

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**"Jnana Sangama" Belagavi – 590018**



**PROJECT REPORT ON**  
**"TREATMENT OF HOSPITAL WASTEWATER USING**  
**ELECTROCHEMICAL COAGULATION"**

Submitted in partial fulfilment for the award of degree of

**BACHELOR OF ENGINEERING**  
**IN**  
**CIVIL ENGINEERING**

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**DEPARTMENT OF CIVIL ENGINEERING**

**ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY**

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# ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

(A Unit of Alva's Education Foundation®, Moodbidri)

"Shobhavana", Mijar, Moodbidri - 574 225, D.K.



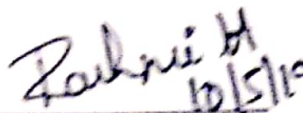
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## Certificate

This is to certify that the project entitled **"TREATMENT OF HOSPITAL WASTEWATER USING ELECTROCHEMICAL COAGULATION"** has been successfully completed by

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the bonafide students of DEPARTMENT OF CIVIL ENGINEERING, ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY of the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI during the year 2018-2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

  
10/5/19  
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## ABSTRACT

The main goal of this study was to determine of the removal efficiency of chemical oxygen demand (COD) from educational hospital waste-water using electrocoagulation process by using 2 Aluminium and Stainless-steel electrodes. A laboratory-scale batch reactor was conducted to determine the removal efficiency by the electrocoagulation method. Samples of Alva's Health Centre Hospital waste-water was collected according to standard methods. The removal of COD from the waste-water was determined and the voltage range of 12, 18, and 24 V at the operation time of 15, 30, 45, and 60 min. Data were analysed and relation between these parameters. Results: The removal efficiency is increased by 93.2% at the optimal condition of 24V and 60 min operation time. By increasing the reaction time from 15, 30, 45 and 60 min at voltages (12, 18, and 24 V), the removal efficiency was increased from 73.3%, 77.7%, 87.1% and 93.2%. The maximum COD removal efficiency was observed at 24V and 60 min reaction time using four 2 Aluminium and 2 Stainless steel electrodes. Analysis showed a significant relationship between voltage and the reaction time with the removal efficiencies. Due to the high efficiency of the electrocoagulation process and also the simplicity and relatively low-cost, it can be used for removing COD from hospital waste-water.

**Keywords**-Electro-chemical coagulation, Chemical oxygen demand, Hospital wastewater