Food Technology Syllabus for GATE 2015 Examinations:

Food Chemistry and Nutrition:

Carbohydrates: structure and functional properties of mono-oligo-polysaccharides including starch, cellulose , pectric substances and dietary fibre.

Proteins: Classification and structure of proteins n foods

Lipids: Classification and structure of lipids, Rancidity of fats, Polymerization and polymorphism

Pigments: Carotenoids, chlorophylls, anthocyanins, tannins and myoglobin

Food Flavors: Terpenes, esters, ketones and quinines,

Enzymes: specificity, kinetics and inhibition, Co enzymes, Enzymatic and non-enzymatic browning,

Nutrition: Balanced diet, essential amino acids and fatty acids, PER, Water soluble and fat soluble vitamins, Role of minerals in nutrition, Anti nutrients, Nutrition deficiency diseases.

Food Microbiology:

Characteristics of Micro-organisms: morphology, structure and detection of bacteria, yeast and mold in food, spores and vegetable cell, microbial growth in food: intrinsic and extrinsic factors, growth and death kinetic, serial dilution method for quantification, Food spoilage: contribution factors, Spoilage bacteria by Staphylococcus, Clostridium and Aspergillums, Bacteria pathogens: Salmonella, Bacillus, Listeria, Escherichia Coli, Shingella, Campylobacter, Fermented Food: Buttermilk, Yoghurt, cheese, Sausage, Alcoholic beverage, vinegar, sauerkraut and soya sauce.

Food Products Technology:

Processing Principles: Canning, chilling, freezing, dehydration, control of water activity, CA and MA storage, fermentation, hurdle technology, addition of preservatives and food additives, Food packaging, cleaning in place and food laws, Grain products processing: Milling of rice, wheat and maize, parboiling of Paddy, production of bread, biscuits, extruded products and breakfast cereals, solvent extraction, refining and hydrogen of oil, Fruits, vegetables and plantation products processing: extraction, clarification and concentration and packaging of fruit juice, production of Jam , jelly, marmalade, squash, candies and pickles, pectin from fruit waste, tea, coffee, chocolate and essential oils from spices, milk and milk products processing: Pasteurized and Sterilized milk, cream, butter, ghee, ice cream, cheese and milk powder, animal products processing: drying and canning of fish, post modern changes, tenderization and freezing of meat, egg powder.

Food Engineering:

Mass and energy balance, momentum transfer: flow rate and pressure relationships for Newtonian fluids flowing through pipe, characteristics of non-Newtonian Fluids- generalized viscocity coefficient and Reynolds number, Flow of compressible fluid, Flow measurement, pumps and compressors, heat transfer: heat transfer by conduction, convection, radiation, boiling and condensation. Unsteady state heat transfer in simple geometry, NTU – effectiveness relationship of co- current and counter current double pipe heat exchanger, Mass transfer: Molecular diffusion and Fick’s law, Steady state mass transfer, Convection mass transfer, Permeability of films and laminates, mechanical operations, energy requirement and rate of operations involved in size reduction of solids, high pressure homogenization ,

filtration , centrifugation, settling, sieving, flow through porous, bed agitation of liquid, solid-solid mixing, and single screw extrusion, thermal operations, energy requirements and rate of operations involved in process time evaluation in batch and continous sterilization, evaporation of liquids foods, hot air drying of solids, spray and freeze – drying, freezing and crystallization, mass transfer of operations, properties of air water vapour mixture, humidification and dehumidification operations.