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National Institute of Technology, Raipur

Department of Chemical Engineering

VIGYAAN Problem Statements

1. Water treatment systems.

In cases of natural calamities like floods, a huge amount of drinking water is required instantly. Build a water purifier with allowable range of minerals and TDS content which can be used in any situation without electricity. The purifier should be such that it is portable and fulfills minimum purifying requirements.

2. Utilizing renewable energy resources.

A day will come when all the renewable energy resources will be replenished. So, the use of non-conventional energy sources is a must. Scientists have developed many machines which utilizes non renewable energy resources. But, one of the key issues is unlocking the full potential of alternative energy resources. Develop a non renewable energy providing system with maximum efficiency you can.

3. Clean energy consumption Technology.

Consumption of energy for example like burning of coal, use of fossil fuel etc. adds to global carbon dioxide levels which is a major environmental concern and a technological challenge which being addressed is the need of the hour. If in any way we can reduce the pollution caused by burning the coal, pollution levels can be decreased to a great extent. Develop a model which depicts this technology.

4. Solid Waste Management.

We all are well aware about the present status of solid waste management in our country. Even after the launch of swach bharat abhiyaan the condition persists. As an engineer, develop a model depicting ways in which the enormous quantity of solid wastes currently disposed off on land can be reduced by recovering materials and energy from wastes, in a cost effective and environmental friendly manner.

5. Novel reactor design for biodiesel production.

Most current biodiesel processes use refined vegetable oils as the oil feedstock. However, there are many potential sources of non-food oils and waste gases that react poorly in these processes due to a high content of free-fatty-acids. Present a design of a novel two phase reactor performing a feasiblity study of the economic, environmental and social impacts of a biodiesel plant using this reactor.

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