VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama" Belagavi – 590018

PROJECT REPORT ON

"COMPARISION STUDY ON LEAD AND ARSENIC REMOVAL USING GROUNDNUT SHELL AND TAMARIND SEED BY ADSORPTION AND NANOSORPTION"

Submitted in partial fulfilment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
CIVIL ENGINEERING

Submitted By

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Certificate

This is to certify that following students

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Has submitted Final report on **"COMPARISION STUDY ON LEAD AND ARSENIC REMOVAL USING GROUNDNUT SHELL AND TAMARIND SEED BY ADSORPTION AND NANOSORPTION"** for VIII Semester **Bachelor of Engineering in Civil Engineering** during the academic year **2018-19.**The final report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

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ABSTARCT

Toxic heavy metal contamination of industrial wastewater is an important environmental problem. Many industries such as electroplating, pigments, metallurgical processes, and mining and leather industries release various concentrations of heavy metals. Metal ions such as cadmium, nickel, chromium, copper, lead, zinc, manganese and iron are commonly detected in both natural and industrial effluents. An experimental investigation was carried out for the treatment of synthetic solution containing Lead an Arsenic using low cost adsorbents which is ground nut shells and tamarind seed. This work focuses on the utilization of activated carbon prepared from groundnut shell and tamarind shell for the removal of lead and arsenic from synthetic solution prepared. A laboratory scale setup was used to remove lead and arsenic from synthetic solution using Cu coated nanoparticle on activated carbon. The effects of temperature, contact time of lead and arsenic on the adsorption process have been investigated separately with respect to activated carbon and Cu coated nanoparticle. SEM and EDX analysis confirmed Cu nanoparticle successfully coated/decorated on activated carbon. AAS instrument was used to check the removal efficiencies of activated carbon and nanoparticle from synthetic solution and the batch adsorption studies were conducted to determine the adsorbent dose and pH.

Keywords: Lead, Arsenic, Groundnut shell, Tamarind seed, activated carbon, nano particle, Adsorption, Nanosorption.