**ENVIRONMENTAL MICROBIAL BIOTECHNOLOGY (MICR 307) ASSIGNMENT 2014**

1. Microbial fuel cells (MFCs) provide new opportunities for the sustainable production of energy from biodegradable, reduced compounds, including carbohydrates and complex substrates present in wastewaters.

(a) Using specific examples, describe the use of microorganisms in the production of electricity from wastewaters, indicating the different substrates that can be utilized.

(b) Discuss the various optimizations that can be carried out to increase electricity generation using MFCs and the associated current challenges.

2. Nanotechnology holds great potential in advancing water and wastewater treatment to improve treatment efficiency as well as to augment water supply through safe use of unconventional water sources.

1. Discuss recent developments in nanotechnology for water and wastewater treatment, highlighting the candidate nanomaterials, properties and mechanisms that enable the applications.
2. Briefly discuss the relative advantages and limitations of nanotechnology to existing processes for water and wastewater treatment.

**INSTRUCTIONS**

1. The assignment should be **at least** **20 pages**, typed and printed on **A4 paper**,

**1.5 line spacing, 12 point Times New Romans font** and **1 inch (or 2.54 cm) border** all through.

1. References should be cited in the text by the surname of the author(s)

and the year. In case of more than two authors, surname of the first author followed by *et al*. and the year should be cited in the text. The list of references should be provided at the end of each question. References should be arranged alphabetically by first author’s name and the style of ***Applied and Environmental Microbiology*** journal should be followed. **Internet references should be avoided!**

1. Plagiarism will be **severely** penalized.
2. Deadline for submission is **Friday 25 April 2014** (**During Practical Session**).