

Topic 1 : microbes in household products

1. Microbes are present everywhere --- in soil, water, air, inside our bodies and that of other plants and animals. They are present even at sites where no other life – form could possibly exist, such as
 - (A) Deep inside the geysers (thermal vents) where the temperature may be high as 100 ° c.
 - (B) Deep in the soil, and under the layers of snow several meters thick
 - (C) In highly acidic environment
 - (D) All of the above

2. Proteinaceous infection agents are called as
 - (A) virus
 - (B) viroids
 - (C) prions
 - (D) all of the above

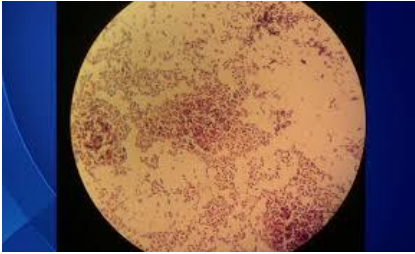
3. Select the microbes from the following:
 - a. Protozoa
 - b. Bacteria
 - c. Fungi
 - d. Microscopic plant viruses
 - e. Viroids
 - f. Prions
 - (A) a, b and c
 - (B) a, b, c and d
 - (C) d, e and f
 - (D) a, b, c, d, e and f

4. Which of the following microbes can be grown on nutritive media and form colonies?
 - a. Bacteria
 - b. Fungi
 - c. Viroids
 - d. virus
 - (A) a and b
 - (B) c and d

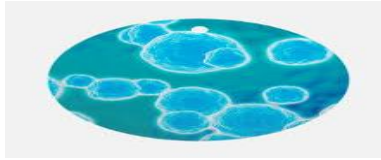
(C) a, b and c

(D) a, b, c, and d

5. Recognize the figure and find out correct matching,



(a)



(b)

(A) a – bacterial colony, b – fungal colony

(B) a- fungal colony, b – bacterial colony

(C) a- viral colony, b- fungal colony

(D) a – bacterial colony, b – viral colony

6. the dough which is used for making idli and dosa is fermented by

(A) *sacharomyces cerevisiae*

(B) A bacteria

(C) *Lactobalillus*

(D) *Propionibactrium sharmanit*

7. Large hole in Swiss cheese are due to production of larger amount of CO_2 by
a

(A) Bacteria

(B) fungi

(C) yeast

(D) *lactobacillus*

8. Respiratory diseases are caused by

(A) *Salmonella typhi*

(B) HIV

(C) *Mycobacterium*

(D) adenoviruses

9. Cheeses are classified on the basis of

(A) Flavor

(B) colour

(C) texture

(D) all the above

10. Curd, cheese and butter are produced with the use of

(A) Yeast

(B) penicillium

(C) streptococcus

(D) none of the above

11. Vinegar is prepared from alcohol with the help of

(A) *Lactobacillus*

(B) *acetobacter*

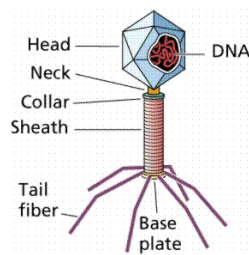
(C) *abotobacter*

(D) *rhizobium*

12. Match the columns I and II . and choose the correct combination from the options given

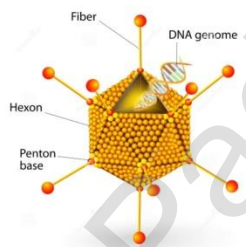
Column I

column II



a.

1. Adenovirus



b.

2. Bacteriophage

c.

3. TMV



(A) a -1 , b -2 , c -3

(B) a -2 , b-3 , c-1

(C) a-2, b-1, c-2

- (D) a- 3 ,b- 1 , c-2
13. In cheese microorganisms are required for
- Ripening
 - Souring of milk
 - Souring and ripening**
 - Development of resistance to spoilage
14. Lactobacillus mediated change of milk to curd occurs due to
- Coagulation and partial digestion of milk fats
 - Coagulation and partial digestion of milk proteins**
 - Coagulation of milk proteins and complete digestion of milk fats
 - Coagulation of milk proteins and complete digestion milk proteins
15. Lactic acid bacteria convert milk into curd and improves its nutritional quality by enhancing vitamin
- | | |
|-------|-------|
| (A) A | (B) B |
| (C) C | (D) D |

Topic 2 : microbes in industrial products

Fermented beverages, antibiotics, chemicals

Enzymes and other bioactive molecules

16. Production of beverages and antibiotics on an industrial scale requires growing microbes in very large vessels called
- | | |
|------------------|-----------------------|
| (A) Setting tank | (B) fermentors |
| (C) biovessel | (D) agitator |
17. Type of the alcoholic drinks are depend on the
- Type of raw material used
 - Type of processing
 - Type of fermentors
 - Type of weather
- | | |
|----------------|-----------------------|
| (A) I, ii, iii | (B) ii,iii, iv |
| (C) i, ii, iv | (D) i, ii only |

18. Penicillin was the first antibiotic which was a chance discovery. Alexander Fleming at that time was working on

- (A) *Streptococci bacteria*
- (B) *Penicillum pneumonia*
- (C) *Penicillum notatum*
- (D) *Staphylococci bacteria*

19. Which diseases are treated by antibiotics, among the following?

- (i) Kali khansi
 - (ii) kushtarog
 - (iii) diphtheria
 - (iv) plague
- (A) i , ii, iii (B) I , ii , iv
- (c) I, iii, iv (D) I,ii, iii, iv

20. Penicillin was extensively used to treat American soldiers wounded in _____ world war.

- (A) First
- (B) second
- (C) both A and B
- (D) none of the above

21. Match the columns I and II, and choose the correct combination from the options given.

Column I

- a. Diphtheria
- b. Leprosy
- c. Whooping cough
- d. Plague

Column II

- 1. Kali khansi
- 2. Gal ghotu
- 3. Black death
- 4. Kushtarog

- (A) a -1 , b -2 , c -3, d -4
- (B) a-2, b-3, c-4 , d -1
- (C) a -2 ,b -4 , c-1, d-3
- (D) a-2, b-1, c-4 , d -3

22. Full potential of penicillin as an antibiotic was established by

- (A) Chain and Fleming
- (B) Chain and Florey

- (C) Chain, florey and fleming
(D) Florey and fleming
23. Functioning of stain is based of
(A) Aliosteric inhibition
(B) Non – competitive inhibition
(C) Competitive inhibition
(D) Endproduct inhibition
24. The most abundant prokaryotes helpful to humans in making curd from milk and in production of antibiotics are the ones categorized as
(A) Chemosynthetic autotrophs
(B) Heterotrophic bacteria
(C) Cyanobacteria
(D) Archabacteria
25. Glucose fermentation by yeast yields
(A) Ethanol + CO_2 (B) Ethanol + H_2O
(C) Methanol + CO_2 (D) H_2O + CO_2
26. Which of the following is used in the formation of beer and bread?
(A) *Rhizopus* (B) *penicillium*
(C) *saccharomyces* (D) *mucor*
27. Which of the following is called Baker 's yeast and Brewer's yeast?
(A) *Rhizopus* (B) *penicillium*
(C) *saccharomyces* (D) *mucor*
28. Penicillin inhibits bacterial multiplicates because it
(A) Checks RNA synthesis
(B) Checks DNA SYNTHESIS
(C) Destroys chromatin
(D) Inhibits cell wall formation
29. Terramycin is got from
(A) *Streptomyces griseus* (B) *s. venezuelae*
(C) *s. aureofaciens* (D) *s. ramosus*

30. Antibiotics are mostly got from

- (A) Fungi
- (B) Actinomycetes / bacteria
- (C) Both A and B**
- (D) Cyanobacteria

31. Match the columns I and II, choose the correct combination from the options given.

Column I

- a. Citric acid
- b. Acetic acid
- c. Butyric acid
- d. Lactic acid
- e. Ethanol

Column II

- 1. Bacteria
- 2. Fungi

- (A) a-2 , b -1 , c -2, d -1, e - 2
- (B) a-1, b-2, c-1 , d -2, e - 2
- (C) a -2 ,b -2 , c-1, d-1, e - 2
- (D) a-2, b-1, c-1 , d -1 ,e - 2**

32. In 1928, a scientist discovered the first effective antibiotic , scientist and antibiotic are

- (A) Fleming – streptomycin
- (B) Fleming – penicillin**
- (C) Waksman – pencilin
- (D) Waksman – streptomycin

33. Which is false about antibiotics?

- (A) The term was coined by Waksman in 1942
- (B) Antibiotics are capable of curing any disease**
- (C) Some persons develop allergy to antibiotics
- (D) Antibiotics are produced by microorganisms

34. *Streptomyces fradiae* produces

- (A) Aureomycin
- (B) terramycin
- (C) neomycin**
- (D) erythromycin

35. Broad spectrum antibiotics are the ones which attack

- (A) Pathogens as well as hosts
- (B) A wide range of pathogens**

- (C) Only a pathogen
(D) Only host

36. Match the columns I and II, and the correct combination from the options given/.

Column I	column II
I. <i>Aspergillus niger</i>	a. ethanol
II. <i>Clostridium butylicum</i>	b. stains
III. <i>Saccharomyces cerevisiae</i>	c. citric acid
IV. <i>Trichoderma polysporum</i>	d. butyric acid
V. <i>Monascus purpureus</i>	e. cyclosporin – A

- (A) i- d, ii – c, iii – b, iv – a, v – e
(B) i- e, ii – d, iii – a, iv – b, v – c
(C) i- c, ii – d, iii – a, iv – e, v – b
(D) i- c, ii – d, iii – e, iv – a, v – b

37. Antibiotics are drugs commonly used to cure disease of

- (A) Fungi (B) viruses
(C) protozoans (D) bacteria

38. An enzyme that stimulates germination of barley seeds is

- (A) invertase (B) α – amylase
(C) lipase (D) protease

Topic 3 : microbes in sewage treatment

39. Full form of BOD is

- (A) Biological oxygen demand
(B) Biological organic demand
(C) Biological oxygen deficit
(D) Biochemical oxygen demand

40. BOD refers to the amount of the ...a ... that would be consumed if all the ...b ... in one ...c ... of water were oxidized by ...d ...

- (A) a – bacteria, b - CO_2 , c - ml, d – oxygen
(B) a – microbes, b - organic matter, c – liter, d - bacteria

- (C) a – oxygen, b – organic matter, c – liter, d – bacteria
(D) a – oxygen, b – organic matter, c – ml, d – bacteria
41. Activated sludge should have the ability to settle quickly so that it can
(A) Absorb colloidal organic matter
(B) Be discarded and pumped back from sedimentation tank to aeration tank
(C) Absorb pathogenic bacteria present in the waste water while sinking to the bottom of the settling tank.
42. In biological treatment when the BOD of sewage is reduced significantly. The effluent is then passed into
(A) Setting tank
(B) Aeration tank
(C) Anaerobic sludge digesters
(D) Aerobic sludge digesters
43. Filtration and sedimentation are the sewage treatment steps involved in
(A) 1^o treatment (B) 2^o treatment
(C) biological treatment (D) both B and C
44. Treatment of waste water is done by the
(A) Autotrophic microbes
(B) Heterotrophic microbes
(C) Chemoautotrophic microbes
(D) All of the above
45. After secondary treatment a part of activated sludge is passed back to aeration tank as inoculum while most of the part of activated sludge passed to
(A) Anaerobic sludge digesters
(B) Rivers and streams
(C) Aeration tank
(D) Setting tank

46. The following figure shows.



- (A) Primary treatment (B) secondary treatment
 (C) biological treatment (D) both B and C

47. Select removal of large and small particle from the sewage through filtration and sedimentation is called

- (A) Activated sludge in settlement tanks of sewage treatment plant is a rich source of aerobic bacteria
 (B) Biogas is produced by the activity of aerobic bacteria of animal waste (dung)
 (C) *Methanobacterium* is an aerobic bacterium found in rumen of cattle
 (D) Biogas, commonly called gobar gas, is pure methane.

48. Physical removal of large and small particle from the sewage through filtration and sedimentation is called

- (A) Primary treatment (B) secondary treatment
 (C) biological treatment (D) both B and C

49. Group of bacteria used in biogas production is

- (A) eubacteria (B) organotrophs
 (C) methanotrophs (D) methanogens

50. Sewage treatment process in which part of decomposed bacteria is recycled into starting of the process is called

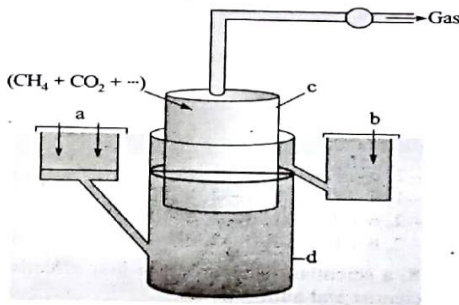
- (A) Cyclic treatment
 (B) Primary treatment
 (C) Tertiary treatment
 (D) Activated sludge treatment

51. Methanogens growing anaerobically on cellulosic material produce
- (A) Methane
 - (B) Methane and hydrogen
 - (C) Methane carbon dioxide
 - (D) Methane, carbon dioxide and hydrogen

Topic 4: microbes in production of biogas

52. Microbes produce different types of gaseous end products during growth and metabolism. The type of the gas produced depends upon the
- (A) Microbes
 - (B) Organic substrates utilized by microbes
 - (C) End product
 - (D) Both A and B
53. In which of the following examples CO_2 gas is produced?
- a. Fermentation of dough
 - b. Cheese making
 - c. Production of beverages
 - d. Biogas production
 - e. Alcoholic fermentation
 - f. Lactic acid fermentation
- (A) a, b, c and e (B) a, b, c and d
- (C) a, b, c, d and e (D) a, b, c, d, e and f

54. Recognize the figure and find out the correct matching



- (A) a- sludge, b- dung and water , c- digester, d- gas holder
 (B) b- sludge, a- dung and water , d- digester, c- gas holder
 (C) a- sludge, b- dung and water , d- digester, c- gas holder
 (D) b- sludge, a- dung and water , c- digester, d- gas holder
55. A peculiar odour that occurs in marshy areas and cowshed is due to gas produced by

- (A) Cyanobacteria (B) archaebacteria
 (C) mycoplasma (D) slime moulds

Topic 5 : microbes as biocontrol agents

56. If we need to protect our crops from mosquitoes then we can use

- (A) Ladybird beetle (B) dragonflies
 © *bacillus thuringiensis* (D) both A and B

57. Baculoviruses are used as biological control agents that attacks

- (A) Insects (B) mammals
 (C) other arthropods (D) both A and C

58. Biological method of control of pests and disease relies of

- (A) Interspecific competition
(B) Intraspecific competition
(C) Natural predation
(D) Introduced chemicals
59. To control butterfly caterpillars we can use
(A) Ladybird beetle
(B) Dragonflies
(C) Nucleopolyhedrovirus
(D) *Bacillus thuringiensis*
60. Which is incorrect about the nucleopolyhedrovirus (NPV)?
(A) These are species – specific.
(B) These are broad – spectrum
(C) They have no negative impact on plants, mammals, bird, fish and non – target insects.
(D) They aid in an overall IPM programme or when and ecologically sensitive area is being treated
61. Which of the following is one of the advantages of application of viruses as bioinsecticides?
(A) They are not used in IPM
(B) They are less effective
(C) They are species specific
(D) They have negative impact on humans.’
62. Dragonflies are used to get rid of
(A) Aphids
(B) Mosquitoes
(C) Both A and B
(D) Shoot borer and fruit borer
63. The majority of baculoviruses are used as biological control agents as
(A) They are species – specific
(B) They have no negative impact on non-targets
(C) Beneficial insects are being conserved
(D) All the above

64. Which is a microbial insecticide?

- (A) *Bacillus thuringiensis* (B) *B. shbtilis*
(C) *B. polymixa* (D) *B. brevis*

Topic 6 : microbes as biofertilisers

65. Which of the following is not an advantage of mycorrhiza?

- (A) Nitrogen fixation
(B) Resistance to root borne pathogens
(C) Tolerance to salinity and drought
(D) Phosphorus absorption

66. The country pioneer in production of fuel alcohol is

- (A) Saudi Arabia (B) Japan
(C) Brazil (D) Iran. Iraq

67. Farmers have reported 50% higher yield of Rice by using biofertilizer

- (A) *Azolla pinnata*
(B) Legume – *Rhizobium symbiosis*
(C) Cyanobacteria
(D) Mycorrhiza

68. Latest trend in plant disease control is

- (A) Chemical control
(B) Biological control
(C) Good manure and fertiliser
(D) Breeding for disease resistance

69. Biofertilisers include

- (A) Nitrogen fixing bacteria
(B) Mycorrhiza
(C) (nitrogen fixing cyanobacteria
(D) All the above

70. *Azollo* is used as biofertiliser as it has
(A) Rhizobium
(B) Cyanobacteria
(C) Mycorrhiza
(D) Large quantity of human
71. Organic farming is raising crops through use of
(A) Biofertilisers (B) manures
(C) resistant varieties (D) all the above
72. Organic farming does not include
(A) Green manures
(B) Chemical fertilizer
(C) Crop rotation
(D) Compost and farmyard manures
73. Mycorrhiza is helpful in
(A) Synthesis of food
(B) Getting nutrients from soil
(C) Providing resistance against different regulators
(D) Increase the fertility of soil
74. If wheat field is inoculated with *Rhizobium*
(A) Soil will become nitrogen rich
(B) No effect on soil nitrogen
(C) Soil will be depleted of nitrogen
(D) Soil will become rich in calcium
75. Which of the following acts as biofertilizer
(A) *Nastac* (B) *rhizobium*
(C) *mycorrhiza* (D) all of the above