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A. The use of bacteria and other microorganisms to break down hazardous waste into relatively harmless compounds is termed as

- a) Phyto remediation
- b) Source reduction process
- c) Integrated waste management
- d) Bioremediation

B. Which of the following statements describe environmental biotechnology?

- a) study of chemical reactions that occur in water, air, and land habitats, and human activities
- b) study of chemical reactions that occur in water, air, and land habitats only
- c) study the use of organisms in industrial or commercial processes
- d) None of the above

C. Match the list i with list ii and select the correct answer

i

1. Chlorofluorocarbon

ii

a. Acid rain.

Biotechnology
Code: (409 E)
Date: 6/1/2025
Time: 2 hours
Full Mark: 70 Marks

Damieta University
Faculty of Sciences
Environ. Sc. Dept.
4th year Env. Sc. Students
& Env. Sc. & Chem Students


جامعة دمياط
Damieta University
1st Semester
(Jan. 2025)

Questions

Answer All the following Questions

الاختبار في ثلاث ورقات

Question 1:

Explain the following [18 Marks]

- Microorganisms can influence behavior of inorganic in bioremediation.
- The main factors which influence the growth of bacteria in the environment.
- Some organisms do not use organic carbon for bioremediation.

Question 2:

[17 Marks]

A. The use of bioremediation

- Depletion in ozone layer in atmosphere.
- Contribution to greenhouse effect.
- disposal of hazardous waste in soil.

- SO₂
- pesticides
- CO₂

Marks]

Question 3: [10 Marks]

statements (true or false) and correct the false one:

Mark the following statements

Explosion is used to extract lipids, carbohydrates, and proteins from biomass.

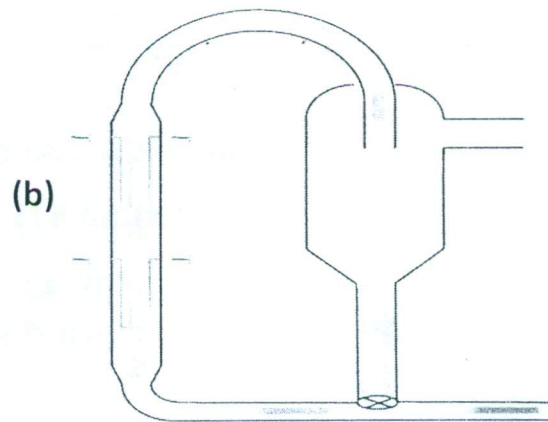
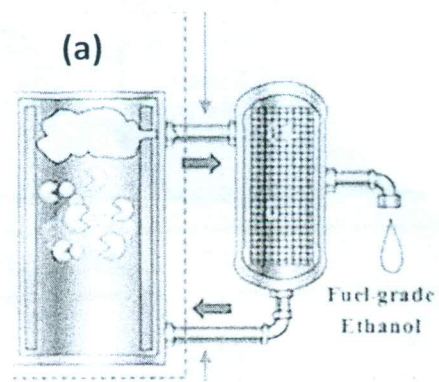
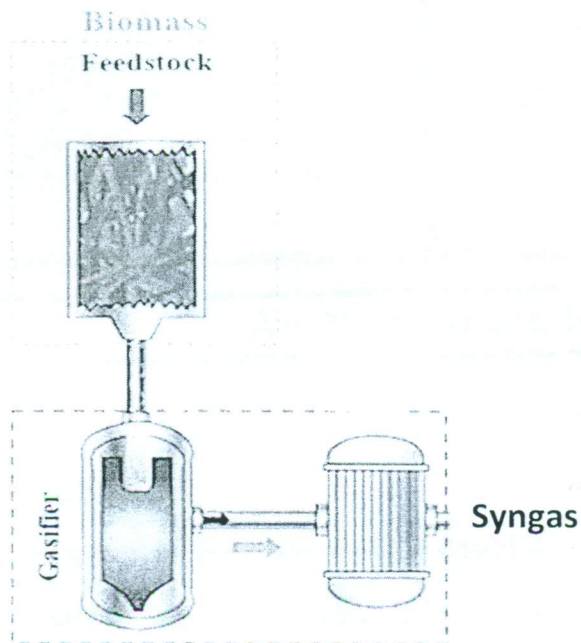
Competition and land use competition are among the various limitations of first generation of biofuels.

are limited by the inability to maintain optimum growth and exposed to risk of contamination from other organisms.

Wheat grass and sugarcane are used for the second generation of biofuels.

- Ammonia fiber explosion is used to extract lipids, carbohydrates, and proteins from biomass.
- Water overconsumption and land use competition are among the various limitations of first generation of biofuels.
- Photobioreactors are limited by the inability to maintain optimum growth and exposed to risk of contamination from other organisms.
- Seed cake, sweet sorghum, and wheat grass and sugarcane are used for the second generation of biofuels.

Question 4: [25 Marks]



1. What is the name of reactor (b) and processes occurred in both reactors?
2. Which one of the previous used processes is the best and why?
3. Place the whole data on the reactor (b) showing the stages of biofuel production.
4. Illustrate the catalysts that can be used in both reactors and giving examples.
5. Mention the names of only two other products that can be produced from reactor (a) and illustrate their various uses.
6. Temperature can affect.....,.....,..... and..... through process (a).

Good Luck

**Examiners: Prof. Maie El Gammal
Dr. Basma Omar**