BIOLOGY

BOOKS - TARGET PUBLICATION

INTRODUCTION TO MICROBIOLOGY

Choose The Correct Alternative

1. During fermentatin, lactose sugar present in milk is converted into _____

A. lactic acid

B. acetic acid

C. ascorbic acid

D. citric acid

Answer: A

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2. Which of the following is a product of fermation of carbohydrates by yeast ?

A. Water

B. Sugar

C. Ethanol

D. Both (B) and (C)

Answer: C

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3. microbial fermentation is used for production of which of the following product (s) ?

A. Kefir

B. Monsodium glutamate

C. Vinegar

D. All of these

Answer: D

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4. Ethanol, an alcohol is obtained by fermentation of carbon compounds with the help of which microbe ?

A. Saccharomyces cerevisiae

B. Acetobacter spp.

C. Aspergillus niger

D. Lactobacillus spp.

Answer: A

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5. Ethanol can be obtained by fermentation of

A. sugar molasses

B. maple syrup

C. starch of roots

D. All of these

Answer: D

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6. Soy sauce is produced by fermentation of a mixture of wheat or rice and soybean with the help of _____

A. Aspergillus oryzae

B. Actinomycetes spp.

C. Streptococcus thermophiles

D. Lactobacillus lactis

Answer: A

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7. _____ is obtained by fermentation of apple juice.

A. Cider

B. Wine

C. Coffee

D. Cocoa

Answer: A

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8. Citric acid used in production of beverages, toffees, chocolates is obtained by fermentation of _____ by Aspergillus niger.

A. grapes

B. sugar molasses

C. apple

D. coffee nuts

Answer: B

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9. _____ is obtained by microbial process Lactobacillus delbrueckii.

A. itaconic acid

B. lactic acid

C. gluconic acid

D. citric acid.

Answer: B

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10. _____ is an antibiotic effective against tuberculosis.

A. Penicillin

B. Rifamycin

C. Gentamicin

D. Tetracycline

Answer: B

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11. Metals leaching from low quality metalloids can be converted into compound with the help of

A. Thiobacilli and Sulphobacilli

B. Lactobacilli and Pseudomonas

C. Actinomycetes and Saccharomyces

D. Acetobacter and Gluconobacter

Answer: A

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12. Plastic bottles are formed from the chemical substance

A. Plymer Tetrachloro Polyester

B. Polyethylene Terephthalate Polyester

C. Polyamino Tetrameric Polyethylene

D. Polymer Tryptophan Polyester

Answer: B

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13. _____ acid is present in acid rain.

A. Acetic

B. Sulphuric

C. Lactic

D. Ascorbic

Answer: B

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14. _____ convery salts of uranium released from the atomic energy plan into insoluble salts.

A. Geobacter

B. Acetobacter

C. Gluconobacter

D. Pseudomonas

Answer: A

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15. _____ a by-product of fermentation is a biopesticide.

A. Fluoroacetamide

B. Spinosad

C. PET

D. Ethyl butyrate

Answer: B

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Complete The Paragraph

1. Fill in the blanks by selecting the correct word from the bracket and complete the given paragraph.

(Acetobacter, sweetness, sourness, Streptococcus thermophilus, fats, whey, fungi, Lactobacillus lactis, protease)

In cheese production, microbes like _____ and _____ are mixed with milk. It imparts _____ to the milk. After this _____ needs to be removed to impart dense texture to the cheese. An enzyme _____ obtained from _____ is used to produce vegetarian cheese.

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Name The Following

1. Dairy products

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2. Varieties of butter

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3. Enzyme _____ obtained from alimentary canal of cattle used tranditionally in the production of cheese.

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4. Name the following:

Water in yoghurt

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5. Name the following :

Probiotic products

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6. Gas released during fermentation by yeast which makes bread spongy.

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7. Ingredients used in chinese food produced by microbial fermentation.

8. Name the following:

Food items in which vinegar is used as preservative.

9. Microbial enzymes

10. Name the following:

Substance obtained by microbial processing which are used as essence.

11. Name the following:

Emulsifiers obtained by microbial processing.

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12. Antibiotics used against various strains of gram positive and gram negative bacteria.

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13. Name the following:

An alcohol which is used as a smokeless fuel.

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14. Solid biofuel

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15. Bacterial species which can decompose PET or plastic bottles.

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16. Microbial species that have the ability to decompose rubber from garbage.

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17. Bacterial which used sulphuric acid as a source of energy and can control soil polution caused due to acid rain.

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True Or False

1. Diacetyl has a flavour of butter true or false

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2. acetic acid is bleached with the help of potassium ferrocyanide before pasteurization.

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3. Water content and acidity of the milk remains same during formation of cheese, yoghurt, etc.

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4. During cheese production, milk is pasteurized at the beginning to destroy lactobacilli present in it.

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5. Acetaldehyde like componds formed due to Streptococcus give dense consistency to yoghurt.

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6. Parmesan is a freshly prepared cheese, hence it is always soft.

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7. Shelf life of yoghurt and its probiotic properties can be improved by pasteurization.

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8. Compressed yeast is used in commercial bakery industry.

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9. State whether the given statement is true or false

4% acetic acid imparts sweet taste to sauce, chutneys, ketchup, etc.

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10. _____ is obtained by fermentation of apple juice.

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11. Xanthan is obtained by fermenting starch and molasses with the help of Geobacter spp.

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12. Glutamic acid, lysine and tryptophan are used as antioxidants.

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13. Aspartame is used as an artificial sweetener.

Watch Video Solution

14. Methane gas is obtained by microbial anaerobic decomposition of waste.

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15. Hydrogen gas is released during bio-photolysis of water.

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16. Biofuels are available in liquid from only.

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17. In villages, domestic sewage is disposed off either in nearby soil or in a biogas plant.

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18. Water released after microbial treatment is environmentally safe.

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19. Fluoroacetamide like chemicals can be used in organic farming as they do not cause any harm to plants and animals.

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Odd One Out

1. Yoghurt, Chedar cheese, Kefir, Soy sauce

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2. Lactobacillus lactis, Clostridium, Lactobacillus cremoris, Streptococcus thermophilus

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3. Spirulina, Chlorella, Yeast, Blue green algae

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4. Beat carotene, Lutein, Vanillin, Lycopene

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5. Neomycin, Lutein, Tetracycline, vancomycin

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Complete The Analogy

1. Yoghurt : Bacteria in Milk :: Cheese: _____

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2. Rennet : Alimentary canal of cattle :: Protease : _____

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3. Yoghurt : Lactobacilli :: Bread : _____

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4. Coffee : Coffea arabica :: Cocoa : _____

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5. Lactobacillus delbrueckii : Lactic acid :: Aspergillus itaconius : _____

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6. Natamycin : Microbial restrictor :: Xanthenes: _____

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7. Polysaccharides : Emulsifiers :: Xylitol : _____

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Match The Following

1.

	Column I (Microbe)		Column II (Products)
i.	*Aspergillus niger*	a	L- glutamic acid
ii.	*Brevibacterium*	b.	Lactic acid
		c.	Itaconic acid
		d.	Gluconic acid

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2.

	'A' group		'B' group
i.	Xylitol	a.	Pigment
ii.	Citric acid	b.	To impart sweetness
iii.	Lycopene	c.	Microbial restrictor
iv.	Nycin	d.	Protein binding
		e.	To impart acidity

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Answer The Following

1. What is applied microbiology ?

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2. Define industrial microbiology. Give any two examples of products formed by fermentation process in industrial microbiology.

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3. Explain the basic process for production of yoghurt, cheese and cream.

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4. Explain the steps involved in the process of yoghurt production.

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5. Write a shot note on yoghurt production.

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6. List down the steps involved in the productio of cheese once the whey is separated from yoghurt.

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7. Which are the reason for increasing the popularity of probiotic products ?

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8. Why the probiotics have developed much importance in recent days ?

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9. How does the bread become spongy ?

Watch Video Solution

10. How the bread and other products produced using baker's yeast are nutritious ?

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11. What is the basic difference between production of yoghurt and bread with respect to the microbes used ?

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12. Explain the process of Vinegar production.

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13. Give uses of organic acids produced by given microbes in a tabular format.

Aspergillus niger, Lactobacillus delbrueckii, Aspergillus itaconius

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14. Give examples of beverages and chemicals obtained by microbial fermentaion of different organic substrartes.

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15. What is xanthan gum ?

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16. State the uses of xanthan gum that is obtained by microbial process.

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17. Which plants are cultivated to obtain the fuel ?

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18. Which fuels can be obtained by microbial processes ? Why is it necessary to increases the use of such fuels ?

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19. What are the benefits of mixing ethanol with petrol and diesel?

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20. Which fuels are obtained from biomass ?

 Watch Video Solution

21. Explain biofuel production with the help of a diagram

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22. Mention any four advantages of biofuels.

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23. How urban waste that is accumulated in terms of tonnes may be disposed off?

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24. Give diagrammatic representation of a modern landfill site and explain how waste it disposed off ?

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25. Write a short note on modern landfill sites for waste disposal.

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26. Why are pits lined with plastic sheets at modern landfill sites ?

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27. What is role of microbes in compost production ?

 Watch Video Solution

28. Explain in detail how sewage management is done in cities ?

 Watch Video Solution

29. Write a short note on sewage management in cities.

Watch Video Solution

30. Which precautions are necessary for proper decomposition of domestic waste ?

Watch Video Solution

31. How can the oil spills of rivers and oceans be cleaned ?

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32. There is an oil layer on the water surface of river in your area. What will you do?

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33. Why is it necessary to ban the use of plastic bags?

Watch Video Solution

34. How can the soil polluted by acid rain be made fertile again ?

Watch Video Solution

35. What is the role of Geobacter in pollution control ?

Watch Video Solution

36. Write four advantages of using microbial incoulants in farming.

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37. Explain the importance of biopesticides in organic farming.

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38. Rewrite the statement using correct option and explain the completed statement

Process of _____ of milk proteins occurs due to lactic acid.

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39. Rewrite the statement using correct option and explain the completed statement

Harmful bacterial like _____ in the intestine are destroyed due to probiotics.

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40. Rewrite the statement using correct option and explain the completed statement

Chemically, vinegar is _____

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41. Rewrite the statement using correct option and explain the completed statement

Salts which can be used as supplement of calcium and iron are obtained from _____ acid.

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42. Why microorganisms are important in our daily life ?

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Give Reasons

1. Use of mutant strains has been increased in industrial microbiology.

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2. Enzymes obtained by microbial process are mixed with detergents.

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3. Microbial enzymes are used instead of chemical catalysts in chemical industry.

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4. It is necessary to control pollution at a right time and to the right extent.

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Complete The Given Chart Table

1. Complete the following table :

Source	Microbe	Products
Sugar molasses and salt	----------	Citric acid
----------	*Lactobacillus delbrueckii*	----------
Corn steep liquor	*Aspergillus itaconius*	----------

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2. Complete the following table representing production of beverages.

No.	Fruit	Microbe used	Role of microbe	Name of beverage
i.	*Coffea arabica*	----------	Separating seeds from fruit	----------
ii.	----------	*Candida, Pichia (Hansenula), Saccharomyces*	Separating seeds from fruit	----------
iii.	Grapes	----------	Fermentation of juice	Wine
iv.	Apple	*Saccharomyces cerevisiae*	Fermentation of juice	----------

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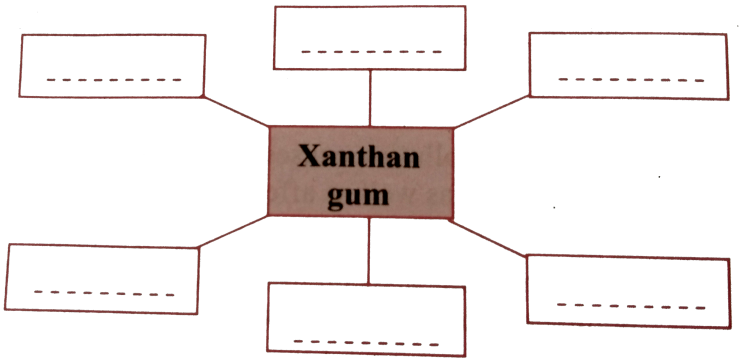
3. Complete the following conceptual picture with respect to uses.



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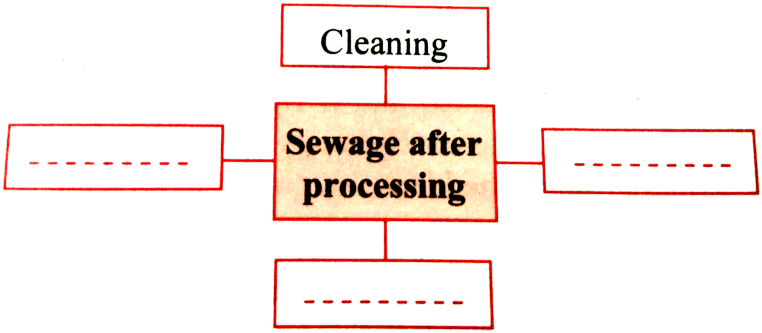
4. Complete the following conceptual picture.



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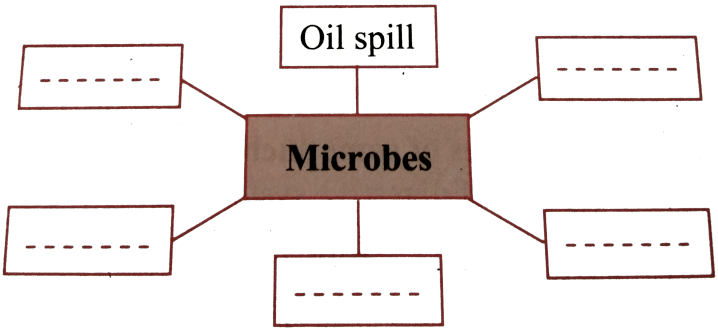
5. Complete the following conceptual picture related to environmental management.



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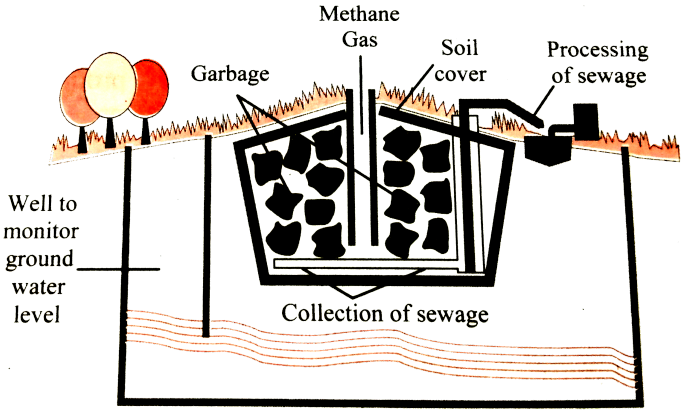
Questions Based On Diagram

1. Observe the figure and answer the question:



Modern landfill site

Identify the process shown in the figure.

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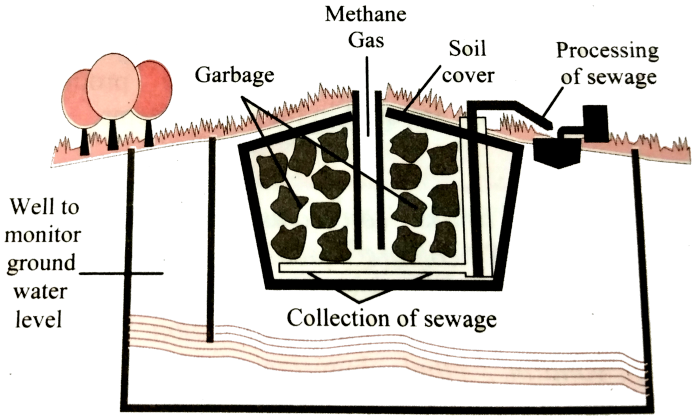
2. Observe the figure and answer the question:



Modern landfill site

Explain the process in short.

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Questions Based On Paragraph

1. The coutries which do not have oil reservatirs in their land import oil from other countries. But sometimes during transporting oil through sea routes, accidental oil spilling occurs. This oil spilled in the ocean may prove fatal and toxic to aquatic animals. Therefore, removel of this spilled oil is essential for protection of aquatic life. For removing this oil layer, certain microbes like Pseudomonas spp. and Alcanivarax borkumensis are used. These microbes have the ability to destroy the pyridines and other toxic chemicals. The

hydrocarbonoclastic bacteria (HCB) are able to decompose the hydrocarbons and bring about the reaction carbon with oxygen resulting in formation of CO_2 and water.

Like oil spills cause damage to aquatic life, platic forms the major part of the grabage on land. Plastics are difficult to degrade as they are made up of PET. By research, various species like Vibrio and Idenoella sakaiensis which can degred PET.By research, various species like Vibrio and Ideonella sakaiensis which can degrade PET have been identified. There are cartain species of microbes which

can decompose rubber from garbage.

Based on the given paragraph answer the following question.

How are aquatic organisms affected by oil spills in oceans ?

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2. The countries which do not have oil reservoirs in their land import oil from other countries. But sometimes during transporting oil through sea routes, accidental oil spilling

occurs. This oil spilled in the ocean may prove fatal and toxic to aquatic animals. Therefore, removel of this spilled oil is essential for protection of aquatic life. For removing this oil layer, certain microbes like Pseudomonas spp. and Alcanivarax borkumensis are used. These microbes have the ability to destroy the pyridines and other toxic chemicals. The hydrocarbonoclastic bacteria (HCB) are able to decompose the hydrocarbons and bring about the reaction carbon with oxygen resulting in formation of CO_2 and water.

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Based on the given paragraph answer the following question.

Which type of chemical compounds are degraded by microbes used for clearing oil spills ?

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3. The coutries which do not have oil reservatirs in their land import oil from other countries. But sometimes during transporting oil through sea routes, accidental oil spilling occurs. This oil spilled in the ocean may prove fatal and toxic to aquatic animals. Therefore, removel of this spilled oil is essential for protection of aquatic life. For removing this oil layer, certain microbes like Pseudomonas spp. and Alcanivarax borkumensis are used. These microbes have the ability to destroy the

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There are cartain species of microbes which can decompose rubber from garbage.

Based on the given paragraph answer the following question.

Name any two species of microbes which can degrade rubber from

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4. The countries which do not have oil reservoirs in their land import oil from other countries. But sometimes during transporting

oil through sea routes, accidental oil spilling occurs. This oil spilled in the ocean may prove fatal and toxic to aquatic animals. Therefore, removel of this spilled oil is essential for protection of aquatic life. For removing this oil layer, certain microbes like Pseudomonas spp. and Alcanivarax borkumensis are used. These microbes have the ability to destroy the pyridines and other toxic chemicals. The hydrocarbonoclastic bacteria (HCB) are able to decompose the hydrocarbons and bring about the reaction carbon with oxygen resulting in formation of C O 2 and water. Like oil spills

cause damage to aquatic life. plastic forms the major part of the garbage on land. Plastics are difficult to degrade as they are made up of PET. By research, various species like Vibrio and Idenoella sakaiensis which can degrade PET have been identified. There are certain species of microbes which can decompose rubber from garbage. Based on the given paragraph answer the following question.Why should there be a ban on plastic bags ?

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Apply Your Knowledge

1. Which different microboes are useful to us ?

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2. Which different products can be produced with the help of microbes ?

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3. We use the fermentation process while conversion of milk into yoghurt. Which microbes are useful for this process ?

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4. Which different type of cheese are used in western food like pizza, burger, sandwich, etc. ?

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5. What is difference between those types of cheese ?

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6. What for probiotic food is famous ?

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7. Use your brain power. In earlier class, you had prepared the solution of dry yeast for

observation of yeast. Which substance is prepared by its use on commerical basis ?

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8. Which function are performed by enzymes secreted in human digestive system ?

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9. Give names of some such enzymes.

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10. Use your brain power. Food materials like cold drinks, ice creams, cakes, juces are available in various colours and flavous. Whether these colours and flavoures are really derived from fruits ?

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11. Read the ingredients and their proporation printed on bottles of cold drinks and juices

and wrappers of ice creams. Find out the natural and artificial ingredients.

View Text Solution

12. What do you mean by antibiotic ?

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13. Read the ingredients and their proportion printed on bottles of cold drinks and juices and wrappers of ice creams. the natural and

artificial ingredients added in them, Which precautions should be taken about their consumption ?

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14. Which different materials are decomposed in biogas plant ?

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15. Which useful materials are obtained through biogas plant? Which is the fuel out of those ?

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16. In biogas plant, Decomposition occurs through which organisms ?

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17. Why is it asked to segregate wet and dry waste in each home ?

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18. What is done with the segregated waste ?

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19. Which is most appropriate method of disposal of dry waste ?

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20. Observe the grabage vans of gram panchayat and municipality. Nowadays, there is facility of decreasing the volume of garbgage by compaction those vans. Explain the advantages of this activity.

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21. Which materials should not be present in garbgage for its proper microbial decomposition ?

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22. How the sewage generated in your house or apartment is disposed off ?

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23. You must have seen or read the news of dead fishes or oily water accumulating at the sea coasts. Why does this happen ?

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24. Collect pictures of various useful microbes. Display chart of their information in classroom.

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25. How the bacteria present in soil and root nodules of leguminous plants are useful ?

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26. Find the ways to implement the zero garbage system at domestic level.

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27. Which are the microbes that destroy the chemical pesticides in soil ?

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28. Collect more information about reasons for avoiding the use of chemical pesticides.

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Chapter Assessment

1. Which of the following causes rise in dough while making bread ?

A. SO_2

B. Acetic acid

C. CO_2

D. Ethanol

Answer:

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2. Which of the following microalgae is NOT used as food ?

A. Spirulina

B. Blue green algae

C. Chlorella

D. Saccharmyces

Answer:

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3. Which of the following microbes is used to control soil pollution occuring due to acid rain ?

A. Ideonella sakaiensis

B. Alcanivarax brokumensis

C. Acidobacillus ferroxidans

D. Corynebacterium

Answer:

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4. _____ obtained from Brevibacterium and Corynebacterium is used for production of Ajinomoto.

A. L-glutamic acid

B. Gluconic acid

C. Itaconic acid

D. citric acid

Answer:

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5. True of False. If false, write the correct sentence.

Biofule is a non-renewable source of energy.

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6. Match the columns.

	Column I		Column II
a.	Rifamycin	1.	Edible colour
b.	Spinosad	2.	Tuberculosis
		3.	Biopesticide
		4.	Biofuel

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7. Complete the anology.

Ascorbic acid : Antioxidant :: Lycopene : _____

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8. Find the odd one out and explain.

Hydrogen gas, Ethanol, Petrol, Methane

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9. Geobacter plays a role controlling ground water pollution.

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10. Recently there is an increase in the use of microbial enzymes instead of chemical catalyst in the chemical industry.

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11. Write a short note on Xanthan gum.

Watch Video Solution

12. Write any four uses of Probiotics.

Watch Video Solution

13. Identify the given microbe and write a note on it.

Watch Video Solution

14. Biofuels are reliable fuels of the future. Explain the given statement.

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15. Fill in the blanks by selecting the correct word from the bracket and complete the given paragraph.

(characterisitic taste, Lactobacilli, Xanthamonas spp., lactic acid, dense consistency, acetic acid, 2:1,Streptococcus thermophilus, 1:1)

For preparation of yoghurt, milk is boiled and once it cools to warm temperature, bacteria such as Lactobacillus delbrueckii and _____ are added to it in _____ proporation. _____ is formed due to Streptococcus that makes the

proteins to gel out and thus give _____ to the yoghurt. Acetaldehyde like compounds are formed due to _____ that gives _____ to the yoghurt.

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16. Complete the following table.

Source	Microbe	Products
Glucose, corn steep liquor	----------	Gluconic acid
----------	*Aspergillus itaconius*	Itaconic acid
Sugar and beet molasses, ammonia salt	----------, *Corynebacterium*	----------
Sugar molasses, salt	*Aspergillus niger*	----------
Molasses, corn steep liquor	*Lactobacillus delbrueckii*	----------

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17. Explain with the help of diagram how waste from urban cities is disposed of at landfill sites.

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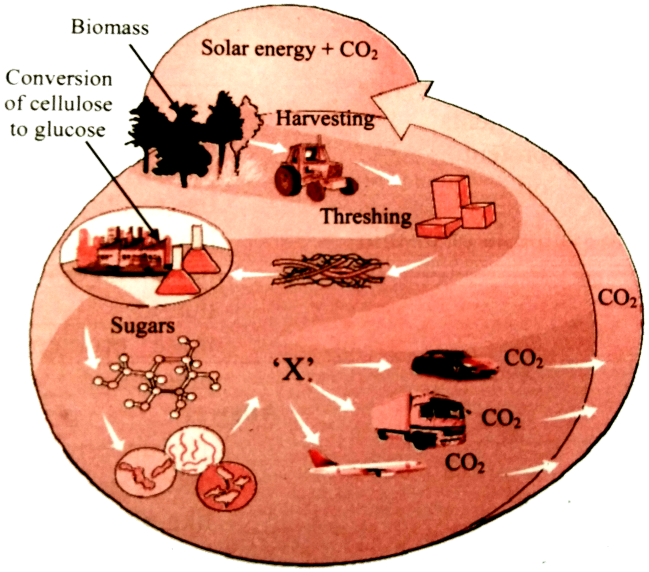
18. Observe the given figure and answer the following questions.



a. What does the given figure indicate ?

b. Name any fuel produced by this method.

c. Identify 'X' in the given figure.

d. Give any two examples of plants used for production of fuel by this method.

e. Name the process by which glucose is converted into liquid fuel in this method.

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