

SEMESTER II

BIOCHEMISTRY II (Paper 2.1) Credit: 5

Hours: 75

Marks: 50

Group A

1. **Neuclic acids:** structure of DNA and RNA. Different types of DNA , RNA, their functions and mutation.
2. **Nutrigenomics :** Nutritional regulation of gene expression .Role of specific nutrient in controlling gene expression.

Group- B

3. **Transcription:** RNA polymerase subunits, different sigma factors related to stress, initiation, elongation and termination (Rho dependent and independent) of RNA synthesis: Antitermination, eukaryotic promoters, enhancers, transcription factors, RNA polymerase: various protein motifs involved in DNA protein interaction during transcription.
4. **Translation:** in prokaryotes and eukaryotes and their regulation, processing of m RNA for translation (eg., 5' capping and splicing) and involvement of different translation factors at different stages of the process.

Group- C

5. **Antioxidants :** Definition of free radicals and antioxidants, production and effects of free radicals, role of antioxidants in reducing the free radicals. Natural and synthetic antioxidants.
6. **DNA Replication in prokaryotes and eukaryotes:** General features and enzymology, mechanisms in initiation, elongation and termination, role of individual factors, telomerases, mechanism of replication, maintenance of integrity and role in cancer, DNA damage and repair: factors affecting DNA bases, identification and molecular characterization of repair

enzymes in photoreactivation, excision, recombination and SOS pathways, models for homologous recombination, site specific recombination and transposition.

Food Processing and Biotechnology (Paper -2.2) Credit points: 4

Total marks: 50

Total Hours: 60

Group A

1. History and development of Biotechnology.
2. Improvement in processed food by the application of various biotechnological processes.
3. Technology of conventional and nonconventional fermentation based food products from cereals, legumes, fruits, vegetables.

Group B

4. Fermentation production of modified carbohydrate, lipid and protein and their purification techniques. Studies on changes in colour, flavour and organoleptic test during processing and storage of the fermented food and chances of spoilage of the products due to process defects.
5. Antibiotics : Production ,principle and structure of some important antibiotic.
6. Production of microbial biomass and its economic aspects.

Group C

7. Regulatory and social aspects of biotechnologically modified foods.
8. Technological aspects of some fermented foods from milk, fish and meat, origin, sources, scope and development.
9. Immobilization of enzymes; Different technique and use in food industry.
10. Application of new techniques like Extrusion, Nano technology etc

ADVANCED NUTRITION-II (PAPER 2.3) Credit points: 4

Total marks: 50

Total Hours: 60

Group A

1. Body Composition: - Significance, Different level of body composition, changes in body composition throughout life cycle. Measurement of body composition. Changes & clinical signs.
2. Growth And Development: Definition, differences between maturation and learning, principles of development, stages of development, physical growth of features, reflexes of new born baby
3. Sports Nutrition: - Aerobic and anaerobic energy system in brief, nutritional requirement. Pre-event & Post-event meal. Importance of Supplement. Carbohydrate loading.

Group B

1. Eating Disorder: - (Anorexia nervosa, Bulimia nervosa)-Causes, clinical features, epidemiology, counseling and management. Brief idea of food fads & fallacies
2. Deficiency Disorders Of Some Common Nutrients : Vit-D, Vit- B12, Folic Acid, & Iron.
3. Vegetarianism:-Concept of vegetarianism, reasons behind the development of vegetarianism. Types of vegetarianism. Health benefits and risk factors present with vegetarianism.
4. Geriatric Nutrition: Physiological and psychological changes during old age, Nutrition- disease interrelationship in old age, Diet and life style modification in old age.

Group C

1. Physiological changes during Pregnancy & Lactation
2. Antenatal care during Pregnancy
3. Lactogenesis – Definition, Phases, & Hormonal control
4. Special conditions – Thalassaemia, Sickle Cell Anaemia, NTD, Down Syndrome, Parkinson's Disease, Alzheimer's Disease

Food Commodities And Packaging(Paper 2.4) Credit points: 4

Total marks: 50

Total Hours: 60

Group A

1. Introduction to packaging. Packaging operation, package function and design. Principle in the development of protective packaging.
2. Deteriorative changes in foodstuff and packaging methods for preservation. Shelf life of packaged food stuff, method of extended shelf life.
3. Food containers –rigid containers, corrosion of containers(tin plate).

Group B

4. Flexible packaging materials and their properties.
5. Food Packaging. Bags, pouches, wrappers, carton and other traditional packages.

6. Containers : wooden boxes, crates, plywood & wire based boxes corrugated & fibre based boxes, textile & paper sachet.
7. Special problems in packaging of food stuff , consideration in the packaging.
of perishable & processed foods.

Group C

8. Evaluation of packaging material & package performance, packaging equipments , package standards& regulation.
9. Bar coding, aseptic & retortable pouches. Flexible & laminated pouches. Aluminium as packaging material.
10. Biodegradable packaging, active packaging.

Food Processing and Preservation Practical (Paper 2.5) Credit points: 4

Total marks: 50

Total Hours: 60

1. Preparation of jam, jelly squash nectar and their Preservation
2. Preparation of pickles, chutneys and sauce.
3. Preparation of fermented vegetables
4. Preservation of foods by canning, freezing, drying, cooling.
5. Production of wheat products including flour, bread, cake, and other confectionary products and their preservation.
6. Quality assessment of processed product. Testing of frozen products.
7. Preparation of Dairy products and preservation by heat treatment and pasteurization.
8. Detection and identification of food spoilage organism.
9. Packaging of food products, machinery and equipment.
10. Visit to Food Industry.
11. Sensory evaluation.

Nutritional Biochemistry Practical (Paper 2.6) Credit points: 4

Total marks: 50

Total Hours: 60

1. Preparation of Buffer.
2. Use of Dialysis, salting out, gel chromatography, gel electrophoresis in protein purification.
3. Analysis of Urine, glucose, protein, blood, acetone, bilirubin.
4. Estimation of blood glucose, lipid profile, bilirubin, uric acid, urea, creatinine, SGOT, SGPT, alkaline phosphatase, Hb, PCV, T3, T4, TSH, ferritin, vitamin A.
5. Estimation of salivary amylase.