Benha university
Faculty of science
Botany of department
Diploma of applied microbiology

Time : 2hours
Date : 5/1/2017

Microbial transformations

Answer the questions:

1-(a)

Sterilization: Removal of any living of dormant form of microorganism from any object .

(b) **Killing rate :** The rate of death according to environmental conditions and type of microorganisms .

(c) **Biodegradation :** Degradation of industrial materials such as : paints , rocks , paper and wood .

(d) Bioremediation : The use of microorganisms to remove pollutants from the environment

(e) **Pure culture :** Means that colonies a single cell .

(f) **Transformation medium** : Water or buffer solution with optimum pH values containing the substrate .

(g) **Pseudocrystallofermentation :** Grinding crystalline substrate to micronized particles for penetration of cell membrane .

(h) **Biocorrosion :** Of tanks or tubes made from iron by means of sulfur redacted bacteria which reduced 5 to h_2s which react with iron of tanks leads to biocorrosion .

2) a-

Bacterial insecticides: *Bacillus thurinigiensis* is produced on a commercial scale for use as an insecticide . *Bacillus thuringiensis* has a crystalline parasporal body accompanies sporulation . on ingestion of these cells by susceptible insects , the high pH value in the gut of the insect dissolve the toxic crystalline protein . thereafter , the gut become damaged .

B) Gibberellins : Are plant hormones promote growth by both cell enlargement and cell division gibberellins are produced by the gungus *gibberella fugikuroi* . Green plants contain small amounts of gibberellin like compounds . gibberellins appears to be a great boon to agriculture .

D) Physiological aspects for inoculation process:

1 - Faster growth occurs by using condensed inoculums

2- Using young spores not old for inoculation

3- For quick growth peregrination for spores or mycelium should be done

e) Legume inoculant: The seeds of legumes such as peas and clover are inoculated with prpoer species and strains of Rhizobium bacteria at the time of planting of the seed. Bacteria develop root nodules .The bacteria fixing nitrogen from the air into forms usable by the plant /

F- Role of microorganisms in petroleum extraction:

1- Inoculation of certain species of bacteria to soil leads to acid formation

2- These acids help for rock solubility. Bacterial inoculation helps for decreasing viscosity of raw oil, leading to streaming oil