

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

T-2 EXAMINATION-2016

B.Tech (BT&BI) VIII Semester

COURSE CODE: 14B1WBT741

MAX. MARKS: 25

COURSE NAME: Bioresource and Industrial Products

COURSE CREDITS: 03

MAX. TIME: 1.5 HRS

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Use of Calculator is allowed

Q1 a): An anaerobic digester has a diameter of 40 feet and a sludge loading depth of 10 feet. Calculate the volatile solids loading if 7,000 pounds of sludge with 55% volatility are pumped to the tank daily.

b) If you have a 50,000 gallon primary anaerobic digester which receives primary sludge only, what data you need to calculate the average volatile solid reduction for a month? [2.5 each]

2: a) Microbial communities (e.g. prokaryotic microorganisms) are a significant bioresource of any area. Taking this as case; write all possible strategies for enumeration and preservation of total prokaryotic microorganism present? How they are useful for industrial application?

b) "Electronic waste is hazardous as well as precious resource". Justify the statement. [2.5 each]

Q3: A group of village farmers of Wagnaghat came to you at JUIT mentioning the problem of agricultural waste discard (pine needles). As an engineer, solve their problem limiting your area to biofuels. Which type of biofuel you would like to select and why? Also elaborate the road map of your plan. [5]

Q4: a) Elaborate the current commercial algae biomass production technologies?

b) What are the essential criteria for selection of microalgae as bioresource for biofuels? [2.5 each]

Q5: a) Enumerate the goals of pretreatment of biomass for industrial applications.

b) What are the factors on which rate of biogas production depend? Highlight the importance of each factor. [2.5 each]