



THE TECHNOCRACY
STUDENTS' TECHNICAL COMMITTEE, NIT RAIPUR

AAVARTAN'22-23



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DEPARTMENT OF BIOTECHNOLOGY

PROBLEM STATEMENTS

BTE01. Improvement in storage and production of fresh vegetables at high altitude

The tinned/dehydrated food being used by troops at the border has its drawbacks as it produces gas and abdominal discomfort. Make use of the latest technology to address this problem of storage and production of fresh vegetables at high altitude.

BTE02. Water cleaner

Various enzymes work specifically on organic pollutants. They break down the organic pollutants into easily manageable parts. Build a Water cleaner that cleans water with help of enzymes and also minimize the by-product obtained during the process.

BTE03. System for bioremediation of Crystal Violet

Industrial effluent containing textile dyes is regarded as a major environmental concern in the present world. Crystal Violet is one of the vital textile dyes of the triphenylmethane group. Develop a system for bioremediation of Crystal Violet.

BTE04. In-situ biological water treatment

The key way for strategies to reduce surface water pollution is bioremediation. With alarming increase in water pollution the requirement for In-situ techniques in water treatment (In-situ biological techniques include the use of aquatic plants, aquatic animals, and microbial remediation.) Develop a model for the above mentioned problem.

BTE05.

Curry Leaf (*Murraya koenigii*) is a green leafy vegetable native to India. They contain several medicinal properties that include it being anti-diabetic, antioxidant, antimicrobial, anti-inflammatory, anti-carcinogenic and with hepato-protective properties. Devise an experiment that illustrates curry leaves could be effective for prevention of bacterial infections.

BTE06. Develop a system to understand the role of oligosaccharyltransferase in tumor progression

The proteomics approach has become popular in cancer studies. Because it offers useful information on the identification, amounts of expression, and modification of proteins, proteomics has grown in importance in the field of molecular sciences.

BTE07.

Design application or website which is able to detect the type of crop by scanning, predict the requirements of the crop, predict the required ideality in its environment, soil, watering time etc to ensure its best possible growth.

BTE08.

Microbial fuel cells act as biocatalysts for the natural conversion to energy of organic substrates. The electrode content is also a significant challenge for MFC's with organic substrates in realistic applications. How do different electrodes affect the overall performance of the fuel cells? Provide a software based solution.

BTE09.

Plastic materials produced from renewable biomass sources are called bioplastics. Not all bioplastics are biodegradable. **Develop a method for synthesis of biodegradable bioplastics from plant extracts.**

BTE10.

Application of MPPC computational system for removal of environmental pollutants.