



BIOLOGY

BOOKS - MBD -HARYANA BOARD

MICROBES IN HUMAN WELFARE

Example

1. Bacteria cannot be seen with the naked eyes, but these can be seen with the help of a microscope. If you have to carry a sample from

your home to your biology laboratory to demonstrate the presence of microbes under a microscope, which sample would you carry and why?



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2. Give examples to prove that microbes release gases during metabolism.



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3. In which food would you find lactic acid bacteria ?Menti some of their useful applications.



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4. Explain the term LAB.



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5. Name some traditional Indian foods made of wheat, rice and Bengal gram (or their products) which involve use of microbes.



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6. In which way microbes have played a major role in controlling diseases caused by harmful bacteria?



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7. Name any two species of fungus ,which are used in the productio fo antibiotics.



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8. What is sewage?In which way can this be harmful?



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9. What is the key difference between primary and secondary sewage treatment?



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10. Do you think microbes can be used as source of energy? If yes, how?



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11. Microbes can be used to lessen the burden of use of chemical pesticides. Explain how this can be accomplished.



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12. Explain how microbe *Bacillus thuringiensis* acts as biological control agent.



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13. Three water samples namely river water, untreated sewage water and secondary effluent discharge from a sewage treatment plant were subjected to BOD test. The samples were labelled A,B and C. but the laboratory attended did not note, which was which . The BOD values of the three samples A,B and C were recorded as 20 mg/L , 8 mg/L and 400 mg/L, respectively. which sample of the water is most polluted ? can you assign the correct label to each , assuming the river water is relatively clean



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14. Name the microbes from which Cyclosporin A (an immunosuppressive drug and Statins (blood cholesterol lowering agents) are obtained.



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15. Find out the role of microbes in the following and discuss it with your teacher

Single cell protein (SCP)

Soil.



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16. How do biofertilizers enrich the soil?



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17. What is Baker's yeast ?Give its application?



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18. Which bacterium is responsible for the formation of curd from milk?



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19. What is brewing ?



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20. What is the difference between rum and whisky?



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21. Give the sources of invertase enzyme (surase).



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22. What is primary sludge?



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23. What are flocs?



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24. Name two gases produced during secondary treatment by sewage.



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25. What are bioreactors?



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26. Name the substances by the fermentation of which ,whisky,beer,wine,brandy and rum can be prepared.



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27. Name the first acid to be produced by forementation.



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28. Which bacteria help in production of vinegar?



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29. Write chemical composition of biogas.



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30. Bacteria cannot be seen with the naked eyes, but these can be seen with the help of a

microscope. If you have to carry a sample from your home to your biology laboratory to demonstrate the presence of microbes under a microscope, which sample would you carry and why?



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31. Give examples to prove that microbes release gases during metabolism.



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32. In which food would you find lactic acid bacteria? Mention some of their useful applications.



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33. Explain the term LAB.



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34. Name some traditional Indian foods made of wheat, rice and Bengal gram (or their products) which involve use of microbes.



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35. In which way microbes have played a major role in controlling diseases caused by harmful bacteria?



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36. Name any two species of fungus, which are used in the production of the antibiotics.



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37. What is sewage? In which way can sewage be harmful to us?



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38. What is the key difference between primary and secondary sewage treatment?



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39. Do you think microbes can also be used as source of energy ? If yes, how ?



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40. Microbes can be used to decrease the use of chemical fertilisers and pesticides. Explain how this can be accomplished.



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41. Explain how microbe *Bacillus thuringiensis* acts as biological control agent.



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42. Three water samples namely river water, untreated sewage water and secondary effluent discharge from a sewage treatment plant were subjected to BOD test. The samples were labelled A,B and C. but the laboratory attended did not note, which was which . The BOD values of the three samples A,B and C were recorded as 20 mg/L , 8 mg/L and 400 mg/L, respectively. which sample of the water is most polluted ? can you assign the correct label to each , assuming the river water is relatively clean



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43. Find out the name of the microbes from which Cyclosporin A (an immunosuppressive drug) and Statins (blood cholesterol lowering agents) are obtained.



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44. Find out the role of microbes in the following and discuss it with your teacher.

(a) Single cell protein (SCP)

(b) Soil



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45. Arrange the following In the decreasing order (most important list) of their importance, for the welfare of human society.

Give reasons for your answer: Biogas



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46. How does biofertilizers enrich the fertility of soil?



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47. What is Baker's yeast ?Give its application?



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48. Which bacterium is responsible for the formation of curd from milk?



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60. How is curd prepared? How preparation of curd improves its nutritional value ?



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61. Discuss the role of microbes in production of household products.



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62. Make a list of milk products obtained from the activities of badcteria.



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63. List two major products obtained by use of microbes at commercial level.



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64. Make a table showing industrial products obtained from activities of bacteria.



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65. List the properties of antibiotics.





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66. What are antibiotics? Name the classes of organisms that produce antibiotics.



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67. What is Cyclosporin A? What is its importance?



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68. Define statins. What is the role with respect to cholesterol?



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69. List two varieties of cheese and write the name of microbes used.



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70. List four industrial products that employ microbes.



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71. Draw a labelled diagram to show three kinds of bacteria.



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72. List any four alcoholic beverages.



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73. Name two alcoholic drinks produced in each of following ways with distillation.



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74. Name two alcoholic drinks produced in each of the following ways. without distillation.



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75. What is fermentation?What are the conditions that favor fermentation?



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76. Write the various steps of fermentation.



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77. What is 'Secondary treatment" of sewage?



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78. Give the advantages of using activated sludge process.



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79. What are methanogens? Give the examples of Methanogenic bacteria.



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80. Where do you find methanogens?



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81. Draw a simple diagram to show anaerobic sludge digester.



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82. Which nitrogen fixers are available on commercial basis in market? Also name th

beneficial crop.



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83. Explain biological control of pests and plant pathogens with examples.



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84. In case of Bt cotton how does the toxic insecticide protein produced by bacterium kill the insect pest but not the cell of Bacillus

thuringiensis where the toxic protein is generated?



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85. Name some organic wastes.



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86. What are advantages of using organic wastes first for biogas generation over direct use as fuel or fertilizers?



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87. Why is cattle dung used to produce biogas?



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88. What are advantages of biogas plant?



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89. What are biofertilizers? What are the main sources of biological nitrogen fixation? Name two organism which fix nitrogen asymbiotically and two organisms with fix symbiotically.



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90. Why are biofertilizers or biopesticides preferred to chemical fertilizers or pesticides?



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91. Explain the role of microbes in sewage treatment.



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92. Microbes play a dual role when used for sewage treatment as they not only help in retrieve usable water but also generate fuel. Write in points how this happens?



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93. What is the role of microbes in Industrial production.



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94. Make a list of antibiotics, acids and vitamins obtained from fungi.



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95. Explain cyanobacteria as main source of biofertilizer.



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96. Describe the biological significance of *Azolla pinnata* in agriculture.



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97. What is Dough? Explain.



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98. What are Bioactive molecules?



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99. How does *Agrobacterium* act as natural genetic engineer of plants ?



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100. What is Baker's yeast ?Give its application?



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Exercise

1. Curdling of milk is done by



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2. Enzyme are used in detergents while fruit juices are clarified by enzymes.



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3. Presence of more organic wastes in waste water increaso..... but decreases



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4. Biogas is produced during anaerobic fermentation of material.



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5. Fill in the blanks with suitable words:

Aphids on the mustard plants are controlled with the help of



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6. Fill in the blanks with suitable words:

Nutrient material for wine and brandy is

Juice.



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7. State true or false:

Fermentation tank where fermentation is carried out in the presence of microorganisms is called bioreactor.



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8. Chloremphenicol is extracted from *Streptomyces griseus*



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9. Presence of high amounts of organic wastes in the sewage decreases both BOD and DO.



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10. State true or false:

Organic farming involves the replacement of chemical fertilizers and pesticides by biofertilizers and biopesticides.



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11. Single cell proteins are the amounts of proteins produced by single cell of microbe per day.



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12. Coin one word for the following statements

:

Property of antibiotics to kill pathogenic organisms.



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13. Coin one word for the following statements

:

Bacterial flocs which aerobically decompose organic matter.



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14. Coin one word for the following statements :

Viruses which attack and kill the insects.



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15. Coin one word for the following statements :

A mixture of gases produced by microbial activity of cattle dung.



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16. Coin one word for the following statements

:

Live organisms used to enrich soil fertility are called.



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17. BGA is chiefly used as fertilizer in

A. Wheat

B. Paddy

C. Mustard

D. Gram.

Answer:



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18. A biofertilizer is

- A. Farmyard manure consisting of mixture of cattle dung and crop residues
- B. Green manure in which a quick growing crop is cultivated and ploughed under
- C. A cyanobacterium like *Anabaena* sp. living in cavities of *Azolla* leaves.
- D. Symbiotic bacteria like *Azotobacter* which fix atmospheric nitrogen.

Answer:



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19. Which organism serves as a biofertilizer:

A. Azolla

B. E.coli

C. Spirogyra

D. Cassia.

Answer:



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20. Azotobacter and Bacillus polymyxa are

- A. Decomposers
- B. Non-symbiotic nitrogen fixers
- C. Symbiotic nitrogen fixers
- D. Pathogenic bacteria.

Answer:



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21. Important objective of biotechnology in agriculture section is

- A. To produce pest resistant varieties of plants
- B. To increase the nitrogen content
- C. To decrease the seed number
- D. To increase the plant weight.

Answer:



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22. The main technique involved in agricultural biotechnology is called :

- A. Tissue culture
- B. Transformation
- C. Plant breeding
- D. DNA replication.

Answer:



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23. A new strain of bacteria produced by biotechnology in alcohol industry is:

- A. *Escherichia coli*
- B. *Saccharomyces cerevisiae*
- C. *Bacillus subtilis*
- D. *Pseudomonas putida*.

Answer:



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24. Genetically engineered bacteria have been used in commercial production of

- A. Thyroxine
- B. Testosterone
- C. Human insulin
- D. Melatonin.

Answer:



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25. Which of the following can be controlled by using biopesticides?

A. Insects

B. Diseases

C. Weeds

D. All of them.

Answer:



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26. Biofertilizers include

A. Blue-green algae, rhizobia, other nitrogen fixing bacteria and mycorrhiza fungi

B. Blue-green algae, rhizobia and other nitrogen fixing bacteria.

C. Rhizobia, other nitrogen fixing bacteria and mycorrhiza fungi.

D. Blue-green algae, rhizobia and mycorrhiza fungi.

Answer:



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