

**SYLLABUS FOR ENTRANCE TEST****PhD IN SUGAR TECHNOLOGY****Department of studies in sugar technology****G.U.P,G.Centre,BIDAR****Sugar Chemistry,**

Types and properties of colloids, isoelectric point, zeta potential, colloids in juice, elimination Of colloids in clarification process. Adsorption of coloring matter. Use of active carbons in refineries. regeneration of active carbon. general properties of amino acids, Maillard reaction, and nature of amino acids present in sugarcane juice, role of amino acid in the process of manufacture of sugar.

Classification and color reactions of proteins, general idea about their properties and structures, determination of the order of combination of amino acids in the proteins, estimation of protein. Nature of non-nitrogenous organic acids present in sugarcane juice and their effect on the process of manufacture of sugar.

Law of crystallization, rate of crystallization, viscosity and its determination in massecuite. kinetics of crystal growth ,rate of growth concentration, temperature, stirring, mechanism of growth ( diffusion, viscosity, colloids, crystallographic consideration)

**Sugar cane agriculture.**

Formation and accumulation of sugar in sugarcane, sugarcane physiology and agronomic practice. Type of soils and climatic conditions of the zone for the sugarcane plantation, definition, weathering and soil formation, composition and classification, sugarcane varieties, breeding of sugarcane.

Sugarcane pests and diseases, plant protection measures for sugarcane, major diseases and pests, symptoms, period of occurrence, control measure and effect of yield and sugar content sugarcane maturing and irrigation.

**Sugar production process**

Juice heaters & its operating process, liming & sulphitation, lime preparation, sulphur burner lime slacker, air compressor, sedimentation in clarifier, filtration of mud, Evaporator & its function, use of steam its temperature and pressure, multiple effect evaporators, General aspects of sugar boiling, construction and description of pan, different types of pans & condensers- barometric and jet condensers and their construction. theory of crystallization, crystallization at rest and at motion, factors affecting crystallization.

**Heat Transfer**

Mechanism of heat transfer by conduction, convection and radiation, heat loss by conduction through various types of surfaces under steady state conditions. Forced convection calculation of overall hear transfer coefficient, free convection, condensation of vapours Combustion processes, chemistry of combustion reaction, characteristics of bagasse combustion, heat balance in Furnaces. Combustion calculations, combustion of sulphur. Different types of pumps, their working principles and constructions pump, theory, pump selection and applications, blower and compressors, pump efficiency.

Calculation of diameter of pipes for flow of juice and other sugar house products, live steam and exhaust steam and vapours.

  
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