MICROBIOLOGY - M.Sc, I YEAR

ENVIRONMENTAL AND AGRICULTURAL MICROBIOLOGY

SUB CODE : P16MB22

1. **Aerobiology :**

Study of living microbes suspended in air transmission of airborne microorganisms.

organisms are sprayed by coughing sneezing.

Air microbes are carried out by

i) Dust particles

ii) Droplet nuclei.

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2. **Air droplet :**

A respiratory droplet is a particle consisting mostly of water that is large enough to fall to the ground rapidly after being produced often defined as having a diameter greater than 5 μm.

2. Biological indicator:

A biological indicator is made up of a carrier material on which bacterial spores with a defined resistance to the sterilization process have been applied.

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4. Aid sanitation:

The system of removing the impurities present in and inside buildings to protect people from infection.

Sanitation of self is essential in enclosed places like hospital wards, operation theatres & buses unit to prevent infection.

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5. Biogeochemical cycles:

Bio - life
geo - earth
Chemical → elements - C, O, N, P, S

A cycling of nutrients (water, carbon, oxygen, nitrogen phosphorus, sulphur) from the abiotic components of the ecosystem (water,

air, soil, rock) through the biotic components animals, fungi, bacteria,

6. marine and freshwater ecosystem:.

The types of organisms in an aquatic ecosystem are mainly determined by the waters salinity.

As a result aquatic ecosystem are divided into freshwater & marine ecosystem.

They are include ponds, lakes, streams, rivers & wetlands.

7. sources of water pollution:.

point sources:.

located at specific place

stack pipes ditches sewer lines

Easy to identify, monitor & regulate.

Nonpoint sources:.

Broad diffuse areas cannot be a single site of discharge)

Difficult to identify a control

Expensive to clean up.

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8. Bod and cod explain:.

Bod:-

Bod is a biological oxygen demand through microorganism.

It is slow method the value is always lower than coo.

Cod:.

cod is slow method the value is chemical oxygen demand

chemical breakdown pollutants through acidified K$_2$Cr$_2$O$_7$.

It is fast method the value always greate than Bod.

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9. sewage treatment:.

Sewage is the liquid waste released from the community.

It contains worthless materials discharged from industries, witchots food industries health sanitaries, municipalites.

The sewage has been treated for reducing the pollution hazards.

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10. Saccharification:.

Saccharification is the hydrolysis of polysaccharides present in the used into various simple sugars.

It produces a number of chemicals like xylase, furfural, molases methanol acetic acid, acidic lignins.

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11. Bio gas:.

Bio gas (or) fuel gas consists of methane & carbon dioxide in the radio of 2:1

It has 65% methane, 30% carbon dioxide, 1% hydrogen sulphide & 4% remaining compounds like oxygen, hydrogen, nitrogen & carbon monoxide.

It is produced by fermentation effects by anaerobic bacteria called methanogens.

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18. SCP :.

micro algae as single cell protein.

rich in nutritionally valued proteins vitamins & minerals.

Easily digestible & acceptable by human body & animals.

cultured in open farms biomass is fastest.

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12. Bio degradation :.

The breakdown of toxin substances by treating with efficient strains of microorganisms is called biodegradation.

usually the toxin substances are not of biological origin & are man-made compounds.

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14. Bioaccumulation :.

This is the gradual accumulation of substances such as pesticides or other

chemicals, in an organisms.

Bioaccumulation occurs when an organisms absorbs a substance at a rate faster by catabolism & excretion.

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15. Panchakavya :-

Panchakavya is a prepared by mixing five ingredients.

They are three direct constituents are cow, dung, urine, milk.

Two derived products are called curd.

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16. microbial association :-

They are natural or man-made communities of microorganisms such as bacteria yeasts, algae & fungi.

microbial associations develop through symbiosis (or) ~~metabiosis~~. Metabiosis.

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17. Nitrogen fixation :-

The is a process by which molecular nitrogen (N) the air is converted into

ammonia (NH_3) or related is molecular dinitrogenous compounds in soil.

Ex:- Azospirillum, cyanobacteria, Azotobactor.

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18. Symbiosis:-

The bacteroids fix the atmospheric nitrogen into ammonia they provide the fixed nitrogen for plants case & & draw nourishments from the host cells.

This type of association is called symbiosis.

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19. PGPR:-

Plant growth-promoting rhizobacteria.

They are associated bacteria that form symbiotic relationships with many plants.

The name comes from the Greek rhizo meaning root.

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20 Fungal pesticids:.

When a fungus is used as insecticide, it is called mycoinsecticides.

The common fungal insecticides are Boaveria bassiana & metathizium anisopliae

The fungal hyphae were used to inactivate the host by release of insects toxins in spray form.

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21 Fungal & Bacterial infections plants:.

Fungal infection plant:.

They damage plants by killing cells & lot causing plant stress sources of fungal infections are infected food, soil, crops debris nearly crops & weeds.

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22. phenolics:.

In organic chemistry phenol is sometimes called phenolics. They are a class of

chemical compounds consisting of a hydroxyl group bonded directly to an aromatic hydrocarbon group.

The simplest of the class is phenol, C_6H_5OH.

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22. microbial pesticides:.

They are composed of microscopic living organisms (viruses bacteria, fungi, protozoa (or) nematodes) or toxin produced by those organisms.

They are includes insecticides fungicides, herbicides & growth regulators of microbial origin.

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23. phosphobacteria:.

eg:- phosphobacteria is a biofertilizer containing the phosphate solubilizing microorganisms such as Bacillus spp.

Q5 Microbial pesticides advantage :.

In the past several authors have argued that the main advantages of microbial pesticides compared to chemical products ~~are~~ ~~pesticides~~ compared to

a) the absence of harmful residues

b) The environmental friendly nature &

c) the low production cost (Loong & Barnes (1993).