



SHIKSHA CLASSES

Subject : Science -II
Class : X

Answer Paper 7. Introduction to Microbiology

Total Marks : 20

- Q.1: A) Choose the correct alternative :** 2
- 1) ----- impacts the characteristic taste to yoghurt.
- Ans.:** d) Acetaldehyde
- 2) ----- imparts thickness to icecreams and pudding.
- Ans.:** c) Xanthangum
- B) Solve the following questions. (Any One)** 1
- 1) **Complete the analogy.**
Candida : cocoa : : Lactobacillus brevis : coffee
- 2) **Find odd one out.**
Methane, ethanol, Hydrogen gas, petroleum.
- Ans.:** Petroleum
- 3) **Give one word for the following**
An example of compound used as emulsifier.
- Ans.:** Polysaccharides / glycolipids
- Q.2: A) Give scientific reason. (Any One)** 2
- 1) **The probiotics have developed much importance in recent days.**
- Ans.:** These products form the colonies of useful microbes in alimentary canal and control other microbes and their metabolic activities, improve resistance and lower the ill effects of harmful substances formed during metabolic activities. Useful microbes become inactive due to antibiotics, probiotics make them active again
Therefore the probiotics have developed much importance in recent days.
- 2) **Compressed yeast is used in commercial bakery industry.**
- Ans.:** Compressed yeast is used in commercial bakery industry because it is available in dry granular form for domestic use yeast produced for commercial use contains various useful contents like carbohydrates, fats, proteins, various vitamins and minerals.
Due to this bread and other products produced with the help of yeast become nutritive.
- B) Solve the following question. (Any Two)** 4
- 1) **What are hermaphrodite?**
- Ans.:** **Hermaphrodite :** Hermaphrodite means male and Female reproductive systems are present in the same animal body.
- 2) **How can bacteria control the soil pollution occurring due to acid rain?**
- Ans.:** 1) Sulphuric acid is present in the acid rain and materials coming out of mines.
2) Erosion of metals present in statues, bridges and building occurs due to it.

- 3) Sulphuric acid is source of energy for some species of bacteria, like *Acidophilium* spp and *Acidobacillus ferrooxidans*.
- 4) Hence these bacteria can control the soil, pollution occurring due to acid rain.

3) Write about hydrocarbonclastic bacteria.

Ans.: Spilling of petroleum oil occurs in ocean due to various reasons. This oil may prove fatal and toxic to aquatic organisms. It is not easy to remove the oil layer from surface of water by mechanical method. However bacteria like *Pseudomonas* spp. and *Alcanovorax bockumensis* have the ability to destroy the pyridines and other chemicals. Hence these bacteria are used to clear the oil spills. These are called hydrocarbonoclastic bacteria (HCB). HCB decompose the hydrocarbons and bring out the reaction of carbon with oxygen CO_2 and water is formed in this process.

4) Distinguish between Applied microbiology and Industrial microbiology.

Applied Microbiology	Industrial microbiology
i) Applied microbiology is the study related to enzymes, proteins, molecular biology etc.	i) Industrial microbiology is the science related to commercial use of micorbes for various economic, social and environment related processes.
ii) This branch looks how one can utilize the abilities possessed by microbes for various research.	ii) This branch strives to put to use abilities of microbes and improve their abilities from a commercial point of view.

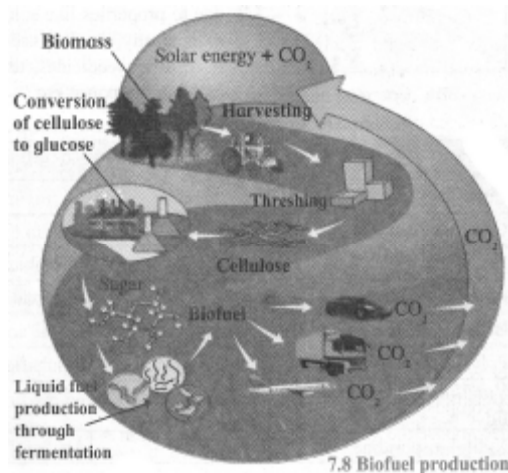
Q.3: Solve the following questions. (Any Two)

6

1) Write a note on biofuel.

Ans.: Bio-fuel

- 1) Bio fuel is important among the renewable source of good energy.
- 2) These fuels are available in solid liquid and gaseous forms
- 3) These fuels are easily available and in plenty of quantity.
- 4) These are reliable fuels of the future.



2) Write about microbes and fuels.

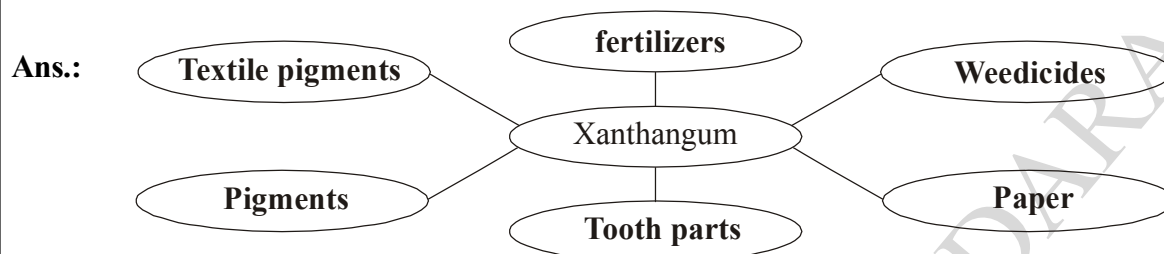
Ans.: Microbes and fuels :

- 1) **Gaseous fuel :** methane can be obtained by microbial anaerobic decomposition of urban agricultural and industrial waste.
- 2) Ethanol, an alcohol is a clean (smoke less) fuel obtained during fermentation of molasses by the yeast *saccharomyces*.
- 3) Hydrogen gas is considered to be the fuel of future. Hydrogen gas is released during bio-photolysis of water in which bacteria perform the photo reduction.

3) Why it is necessary to ban the use of plastic?

- Ans.:**
- i) Plastic contains a chemical substance PET (polyethylene terephthalate polyester)
 - ii) PET is a non degradable compound that can be acted upon by only a few microbes Due to this it stays accumulated in the environment.
 - iii) Plastic being used for storing garbage is although biodegradable polylactic acid it gets degraded after prolonged period of time.
 - iv) Thus such materials due to the time taken for them to get degraded should be banned.

4) Complete the chart



Q. 4: Solve the following question. (Any One)

5

1) Write a note on microbial enzymes.

Ans.: **Microblal Enzymes :**

- i) Enzymes are substances that are produced by living organisms which act as catalysts.
- ii) Enzymes are active at low temperature, pH, pressure.
- iii) Enzymes carry out specific processes hence unnecessary by products are not formed due to which expenses on purification are minimized.
- iv) Elimination and decomposition of waste materials is avoided in case of enzymatic reactions and enzymes can be reused making them ecofriendly.
- v) Some examples of microbial enzymes are transferase, lyase, ligase etc.
- vi) microbial enzymes are used in various industries like cheese, plant extracts, leather, paper etc.
- vii) They are also mixed in detergents for dirt and the cleaning can occur at low temperatures too.

2) How bread and other products produced using baker's yeast are nutritious?

- Ans.:**
- i) Compressed yeast is used for commercial bakery industry.
 - ii) It is available in dry and granular form for commercial use.
 - iii) Yeast produced for commercial use contains various useful contents like carbohydrates, fats, proteins, various vitamins and minerals.
 - iv) Due to the presence of such materials the bread and other products produced becomes nutritive.

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