**
 |  |
| * **Diagnosis – History, Food record**
 |  |
| * **Biochemical and Immunotesting (Brief)**
 |  |
| * **Elimination diets**
 |  |
| * **Food selection**
 |  |
| * **Medications (brief)**
 |  |
| * **Prognosis food Allergy in infancy – Milk sensitive enteropathy; Colic, Intolerance to breast milk, prevention of Food Allergy.**
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| **11. Diseases of Nervous System, Behavioural Disorders and Musculo Skeletal System** |  |
| * **Neuritis and polyneuritis**
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| * **Migraine, headache**
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| * **Epilepsy**
 |  |
| * **Multiple sclerosis**
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| * **Hyperkinetic Behaviour Syndrome**
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| * **Orthromolecular psychiatry and mental illness (Brief) Definition, etiology, dietary treatment and prognosis in the above conditions.**
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| * **Arthritis –**
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| * **Rheumatoid Arthritis**
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| * **Osteoarthritis**
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| * **Symptoms, dietary management**
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| **12. Nutrition in Cancer** |  |
| * **Types, symptoms, detection**
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| * **Cancer therapies and treatment – side effects and nutritional implications**
 |  |
| * **Goals of care and guidelines for oral feeding**
 |  |
| * **Accommodating side effects**
 |  |
| * **Enteral tube feeding – Nasogastric, Gastrostomy, Jejunostomy**
 |  |
| * **Parenteral Nutrition**
 |  |
| * **Pediatric patients with cancer**
 |  |
| * **The terminal cancer patient**
 |  |
| **13. Nutrition in Physiological Stress** |  |
| * **Physiological stress and its effect on body, nutritional implications.**
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| * **Fevers and infections**
 |  |
| * **Surgery and Management of Surgical Conditions**
 |  |
| * **Parenteral Nutrition – Types, mode, and composition of feeds**
 |  |
| * **Tube feeding – Routes, modes, composition, care to be taken during feeding**
 |  |
| * **Dietary guidelines**
 |  |
| * **Burns**
 |  |
| * **Metabolic implications – nutritional requirement**
 |  |
| * **Management and nutritional care**
 |  |
| * **Nutritional Management of Patients with HIV, AIDS**
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| * **Nutritional Management – Counselling and Management**
 |  |
| * **Goals of care**
 |  |
| * **Timing of food presentation**
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| * **Guidelines for oral feeding anti-tumour therapy**
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| * **Accommodating taste changes**
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| * **External tube feeding**
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| * **Parenteral nutrition**
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| * **Patient co-operation**
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| * **Pediatric patients with cancer**
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| * **The terminal cancer patient**
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| * **Misconceptions in nutritional care**
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# NUTRITION EDUCATION AND DIETETIC COUNSELING

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| **1. Dietitian as part of the Medical Team and Outreach Services.** |  |
| **2. Clinical Information – Medical History and Patient Profile****Techniques of obtaining relevant information, Retrospective information, Dietary Diagnosis, Assessing food and nutrient intakes, Lifestyles,****Physical activity, Stress, Nutritional Status. Correlating Relevant****Information and identifying areas of need.** |  |
| **3. . The Care Process – Setting goals and objectives short term and long term, Counselling and Patient Education, Dietary Prescription.** |  |
| **4. Motivating Patients.** |  |
| **5. Working with –** |  |
| * **Hospitalized patients (adults, pediatric, elderly, and handicapped), adjusting and adopting to individual needs.**
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| * **Outpatients (adults, pediatric, elderly, handicapped), patients’ education, techniques and modes.**
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| **6. . Follow up, Monitoring and Evaluation of outcome, Home visits** |  |
| **7. Maintaining records, Reporting findings, Applying findings, Resources and Aids for education and counselling, Terminating counselling, Education for individual patients, Use of regional language,****linguistics in communication process, Counselling and education.** |  |

**References:**

* **Krause. Food, Nutrition & Diet Therapy.**

# FOOD SERVICES MANAGEMENT

|  |  |
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| **1. Introduction to food services and catering industry, Development of Food Service Institutions in India, Types of Services as affected by changes in the environment.** |  |
| **2. Hospital food service as a speciality – Characteristics, rates and****services of the food production, service and management in hospitals. Role of the Food Service Manager / Dietitian.** |  |
| **3. . Organizations – Types of organizations and characteristics. Organizational charts.** |  |
| **4. Catering Management – Definition, Principles and Functions, Tools of Management Resources. Attributes of a successful manager.** |  |

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| **5. . Approaches to Management Traditional, Systems Approach, Total Quality Management.** |  |
| **6. Management of Resources – Capital, Space, Equipment and Furniture, Materials, Staff, Time and Energy, Procedures Physical facility design and planning. Equipment selection.** |  |
| **7. Purchase and store room management – Purchase systems, specifications, food requisition and inventory systems, quality assurance.** |  |
| **8. Human Resource Management** |  |
| * **Definition, Development and policies**
 |  |
| * **Recruitment Selection, Induction**
 |  |
| * **Employment procedures: Employee Benefits, Training and Development,**

**Human Relations, Job description, Job specifications, Job evaluation, Personnel appraisal.** |  |
| * **Trade Union Negotiations and Settlement.**
 |  |
| **9. Financial Management (in brief since there is a separate subject Food Cost and Quality Control) – Elements of Financial management, Budget Systems and accounting, Budget preparation.** |  |
| **10. Food Production and Service Operations** |  |
| * **General Planning**
 |  |
| * **Preliminary planning**
 |  |
| * **Consideration of patients with specific nutritional and dietary needs, labour use and productivity.**
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| * **Flow pattern.**
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