



# **BIOLOGY**

# **BOOKS - MTG BIOLOGY (ENGLISH)**

# **MICROBES IN HUMAN WELFARE**



1. Microbes are present in

A. Soil

B. thermal vents

C. polluted water

D. all of these

Answer: D



2. Which of the following microbes is a proteinaceous infectious agent?

A. Fungi

**B.** Prions

C. Bacteria

D. Protozoa

Answer: B

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3. Match column I with column II and select the correct answer from the

give codes.



C. 
$$A-(iii), B-(ii), C-(i)$$

D. 
$$A-(iii), B-(i), C-(ii)$$

#### Answer: C

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**4.** Refer to the given figure and select the correct match.



- A. A-Fungal colony, B-Bacterial colony
- B. A-Viral colony, B-Bacterial colony
- C. A-Bacterial colony, B-Viral colony
- D. A-Bacterial colony, B-Fungal colony

#### Answer: D



5. The nutritive medium for growing bacteria and many fungi in laboraory

is called

A. growth media

B. suspension media

C. culture media

D. colonial media

Answer: C

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6. The inoculum is added to the fresk milk in order to convert milk into

curd, the term 'inoculum' here refers to

A. a starter rich in vitamin  $B_{12}$ 

B. a starter rich in proteins

C. a starter containing millions of LAB

D. an aerobic digester

#### Answer: C



7. Study the following statements regarding lactic acid bacteria (LAB) which are used to convert milk into curd.

(i) They produce acids that coagulate and partially digest the milk proteins.

(ii) A small amount of curd added to the fresh milk as an inoculum contains millions of LAB, which at suitable temperature, multiply and convert milk into curd.

(iii) Conversion of milk into curd improves its nutritional quality by increasing vitamin  $B_{12}$ .

(v) LAB may result in acidity in the stomach of human beings.

Which of the given statements are correct ?

A. (i) and (ii)

B. (ii) and (iii)

C. (i),(ii) and (iii)

D. (i), (ii), (iii) and (iv)

#### Answer: C

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8. Study the following flow chart depicting the formation of curd from

milk. Identify the missing parts X and Y.



A. X-Gluconic acid, Y-Vitamin  $B_1$ 

B. X-Lactic acid, Y-Vitamin  $B_2$ 

C. X-Lactic acid, Y-Vitamin  $B_{12}$ 

D. X-Citric acid, Y-Vitamin C

#### Answer: C

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9. Read the following statements and select the correct option.

Statement 1: Besides curdling of milk, LAB also improve its nutritional quality by increasing vitamin  $B_{12}$ .

Statement 2: LAB, when present in human stomach, check disease causing microbes.

A. Both statements 1 and 2 are correct

B. Statement 1 is correct but statement 2 is incorrect

C. Statement 1 is incorrect but statement 2 is correct

D. Both statements 1 and 2 are incorrect

#### Answer: A

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**10.** Which one of the following combinations of organisms are responsible for the formation and flavour of yoghurt

A. Lactobacillus bulgaricus and streptococcus thermophilus

B. Rhizobium melioti and Aztobactor

C. Bacillus subtillis and Escherichia coli

D. Bacillus megathermus and Xanthomonas species

# Answer: A



**11.** Which of the following food items is produced by the fermenting activity of microbes?

A. ldli B. Dosa

C. Toddy D. Cheese

A. A and C

B. C and D

C. A,B and C

D. A,B,C and D

Answer: D

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12. Read the following statements and select the incorrect one.

A. The dough used for making Dosa and Idli is fermented by bacteria.

B. Microbes are used to ferment fish, soybean and bamboo shoots to

make food

C. The large holes in 'Swiss cheese' are due to production of large

amount of  $CO_2$  by a fungi called Propinibacterium sharmanii

D. Toddy' is a traditional drink of Southern India made by fermentation

by microbes

Answer: C

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13. Match different organisms in column I with their uses in column I and

select the correct answer from the given codes.

ColumnIColumnIIA. Lactobacillus acidophilus(i)Formation of doughB. Saccharomyces cerevisiae(ii)single cell proteinsC. Propionibacterium shermanii(iii)Conversion of milk into curdD. Spirullina(iv)Formation of Swiss cheese

A. 
$$A-(iii),B-(i),C-(ii),D-(iv)$$

B. 
$$A-(iii),B-(i),C-(iv),D-(ii)$$

C. 
$$A-(i),B-(iii),C-(iv),D-(ii)$$

D. 
$$A-(i),B-(iii),C-(ii),D-(iv)$$

#### Answer: B

**14.** Which of the following organisms is used in the production of beverages?

A. Penicillium notatum

B. Saccharomyces cerevisiae

C. Aspergillus niger

D. Clostridium butyricum

# Answer: B

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**15.** Which of the following options contains the end products formed during anaerobic respiration in yeast?

A.  $H_2O, CO_2$  and energy

B.  $H_2S, C_6H_{12}O_6$  and energy

C.  $CO_2, C_2H_5OH$  and energy

D.  $H_2O$  and  $CO_2$ 

#### Answer: C

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**16.** Wine and beer are produced directly by fermentation whereas brandy and whisky require both fermentation and distillation. This is because

A. fermentation is inhibited at the alcohol level of  $10-18\,\%$ 

B. distillation prolong storage

C. distillation improves quality

D. distillation purifies the beherage

#### Answer: A

**17.** The chemical substances produced by some microbes which can kill or inhibit the growth of other microbes are called

A. antiseptics

B. antacids

C. antibiotics

D. all of these

Answer: C

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18. Antibiotics are obtained from

A. bacteria

B. fungi

C. actinomycetes

D. all of these

Answer: D



**19.** Which of the following antibiotics was extensively used to treat American soldiers wounded in World War II ?

A. Neomycin

B. Bacitracin

C. Chloroamphenicol

D. Penicillin

Answer: D

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20. Which of the following statements regarding antibiotics is not correct

?

(i) Antibiotics are the attenuated microorganisms which in small concentration can kill or retard the growth of other harmful microorganisms.

(ii) Penicillin was the first antibiotic discovered by Alexander Fleming(1928) while working on bacterium Staphylococcus aureus.

(iii) The full potential of penicillin as an effective antibiotic was established by Ernest chain and Howard Florey.

(iv) Fleming, Chain and Florey were awarded the Nobel Prize in 1945

A. (i) only

B. (ii) only

C. (ii) and (iv)

D. (i),(ii) and (v)

#### Answer: A

21. Which of the following discases are treated by antibiotics ?

(i) Plague (ii) Diphtheria

(iii) Leprosy (iv) Whooping cough

A. (i), (ii) and (iii)

B. (i), (iii) and (iv)

C. (ii), (iii) and (iv)

D. (i),(ii), (iii) and (iv)

### Answer: D

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22. Streptomycin is obtained from

A. Streptomyces griseus

B. S. cerevisiae

C. S. venezuelae

D. S.rimosus

Answer: A

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23. Which of the following antibiotics is not correctly matched with the

source from which it is obtained ?

| A. | Antibiotic   | Source                   |
|----|--------------|--------------------------|
|    | Penicillin   | Penicillium chrysogenum  |
| B. | Antibiotic   | Source                   |
|    | Bacitracin   | Bacillus licheniformis   |
| C. | Antibiotic   | Source                   |
|    | Griseofulvir | Penicillium griseofulvum |
| D. | Antibiotic   | Source                   |
|    | Streptomyc   | in Bacillus griseus      |

#### Answer: D

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24. Select the correct option to fill up the blanks.

- (i) \_\_\_\_\_are used in detergent formulations and are helpful in removing oily stains from the laundry.
- (ii) \_\_\_\_\_are ripened by growing Penicillium roqueforti on them.
- (iii) \_\_\_\_\_are produced without distillation whereas, \_\_\_\_\_are produced by distillation of the fermented broth.
- (iv) \_\_\_\_\_antibiotic was used to teat American soldiers wounded in world war II.
- (v) \_\_\_\_\_is also called as Kusht rog.
  - A. (i) Lipases, (ii) Camembert cheese, (iii) Whisky and rum, wine and beer, (iv) Penicillin, (v) Leprosy
  - B. (i) Lipases, (ii) Roquefort cheese, (iii) Wine and beer, whisky and rum,
    - (iv) Penicillin, (v) Leprosy
  - C. (i) Streptokinases, (ii) Roquefort cheese, (iii) Wine and beer, whisky

and rum, (iv) Streptomycin, (v) Whooping cough

- D. (i) Amylases, (ii) Swiss cheese, (iii) Whisky and rum, wine and beer,
  - (iv) Penicllin, (v) Diphtheria

### Answer: B

**25.** \_\_\_\_\_produced by bacterium Streptococcus and modified by genetic engineering is used as a clot buster for removing clots from the blood vessels of patients who have undergone myocardial infarction leading to heart attack.

A. Lipase

B. Streptokinase

C. Cyclosporin A

D. Antibiotic streptomycin

Answer: B

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26. Enzyme which has the fibrinolytic effect is

A. protease

B. amylase

C. lipase

D. streptokinase

# Answer: D

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27. Identify the blank spaces A,B,C and D in the following table and select

the correct answer.

| Type of microbe | Scientific name         | Commercial product |
|-----------------|-------------------------|--------------------|
| Bacterium       | A                       | Streptokinase      |
| В               | Aspergillus niger       | Citric acid        |
| Fungus          | Trichonderma polysporum | C                  |
| Bacterium       | D                       | Butyric acid       |

A. A-Streptococcus B-Fungus

C-Cyclosporin A D-Clostridium butylicum

B. A-Clostridium butlyclium B-Streptococcus

C-Fungus D-Cyclosporin A

C. A-Streptococcus B-Yeast

C-Cyclosporin A D-Lacyobacillus

D. A-Streptococcus B-Cyclosporin A

C-Strains D-Clostridium butylicum

#### Answer: A

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28. A drug used for patient A is obtained from the organism B. Identify A

and B in the above statement and select the correct answer.

A.  $\frac{A}{\text{Swine flu}} = \frac{B}{\text{Monascus purpureus}}$ 

ABAIDSPseudomonas denitrificasC.ABHeartPenicillium chrysogenumD.ABOrgan transplantTrichoderma polysporum

### Answer: D

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29. Stains used for lowering blood cholesterol level are extracted from

A. algae

B. bacteria

C. viruses

D. yeast

Answer: D

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30. Monascus purpureus is a yeast commerically used in the production

of

A. citric acid

B. ethanol

C. blood cholesterol lowering statins

D. streptokinase for removing clots from blood vessels.

# Answer: C

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31. Identify the blank spaces A,B,C and D in the table given below and

select the correct answer.

| type of microbe | Scientific name     | Product       | Medical applicati |
|-----------------|---------------------|---------------|-------------------|
| Fungs           | A                   | Cyclosporin A | В                 |
| C               | Monascus purpuereus | Statin        | D                 |

A. A-Trichoderma polysproum,

B-As an immunosuppressive agent,

C-Yeast (Fungus),

D-Lowering of blood chloesterol

B. A-Trichoderma polysporum,

B-Lowering of blood cholesterol,

C-Yeast (Fungus),

D-As an immunospressive agent

C. A-Yeast (Fungus), B-Lowering of blood cholesterol,

C-Trichoderma polysporum,

D-As an immunosuppressive agent

D. A-Streptococcus,

B-As an immunosuppressive agent,

C-Bacterium, D-Lowering of blood cholesterol

Answer: A

# 32. Identify the blanks spaces A,B,C and D in the following table and select

the correct answer.

| Type of microbe | Scientific name     | Commercial product |
|-----------------|---------------------|--------------------|
| Bacterium       | A                   | Lactic acid        |
| Fungus          | B                   | Cyclosporin A      |
| C               | Monascus purpureus  | Statins            |
| Fungus          | Penicillium notatum | D                  |

A. A-Lactobacillus B-Trichoderma polysporum

C-Yeast D-Penicillin

B. A-Acetobacter B-Trichoderma polysporum

C-Yeast D-Streptomycin

C. A-Lactobacillus B-Aspergillus niger

C-Algae D-Penicillin

D. A-Lactobacillus B-Trichoderma polysporum

C-Agaricus D-Penicillin

# Answer: A



#### Answer: C



**34.** During the primary treatment of sewage, solid paricles that settle down are called

A. flocs

B. primary sludge

C. activated sludge

D. anaerobic sludge

Answer: B

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35. The purpose of biological treatment of waste water is to

A. reduce BOD

B. increase BOD

C. reduce sedimentation

D. increase sedimentation

Answer: A

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36. The masses of bacteria held together by slime and fungal filaments to

form mesh-like structures are called as

A. primary sludge

B. floces

C. activated sludge

D. anaerobic sludge

Answer: B

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**37.** Read the following statements and select the correct option.

Statement 1: BOD represents the amount of dissolved oxygen that would

be consumed if all the organic matter in one litre of water were oxidised

by microorganisms.

Statement 2 : High value of BOD indicates that water is highly polluted by organic matter.

A. Both statements 1 and 2 are correct

B. Statement 1 is correct but statement 2 is incorrect

C. Statement 1 is incorrect but statement 2 is correct

D. Both statements 1 and 2 are incorrect

#### Answer: A

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**38.** BOD is\_\_\_\_\_in polluted water and \_\_\_\_\_\_in potable water.

A. more, less

B. less, more

C. less in both

D. medium in both

# Answer: A

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39. Biochemical oxygeb demand (BOD) in a river water

A. has no relatiship with concentration of oxygen in the water

B. gives a measure of Salmonella in the water

C. increases when sewage gets mixed with river water

D. remains unchanged when algal bloom occurs.

Answer: C

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40. When domestic sewage mixes with river water

A. small animals like rats will die after drinking river water

B. the increased microbial activity releases micronutrients such as iron

C. the increased microbial activity uses up dissolved oxygen

D. the river water is still suitable for drinking as impurities are only

about  $0.1\,\%$  .

#### Answer: C



**41.** A sewage treatement process in which a part of decomposer bacteria present in the waste is recycled into the starting of the process is called

as

A. primary treatment

B. activated sludge treatment

C. tetriary treatment

D. none of these

### Answer: B

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**42.** In the sewage treatment, bacterial flocs are allowed to sediment in a setting tank. This sediment is called as

A. inactivated sludge

B. activated sludge

C. primary sludge

D. secondary sluge

Answer: B



43. Match column I with column II and select the correct answer from the

given codes.

ColumnI ColumnII A. The stage in which of physical treatment of sewage is done (i)Anaerob B. The stage in which biological treatment of sewage is done (ii)Activat C. Name of the sediment in primary treatment (iii)Aeratio D. It is carried to aeration tanks from primary (iv)Primar E. Name of the sediment in secondary treatment (v)Primary F. site of flocs growth (vi)seconda (vii)Prima G. Function of sludge digester

$$A-(vii),B-(vi),c-(v),D-(iv),E-(ii),F-(iii),G-(i)$$

Β.

$$A-(i), B-(iii), C-(v), D-(vii), E-(ii), F-(iv), G-(vi)$$

C.

$$A-(i), B-(ii), C-(iii), D-(iv), E-(v), F-(vi), G-(vii)$$

D.

$$A-(vii),B-(vi),C-(i),D-(ii),E-(iii),F-(iv),G-(v)$$

#### Answer: A

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44. Given below is the flow chart of sewage treatement. Identify A,B,C and

D and select the correct option.



A. A-Mechanical agitation, B-Increased BOD C-Activated sludge, D-Aerobic sludge digesters

B. A-Mechanical agitation, B-Reduced BOD C-Activated sludge, D-

Anaerobic sludge digesters

C. A-Microbial digestion, B-Activated sludge C-Reduced BOD, D-

Anaerobic sludge digesters

D. A-Microbial digestion, B-Mechaical agitation C-Reduced BOD, D-

Aerobic sludge digesters

Answer: B

**45.** Read the following statements and select the incorrect one.

- A. Little decomposition occurs during the formation of primary sludge
- B. Formation of primary sludge requires ample aeration
- C. Activated sludge posses flocs of decomposer microbes
- D. Formation of activated sludge required aeration

#### Answer: B

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**46.** Select the correct statement regarding activated sludge formed during secondary sewage treatment.

A. A small part of it is rapidly pumped back from sedimentation to

aeration tank
B. It absorbs pathogenic bacteria present in waste water while sinking

to the bottom of the settling tank

C. A major part of it is anaerobically digested

D. Both (a) and (c)

### Answer: D



47. Which of the following steps is taken by the Ministry of Enviornment

and Forests to protect rivers from water pollution?

A. Ganga Action Plan

B. Narmada Action Plan

C. Yamuna Action Plan

D. Both (a) and (c)

Answer: D

48. Mach column I with column II and select the correct answer from the

given codes.

| ColumnI                   | ColumnII                               |
|---------------------------|--|
| A. Methanogens            | (i)BOD                                 |
| B. Fermentors             | (ii)Methane rich fuel gas              |
| C. Organic waste in water | (iii)Production of methane             |
| D. Biogas                 | (iv)Large vessels for growing microbes |

A. 
$$A-(ii), B-(iv), C-(iii), D-(i)$$

B. 
$$A-(iv),B-(iii),C-(ii),D-(i)$$

C. 
$$A-(ii), B-(i), C-(iv), D-(iii)$$

D. 
$$A-(iii), B-(iv), C-(i), D-(ii)$$

### Answer: D

**49.** Study the following statements and select the incorrect ones.

(i) Physical removal of large and small particles through filtration and sedimentation is called primary sewage treatment.

(ii) Secondary sewage treatment is mainly a mechanical process.

(iii) Activated sludge sediment in a sewage treatment plant is a rich source of aeroic bacteria.

(iv) Biogas, commonly called as gobar gas, is pure methane.

A. (i) and (ii)

B. (ii) and (iv)

C. (ii) and (iii)

D. (iii) and (iv)

#### Answer: B

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50. Methanogens, growing anaerobically on cellulosic material produce

A. methane

- B. methane and carbon dioxide
- C. methane and hydrogen
- D. methane, carbon dioxide and hydrogen

### Answer: D

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# 51. Which of the following bacteris is present in the rumen of cattle?

A. Azotobacter

B. Rhizobium

C. Methanobacterium

D. Azospirillum

### Answer: C

52. Process of biogas production is

A. aerobic process

B. anaerobic process

C. active process

D. passive process

#### Answer: B

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53. Biogas is produced by

A. aerobic breakdown of biomass

B. anaerobic breakdown of biomass

C. with the help of methanogenic bacteria

D. both (b) and (c)

### Answer: D



54. Match column I with column II and select the correct option from the

codes given below.

| ColumnI               | ColumnII                    |
|-----------------------|-----------------------------|
| A. Statins            | (i)Biogas                   |
| B. Dung               | (ii)Saccharomyces cerevisae |
| C. Ethanol production | (iii)Monascus purpureus     |
| D. CyclosporinA       | (iv)Trichoderma polysporum  |

A. 
$$A-(iii), B-(i), C-(iv), D-(iii)$$

B. 
$$A-(i),B-(iii),C-(iv),D-(ii)$$

C. 
$$A-(iii),B-(ii),C-(iv),D-(i)$$

D. 
$$A-(iii),B-(i),C-(ii),D-(iv)$$

#### Answer: D

**55.** These bacteria grow anaerobically on cellulosic material, produce large amount of methane along with  $CO_2$  and  $H_2$ , and are collectively called as methanogens. Examples of such bacteria are

A. Methanobacterium

B. Methanobrevibacter

C. Methanococcus

D. all of these

Answer: D

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**56.** The given figure represents a typical biogas plant. Select the correct option for A,B and C respectively.



## A. A is the inlet for cattle dung

B. C is the outlet for the release of biogas

C. B is the chamber which contains leftover slurry

D. All of these

Answer: A

57. Which of the following statements is incorrect ?

- A. Word antibiotic is a misnomer. Anti is a Greel word that means 'orgainst' and bios means 'life' together they mean against life (in the context of disease causing organisms), whereas with reference to human beings, they are pro-life and not agnist
- B. Flocs are masses of bacteria with interwoven fungal filaments which

form mesh-like structures.

C. Componenets of biogas are methane (50-70~%), carbon dioxide

(30-40~% ) and traces of hydrogen, nitrogen and  $H_2S$ 

D. None of these

#### Answer: D

**58.** Biogas generation is a three stage anaerobic digestion of animal and other organic wastes. Study the following flow chart and select the correct option for stages I, II and III.



A. In stage -I, anaerobic microorganisms bring about enzymatic breakdown of complex organic compounds into simple soluble compounds or monomers

- B. In stage -II, monomers are converted into organic acids by fermentation causing microbes
- C. In stage-III, organic acids are acted upon by methanogenic bacteria
  - to produce biogas

### D. All of these

#### Answer: D

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59. Read the following statements and select the correct option.

Statement 1 : Biocontrol refers to the use of biological methods for controlling plant diseases and pests.

Statement 2 : Use of biocontrol measures will greatly reduce our dependence on toxic chemicals and pesticides.

A. Both statements 1 and 2 are correct

B. Statement 1 is correct but statement 2 is incorrect

C. Statement 1 is incorrect but statement 2 is correct

D. Both statements 1 and 2 are incorrect

#### Answer: A

60. Biopesticides are

A. the chemicals which are used to destroy the pests

B. the living organisms or their products which are used for the pest

control

C. the organisms which destroy the crops

D. none of these

#### Answer: B

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**61.** When a natural predator (living organism) is applied on the other pathogen organisms to control them, this process is called as

A. biological control

B. genetic engineering

C. arifificial control

D. confusion technique

## Answer: A

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62. Dragonflies are used to get rid of

A. (a) mosquitoes

B. (b) aphids

C. (c) butterfly caterpillars

D. (d) all of the above

### Answer: A

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63. A microbial biocontrol agent that can be used to control butterfly

caterpillars is

- A. Trichoderma polysporum
- B. Bacillus thuringiensis
- C. Streptococcus
- D. mycorrhiza

### Answer: B

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64. Bacillus thuringiensis is used to control

A. bacterial pathogens

- B. fungal pathogens
- C. mematodes
- D. insect pests

## Answer: D



65. Bacillus thuringiensis (Bt) strains have been used for designing novel

A. biofertilisers

B. bio-metallurgical techniques

C. bio-mineralisation process

D. bio-insecticidal plants

### Answer: D

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**66.** Fill up the blanks by selecting the correct option.

(i) Biogas is a mixture of gases which predominantly contains\_\_\_\_\_and is

used as\_\_\_\_\_

(ii) Methanogens are commonly found in the\_\_\_\_\_during sewage treatment.

(iii) \_\_\_\_\_\_species are free-living fungi and effective biocontrol agents of several plant pathogens.

A. (i) methane, fuel, (ii) anaerobic sludge, (iii) Trichoderma

B. (i)  $CO_2$ , fuel, (ii) primary sludge, (iii) Trichoderma

C. (i) mathane, fuel, (ii) anaerobic sludge, (iii) Baculoviruses

D. (i) methane, fuel, (ii) aerobic sludge, (iii) Trichoderma

### Answer: A

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**67.** Which of the following statements is correct with regard to biocontrol agents ?

A. Ladybird and dragonifies are used to get rid of aphids and

mosquitoes respectively.

B. Bacillus thuringiensis bacteria are used to control butterfly

caterpillars

C. Trichoderma species are used to control several plant pathogens

D. All of these

## Answer: D



68. Trichoderma harizianum has proved to be a useful microorganism for

A. gene transfer in higher plants

B. biological control of soil-borne plant pathogens

C. bioremediation of contaminated soils

D. reclamation of wastelands.

### Answer: B



69. Baculoviruses (Nucleopolyhedrobirus) do not show

A. host specificity

B. narrow spectrum applications

C. effects on non-target pathogens

D. utility in IPM programme

### Answer: C

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**70.** Which of the following statements regarding baculoviruses as biocontrol agents is/are correct ?

A. The majority of baculovirus used as biocontrol agents are included

in the genus-Nucleopolyhedrovirus

B. Infection with baculoviruses occurs when susceptible hosts (e.g.,

some specific insects) eat virus particle present on foliage and dies.

C. These are important in organic farming because of their specific

action on harmful insects without causing and damage to beneficial

insects as well as to the environment

D. All of these

Answer: D

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71. Integrated Pest Mangement (IPM) discourages the excessive use of

A. biological methods

B. chemical pesticides

C. mechanical methods

D. all of these

## Answer: B



**72.** Which of the following is not used as a biopesticide ?

- A. Trichoderma harzianum
- B. Nucleopolyhedrovirus
- C. Xanthomonas campestris
- D. Bacillus thuringiensis

### Answer: C



73. The reason that the chemical/synthetic fertilisers should be replaced

by biofertilisers is that the former

A. are source of environmental pollution

B. are expensive

C. exhaust the valuable energy resources for their manufacture

D. all of these

Answer: D

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74. Organic farming does not include

A. green manures

B. chemical fertilisers

C. farmyard manures

D. compost

Answer: B



75. Organic farming includes

A. use of fertilisers and pesticides of biological origin

B. IPM (Integrated Pest Management)

C. locally developed pest resistance varieties

D. all of these

Answer: D

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76. Living organisms used to enrich the nutrient quality of the soil are

called as

A. bicontrol agents

B. biofertilisers

C. synthetic fertilisers

D. natural ferilisers

### Answer: B



77. Biofertilisers are prganisms that enrich the nutrient quality of the soil.

Which of the following can be used as biofertilisers ?

A. Nitrogen fixing cyanobacteria

B. Nitrogen fixing bacteria

C. Mycorrhizae

D. All of these

Answer: D

## 78. Biofertilisers are

- A. some bacteria and cyanobacteria
- B. fertilisers formed by ploughing in barseem
- C. fertilisers obtained by decay of dead organisms
- D. fertilisers prepared by mixing cattle dung with crop residues.

## Answer: A

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79. Biofertilisers are the living organisms which

A. bring about soil nutrient enrichment

B. maximise the ecological benefits

C. minimise the environmental hazards

D. all of these

## Answer: D

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80. Unicellular symbiotic organisms improve yield of legumes by

A. fixing atmospheric nitrogen without colonising roots of host plant

B. fixing atmospheric nitrogen and colonising roots of host plant

C. inducing the host plant to absorb more phosphours

D. stimulating the host plant to become tolerant to drought

#### Answer: B



**81.** Match column I with column II and select the correct answer from the gives codes.

ColumnIColumnIIA. Trichoderma(i)Free living nitrogen fixing bacteriaB. Streptomyces(ii)Biocontrol agentC. Azospirillum(iii)Lactic acidD. Lactobacillus(iv)Source of antibiotic

A. 
$$A-(ii),B-(iii),C-(iv),D-(i)$$

B. 
$$A-(ii),B-(iv),C-(i),D-(iii)$$

C. 
$$A-(iii),B-(i),C-(ii),D-(iv)$$

D. 
$$A-(iv),B-(ii),C-(i),D-(iii)$$

#### Answer: B

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82. Which one of the following can be used as biofertiliser in cotton field?

A. Azolla-Anabaena

**B. Streptococcus** 

C. Azospirillum

D. Azotobacter chroococcum

## Answer: D



83. The symbiotic association between fungi and roots of higher plants is

referred to as

A. lichen

B. mycorrhiza

C. biofertiliser

D. biocontrol agent

Answer: B

**84.** Which one of the following microorganisms forms symbiotic assocation with plants and helps them in their nutrition?

A. Glomus

B. Azotobacter

C. Klebsiella

D. Azospirillum

Answer: A

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**85.** Which of the following statements is not correct regarding mycorrhiza ?

A. It helps in absorption of phosphous from the soil.

B. It is a symbiotic assocaition of fungi with the roots of higher plants

C. It helps the plant in developing resistance to rootborne pathogens

D. None of these

### Answer: D



86. Which one of the following pairs is correctly matched?

A. Rhizobium - Parasite in the roots of leguminous plants

B. Mycorrhizae- Mineral uptake from soil

C. Yeast - Production of biogas

D. Azospirillum - Symbiotic  $N_2$ - fixing bacterium

### Answer: B



87. Match column I with column II and select the correct answer from the

given codes.

| ColumnI                   | ColumnII                 |
|---------------------------|--------------------------|
| A. Mycorrhizae            | (i)Azadirachtin          |
| B. Bacillus thuringiensis | (ii)Phosphours nutrition |
| C. Root nodules           | (iii)Leghaemoglobin      |
| D. Biopesticide           | (iv)Bioinsecticide       |

A. 
$$A-(iii), B-(i), C-(ii), D-(iv)$$

B. 
$$A-(ii), B-(iii), C-(iv), D-(i)$$

C. 
$$A-(ii),B-(iv),C-(iii),D-(i)$$

D. 
$$A-(iii), B-(iv), C-(ii), D-(i)$$

## Answer: C



88. Cyanobacteria are

## A. heterotrophs

B. chemotrophs

C. autotrophs

D. organotrophs

Answer: C

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89. A nitrogen fixing microbe associated with the fern Azolla in rice fields

is

A. Frankia

B. Rhizobium

C. Spirunlina

D. Anabaena

Answer: D

**90.** Azolla pinnata has been found to be an important biofertiliser for paddy crops. This quality is due to the presence of

A.  $N_2$  fixing bacteria

B.  $N_2$  fixing cyanobacteria

C. mycorrhizae

D. all of these

Answer: B

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91. Which of the following is widely used as a successful biofertiliser in

Indian rice fields ?

A. Rhizobium

B. Acacia arabica

C. Acalypha indica

D. Azolla pinnata

Answer: D

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92. Study the following statements and select the correct ones

(i) Methanogens are archeabacteria which produce methane in marshy

areas

(ii) Nostoc is a filamentous blue green alga which fixes atmospheric nitrogen.

(iii) Many membres of the genus Glomus form my corrhiza.

A. (i) and (ii)

B. (i) and (iii)

C. (ii) and (iii)

D. (i),(ii) and (iii)

## Answer: D

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93. Which of the following statements is/are correct ?

A. In paddy fields, cyanobacteria serve as an important biofertiliser.

B. Vermicompost consists of organic matter prepared by the action of

earthworms on human or animal waste.

C. The important examples of cyanobacteria as biofertilisers are

Anabaena, Nostoc and Oscillatoria.

D. All of these

#### Answer: D

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94. Which of the following options includes biofertilisers ?

A. Cowdung manure and farmyard waste

B. A quick growing crop ploughed back into the field

C. Nostoc, Oscillatoria

D. All of these

### Answer: C

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# 95. Which of the following is a non-symbiotic biofertiliser ?

A. VAM

B. Azotobacter

C. Anabaena

D. Rhizobium

#### Answer: B

96. Nitrogen fixation in root nodules of Alnus is brought about by

A. Frankia

B. Azorhizobium

C. Bradyrhizobium

D. Clostridium

Answer: A

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97. Farmers have reported over 50~% higher yields of rice by using which

of the following biofertilisers ?

A. Bacillus thuringiensis

B. Lagume-Rhizobium symbiosis

C. Mycorrhizae
D. Azolla pinnata

## Answer: D



98. Match column I with column II and select the correct answer from the

given codes.

| ColumnI              | ColumnII                                |
|----------------------|---|
| A. Ganga action plan | $(i)N_2 { m fixing  cyanobacterium}$    |
| B. Bt cotton         | (ii)Ministry of environment and forests |
| C. Rhizobium         | (iii)Insect resistant plant             |
| D. Nostoc            | $(iv)N_2$ fixing bacterium              |

A. A - (ii), B - (iii), C - (iv), D - (i)

B. 
$$A - (iii), B - (i), C - (iv), D - (i)$$

C. 
$$A-(ii), B-(iv), C-(iii), D-(i)$$

D. 
$$A-(i),B-(iii),C-(ii),D-(iv)$$

#### Answer: A

99. Which of the following statements is/are incorrect?

(i) Cyanobacteria are autotrophic microbes widely distributed in aquatic and terrestrial habitats.

(ii) Anabaena, Nostoc and Oscillatoria are photosynthetic  $N_2$ -fixing cyanobacteria.

(iii) Tolypothrix (BGA) can increase rice production by about 20~%

(iv) BGA add organic matter to the soil and increase its fertility.

(v) In our country, biofertilisers are not available commercially in the markets for farmers.

A. (v) only

B. (iv) only

C. (iii) only

D. None of these

## Answer: A

100. Match column I with column II and select the correct answer from

the given codes.

| ColumnI              | ColumnII   |
|----------------------|--|
| A. Azolla            | $(i) { m symbiotic} N_2 - { m fixer}$                                  |
| B. Rotenone          | $(ii) { m Symbiotic} \ { m association} \ { m with} N_2 - { m fixing}$ |
| C. Crotolaria juncea | (iii)Natural insecticide   |
| D. Frankia           | (iv)Green manure   |

A. 
$$A-(ii), B-(iii), C-(iv), D-(i)$$

$$\mathsf{B}.\,A-(iii),B-(iv),C-(iii),D-(i)$$

$$\mathsf{C}.\,A-(ii),B-(i),C-(iv),D-(iii)$$

D. 
$$A-(i),B-(iii),C-(iv),D-(ii)$$

## Answer: A

**View Text Solution** 



1. Which of the following curves correctly represents the process of

antibiotic production by Streptomyces sp?



### Answer: D

**2.** In a microbiology laboratory, the technician uses heat to sterilise the nutrient solution that is used to grow a fungus. When the heating system broke down, he sterilised the solution by passing it (in a sterile environment) through a sterile filter with a pore size of 0.2 micrometers. when the fungs was grown on the filtered nutrient solution, it stopped growing and looked unhealthy within a few days. which statements is the most likely explanation for the observed effects on the fungus ?

A. The nutrient solution contained a virus.

- B. Heating makes the glucose in the nutrient solution more digestible
- C. Filering removed one of the larger nutrient molecules
- D. The nutrient solution contained a bacterium that was pathogenic

to the fungus.

Answer: A

**3.** Study the given differences between primary sludge and activated sludge and select the incorrect ones. Primary Sludge Activated sludge (i) It is sludge formed during primary sewage treatment. It is sludge formed during secondary sewage treatment. (ii) It possesses flocs of decomposer microbes. It does not possess flocs of decomposer microbes. (iii) It does not require aeration. Formation of activated sludge requires aeration. (iv) A lot of decomposition occurs during formation of activated sludge. Very little decomposition occurs during formation of activated sludge.

A. (i) and (ii)

B. (ii) and (iv)

C. (i),(ii) and (iv)

D. (ii) and (iii)

#### Answer: B

## 4. Microbe used for biocontrol of pest bufferfly caterpillars is

A. Saccharomyces cerevuisiae

**B.** Bacillus thuringiensis

C. Streptococcus sp

D. Trichoderma sp

#### Answer: B

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**5.** In batch fermentation: A) substrates are added to the system all at once and runs until product is harvested. B) nutrients are continuously fed into the reactor and the product is siphoned off during the run. C) new batches of microorganisms are screened for increase yield. D) small-scale production is used to synthesise product.

A. substrates are added to the system all at once and runs until

produce is harvested

B. nutrients are continuously fed into the reactor and the product is

siphoned off during the run

C. new batches of microorganisms are screened for increase yield

D. small-scale production is used to synthesise product

#### Answer: A

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## Ncert

**1.** The vitamin whos content increases following the conversion of milk

into curd by lactic acid bacteria is

A. vitamin C

B. vitamin D

C. vitamin  $B_{12}$ 

D. vitamin E

Answer: C

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2. Wastewater treatment generates a large quantity of sludge, which can

be treated by: 1. anaerobic digesters 2. floc 3. chemicals 4. oxidation pond

A. anaerobic digesters

B. floc

C. chemicals

D. oxidation pond

Answer: A

3. Methanogenic bacteria are not found in

A. rumen of cattle

B. gobar gas plant

C. bottom of water-logged paddy fields

D. activated sludge

#### Answer: D

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4. Match the following list of bacteria and their commercially important

products.

BacteriumProduct(i)Aspergillus niger(A)Lactic acid(ii)Acetobacter aceti(B)Butyric acid(iii)Clostridium butylicum(C)Acetic acid(iv)Lactobacillus(D)Citric acid

Choose the correct match.

A. i-(B), ii-(C), iii-(D), iv-(A)

$$egin{aligned} & \mathsf{B}.\,i-(B),\,ii-(D),\,iii-(C),\,iv-(A) \ & \mathsf{C}.\,i-(D),\,ii-(C),\,iii-(B),\,iv-(A) \ & \mathsf{D}.\,i-(D),\,ii-(A),\,iii-(C),\,-iv-(B) \end{aligned}$$

## Answer: C

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# 5. Match the following list of bioactive substances and their roles.

| Bioactive substance | Role                                    |
|---------------------|---|
| (i)Statin           | $(A) { m Removal} 	ext{ of oil stains}$ |
| (ii)CyclosporinA    | (B)Removal of clots from blood vessels  |
| (iii)Streptokinase  | (C)Lowering of blood cholesterol        |
| (iv)Lipase          | $(D) { m Immuno-suppressive \ agent}$   |

Choose the correct match.

A. 
$$i-(B), ii-(C), iii-(A), iv-(D)$$

B. 
$$i-(D), ii-(B), iii-(A), iv-(C)$$

$$\mathsf{C}.\,i-(D),ii-(A),iii-(B),iv-(C)$$

$$\mathsf{D}.\,i-(C),ii-(D),iii-(B),iv-(A)$$

## Answer: D



6. The primary treatement of wastewater involves the removal of

A. dissolved impurities

B. stable particles

C. toxic substances

D. harmuf bacteria

#### Answer: B

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**7.** BOD of wastwater is estimated by measuring the amount of

A. total organic matter

B. biodegradable organic matter

C. oxygen evolution

D. oxygen consumption

#### Answer: D

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**8.** Which one of the following alcoholic drinks is produced without distillation? 1. Wine 2. Whisky 3. Rum 4. Brandy

A. Wine

B. Whisky

C. Rum

D. Brandy

Answer: A

**9.** The technology of biogas production from cow dung was developed in india largely due to the efforts of

A. Gas Authority of India

B. Oil and Natural Gas Commission

C. India Agricultural Research Institute and Khadi & Village Industries

Commission

D. Indian Oil Corporation

## Answer: C

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**10.** The free-living fungus Trichoderma can be used for 1) killing insects 2) biological control of plant diseases 3) controlling butterfly caterpillars 4) producing antibiotics

A. killing insects

B. biological control of plant diseases

C. controlling butterfly caterpillars

D. producing antibiotics

#### Answer: B



**11.** What would happen if oxygen availability to activated sludge flocs is reduced? 1) It will slow down the rate of degradation of organic matter 2) The center of flocs will becomes anoxic, which would cause death of bacteria and eventually breakage of flocs 3) Flocs would increase in size as anerobic bacteria would grow around flocs 4) Protozoa would grow in large numbers

A. It will slow down the rate of degradation of organic matter

B. The center of flocs will becoms anoxic, which would cause death of

bacteria and eventually breakage of flocs

C. Flocs would increase in size as anerobic bacteria would grow

around flocs

D. Protozoa would grow in large numbers

Answer: A::B



**12.** Mycorrhiza does not help the host plant in: 1. enhancing its phosphorus uptake capacity 2. increasing its tolerance to drought 3. enhancing its resistance to root pathogens 4. increasing its resistance to insects

A. enhancing its phosphorus uptake capacity

B. increasing its tolerance to drought

C. enhancing its resistance to root pathogens

D. increasing its resistance to insects

## Answer: D



13. Which one of the following is not a nitrogen-fixing organism ?

A. Anabaena

**B.** Nostoc

C. Azotobacter

D. Pseudomonas

#### Answer: D



14. Big holes in Swiss cheese are made by a

A. a machine

B. a bacterium that produces methane gas

C. a bacterium producing a large amount of carbon dioxide

D. a fungus that releases a lot of gases during its metabolic activities

### Answer: C

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## 15. The residue left after methane production from cattle dung is

A. burnt

B. burried in land fills

C. used as manure

D. used in civil construction

## Answer: C

16. Mathanogens do not produce

A. oxygen

B. methane

C. hydrogen sulphide

D. carbon dioxide

Answer: A

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17. Activated sludge should have the ability to settle quickly so that it can

A. be rapidly pumped back from sedimentation tank to aeration tank

B. absorb pathogenic bacteria present in watewater while sinking to

the botton of the settling tank

C. be discarded and anaerobically digested

D. absorb colloidal organic matter

#### Answer: A

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18. Match the items in column 'A' and column 'B' and choose correct

answer.

ColumnAColumnB(i)Lady bird(A)Methanobacterium(ii)Mycorrhiza(B)Trichoderma(iii)Biological control(C)Aphids(iv)Biogas(D)Glomus

The correct answer is

$$\begin{array}{l} \mathsf{A.}\left(i\right)-B,\left(ii\right)-D,\left(iii\right)-(C),iv\right)-A\\ \mathsf{B.}\left(i\right)-C,\left(ii\right)-D,\left(iii\right)-B,\left(iv\right)-A\\ \mathsf{C.}\left(i\right)-D,\left(ii\right)-A,\left(iii\right)-B,\left(iv\right)-C\\ \mathsf{D.}\left(i\right)-C,\left(ii\right)-B,\left(iii\right)-A,\left(iv\right)-D \end{array}$$

## Answer: B

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Assertion Reaosn

1. Assertion : Nucleic acid complexes alone cannot cause diseases.

Reason : Only nucleoproteins can function as infectious agents.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

- C. If assertion is true but reason is false
- D. If both assertion and reason are false

#### Answer: D

**2.** Assertion : Streptococcus thermophilus increases nitritional value of milk.

Reason : Curd and yoghurt have higher vitamin content than milk.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

#### Answer: A



3. Assertion : Toddy becomes unpalatable after 24 hours.

Reason : The fermentation of toddy is continued by naturally occuring yeasts.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

#### Answer: A

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**4.** Assertion : Beer and wine are called soft liquors while gin,rum, etc., are

hard liquors.

Reason : Beer and wine are made without distillation.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

## Answer: B

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**5.** Assertion : Griseofulvin extracted from P.griseofulvum is used for ringworm treatment.

Reason : Trichopyton, Epidermophyton, etc., cannot grow well in presence

of Penicillium griseofulvum.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

- C. If assertion is true but reason is false
- D. If both assertion and reason are false

## Answer: A

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**6.** Assertion : Acetic acid production involves both aerobic and anaerobic processes.

Reason : Production of alcohol from glucose is an aerobic process and production of acetic acid from alcohol is an anerobic process

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

#### Answer: C



7. Assertion : An organ transplant patient if not provided with cyclosporin

A may reject the transplanted organ.

Reason : Cycosporin A inhibits activation of T-cells and interferes with destruction of non-self cells.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: A

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**8.** Assertion : Rennet and fruit extract of Withania somnifera have antagonistic functions.

Reason : Rennet is obtained from calf's liver and is used for curding of milk.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

## Answer: D

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**9.** Assertion : Secondary treatement of sewage is also called biological treatment while primary treatment is called physical treatment.

Reason : Primary sewage treatment depends only upon sedimentation properties of materials present in sewage and filtration.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

#### Answer: A

**10.** Assertion : Energy value of biogas is lower than that of organic matter. Reason : Biogas minimises the chances of spread of fecal pathogens.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

- C. If assertion is true but reason is false
- D. If both assertion and reason are false

#### Answer: B

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11. Assertion : Dragonflies can be used to decrease occurrence of diseases

like malaria, dengue, etc.

Reason : Baculoviruses are effective in controlling may insects and other arthropods.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

## Answer: B

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12. Assertion : Integrated pest management (IPM) programme at the same time deals with conservation of insects and destruction of insects. Reason : IPM programmes are specially used in dealing with ecologically sensitive areas. A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

- C. If assertion is true but reason is false
- D. If both assertion and reason are false

## Answer: B

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13. Assertion : Biofertilisers are preferred to chemical fertilisers.

Reason : Chemical fertilisers are generally more expensive and hazardous

to environment.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

#### Answer: A

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**14.** Assertion : Most orchid seedlings cannot develop well in the absence of fungal mycelium.

Reason : Fungal mycelium increases efficiency of absorption only

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

### Answer: C



**15.** Assertion : Nitrogenase enzyme gets inactivated in presence of oxygen yet  $N_2$  fixation occurs in aerobic cells of legume nodules. Reason : Laghaemoglobin allows presence of oxygen just sufficient for cellular respiration only.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

## Answer: A

**D** Watch Video Solution

Microbes In Human Welfare

1. Microbes are present in

A. Soil

B. thermal vents

C. polluted water

D. all of these

#### Answer: D

Watch Video Solution

2. Which of the following microbes is a proteinaceous infectious agent?

A. Fungi

**B.** Prions

C. Bacteria

D. Protozoa

Answer: B

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**3.** Match column I with column II and select the correct answer from the give codes.



C. 
$$A-(iii), B-(ii), C-(i)$$

D. 
$$A-(iii), B-(i), C-(ii)$$

## Answer: C
**4.** Refer to the given figure and select the correct match.



- A. A-Fungal colony, B-Bacterial colony
- B. A-Viral colony, B-Bacterial colony
- C. A-Bacterial colony, B-Viral colony
- D. A-Bacterial colony, B-Fungal colony

## Answer: D



5. The nutritive medium for growing bacteria and many fungi in laboraory

is called

A. growth media

B. suspension media

C. culture media

D. colonial media

Answer: C

Watch Video Solution

6. The inoculum is added to the fresk milk in order to convert milk into

curd, the term 'inoculum' here refers to

A. a starter rich in vitamin  $B_{12}$ 

B. a starter rich in proteins

C. a starter containing millions of LAB

D. an aerobic digester

### Answer: C



7. Study the following statements regarding lactic acid bacteria (LAB) which are used to convert milk into curd.

(i) They produce acids that coagulate and partially digest the milk proteins.

(ii) A small amount of curd added to the fresh milk as an inoculum contains millions of LAB, which at suitable temperature, multiply and convert milk into curd.

(iii) Conversion of milk into curd improves its nutritional quality by increasing vitamin  $B_{12}$ .

(v) LAB may result in acidity in the stomach of human beings.

Which of the given statements are correct ?

A. (i) and (ii)

B. (ii) and (iii)

C. (i),(ii) and (iii)

D. (i), (ii), (iii) and (iv)

## Answer: C

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8. Study the following flow chart depicting the formation of curd from

milk. Identify the missing parts X and Y.



A. X-Gluconic acid, Y-Vitamin  $B_1$ 

B. X-Lactic acid, Y-Vitamin  $B_2$ 

C. X-Lactic acid, Y-Vitamin  $B_{12}$ 

D. X-Citric acid, Y-Vitamin C

### Answer: C

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9. Read the following statements and select the correct option.

Statement 1: Besides curdling of milk, LAB also improve its nutritional quality by increasing vitamin  $B_{12}$ .

Statement 2: LAB, when present in human stomach, check disease causing microbes.

A. Both statements 1 and 2 are correct

B. Statement 1 is correct but statement 2 is incorrect

C. Statement 1 is incorrect but statement 2 is correct

D. Both statements 1 and 2 are incorrect

#### Answer: A

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**10.** Which one of the following combinations of organisms are responsible for the formation and flavour of yoghurt

A. Lactobacillus bulgaricus and streptococcus thermophilus

B. Rhizobium melioti and Aztobactor

C. Bacillus subtillis and Escherichia coli

D. Bacillus megathermus and Xanthomonas species

# Answer: A



**11.** Which of the following food items is produced by the fermenting activity of microbes?

A. ldli B. Dosa

C. Toddy D. Cheese

A. A and C

B. C and D

C. A,B and C

D. A,B,C and D

Answer: D

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12. Read the following statements and select the incorrect one.

A. The dough used for making Dosa and Idli is fermented by bacteria.

B. Microbes are used to ferment fish, soybean and bamboo shoots to

make food

C. The large holes in 'Swiss cheese' are due to production of large

amount of  $CO_2$  by a fungi called Propinibacterium sharmanii

D. Toddy' is a traditional drink of Southern India made by fermentation

by microbes

Answer: C

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13. Match different organisms in column I with their uses in column I and

select the correct answer from the given codes.

ColumnIColumnIIA. Lactobacillus acidophilus(i)Formation of doughB. Saccharomyces cerevisiae(ii)single cell proteinsC. Propionibacterium shermanii(iii)Conversion of milk into curdD. Spirullina(iv)Formation of Swiss cheese

A. 
$$A-(iii), B-(i), C-(ii), D-(iv)$$

B. 
$$A-(iii),B-(i),C-(iv),D-(ii)$$

C. 
$$A-(i),B-(iii),C-(iv),D-(ii)$$

D. 
$$A-(i),B-(iii),C-(ii),D-(iv)$$

#### Answer: B

**14.** Which of the following organisms is used in the production of beverages?

A. Penicillium notatum

B. Saccharomyces cerevisiae

C. Aspergillus niger

D. Clostridium butyricum

## Answer: B

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**15.** Which of the following options contains the end products formed during anaerobic respiration in yeast?

A.  $H_2O, CO_2$  and energy

B.  $H_2S, C_6H_{12}O_6$  and energy

C.  $CO_2, C_2H_5OH$  and energy

D.  $H_2O$  and  $CO_2$ 

### Answer: C

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**16.** Wine and beer are produced directly by fermentation whereas brandy and whisky require both fermentation and distillation. This is because

A. fermentation is inhibited at the alcohol level of  $10-18\,\%$ 

B. distillation prolong storage

C. distillation improves quality

D. distillation purifies the beherage

### Answer: A

**17.** The chemical substances produced by some microbes which can kill or inhibit the growth of other microbes are called

A. antiseptics

B. antacids

C. antibiotics

D. all of these

Answer: C

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18. Antibiotics are obtained from

A. bacteria

B. fungi

C. actinomycetes

D. all of these

Answer: D



**19.** Which of the following antibiotics was extensively used to treat American soldiers wounded in World War II ?

A. Neomycin

B. Bacitracin

C. Chloroamphenicol

D. Penicillin

Answer: D

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20. Which of the following statements regarding antibiotics is not correct

?

(i) Antibiotics are the attenuated microorganisms which in small concentration can kill or retard the growth of other harmful microorganisms.

(ii) Penicillin was the first antibiotic discovered by Alexander Fleming(1928) while working on bacterium Staphylococcus aureus.

(iii) The full potential of penicillin as an effective antibiotic was established by Ernest chain and Howard Florey.

(iv) Fleming, Chain and Florey were awarded the Nobel Prize in 1945

A. (i) only

B. (ii) only

C. (ii) and (iv)

D. (i),(ii) and (v)

#### Answer: A

21. Which of the following discases are treated by antibiotics ?

(i) Plague (ii) Diphtheria

(iii) Leprosy (iv) Whooping cough

A. (i), (ii) and (iii)

B. (i), (iii) and (iv)

C. (ii), (iii) and (iv)

D. (i),(ii), (iii) and (iv)

## Answer: D

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22. Streptomycin is obtained from

A. Streptomyces griseus

B. S. cerevisiae

C. S. venezuelae

D. S.rimosus

Answer: A

**Watch Video Solution** 

23. Which of the following antibiotics is not correctly matched with the

source from which it is obtained ?

| A. | Antibiotic   | Sou                 | ırce                     |
|----|--------------|---------------------|--------------------------|
|    | Penicillin   | Per                 | nicillium chrysogenum    |
| B. | Antibiotic   | Sou                 | ırce                     |
|    | Bacitracin   | Ba                  | cillus licheniformis     |
| C. | Antibiotic   | S                   | ource                    |
|    | Griseofulvir | ı F                 | Penicillium griseofulvum |
| D. | Antibiotic   |                     | Source                   |
|    | Streptomyc   | $\operatorname{in}$ | Bacillus griseus         |
|    |              |                     |                          |

## Answer: D

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24. Select the correct option to fill up the blanks.

- (i) \_\_\_\_\_are used in detergent formulations and are helpful in removing oily stains from the laundry.
- (ii) \_\_\_\_\_are ripened by growing Penicillium roqueforti on them.
- (iii) \_\_\_\_\_are produced without distillation whereas, \_\_\_\_\_are produced by distillation of the fermented broth.
- (iv) \_\_\_\_\_antibiotic was used to teat American soldiers wounded in world war II.
- (v) \_\_\_\_\_is also called as Kusht rog.
  - A. (i) Lipases, (ii) Camembert cheese, (iii) Whisky and rum, wine and beer, (iv) Penicillin, (v) Leprosy
  - B. (i) Lipases, (ii) Roquefort cheese, (iii) Wine and beer, whisky and rum,
    - (iv) Penicillin, (v) Leprosy
  - C. (i) Streptokinases, (ii) Roquefort cheese, (iii) Wine and beer, whisky

and rum, (iv) Streptomycin, (v) Whooping cough

- D. (i) Amylases, (ii) Swiss cheese, (iii) Whisky and rum, wine and beer,
  - (iv) Penicllin, (v) Diphtheria

## Answer: B

**25.** \_\_\_\_\_produced by bacterium Streptococcus and modified by genetic engineering is used as a clot buster for removing clots from the blood vessels of patients who have undergone myocardial infarction leading to heart attack.

A. Lipase

B. Streptokinase

C. Cyclosporin A

D. Antibiotic streptomycin

Answer: B

Watch Video Solution

26. Enzyme which has the fibrinolytic effect is

A. protease

B. amylase

C. lipase

D. streptokinase

# Answer: D

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27. Identify the blank spaces A,B,C and D in the following table and select

the correct answer.

| Type of microbe | Scientific name         | Commercial product |
|-----------------|-------------------------|--------------------|
| Bacterium       | A                       | Streptokinase      |
| В               | Aspergillus niger       | Citric acid        |
| Fungus          | Trichonderma polysporum | C                  |
| Bacterium       | D                       | Butyric acid       |

A. A-Streptococcus B-Fungus

C-Cyclosporin A D-Clostridium butylicum

B. A-Clostridium butlyclium B-Streptococcus

C-Fungus D-Cyclosporin A

C. A-Streptococcus B-Yeast

C-Cyclosporin A D-Lacyobacillus

D. A-Streptococcus B-Cyclosporin A

C-Strains D-Clostridium butylicum

### Answer: A

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28. A drug used for patient A is obtained from the organism B. Identify A

and B in the above statement and select the correct answer.

A.  $\frac{A}{\text{Swine flu}} = \frac{B}{\text{Monascus purpureus}}$ 

ABAIDSPseudomonas denitrificasC.ABHeartPenicillium chrysogenumD.ABOrgan transplantTrichoderma polysporum

# Answer: D

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29. Stains used for lowering blood cholesterol level are extracted from

A. algae

B. bacteria

C. viruses

D. yeast

Answer: D

Watch Video Solution

30. Monascus purpureus is a yeast commerically used in the production

of

A. citric acid

B. ethanol

C. blood cholesterol lowering statins

D. streptokinase for removing clots from blood vessels.

# Answer: C

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31. Identify the blank spaces A,B,C and D in the table given below and

select the correct answer.

| type of microbe | Scientific name     | Product       | Medical applicati |
|-----------------|---------------------|---------------|-------------------|
| Fungs           | A                   | Cyclosporin A | В                 |
| C               | Monascus purpuereus | Statin        | D                 |

A. A-Trichoderma polysproum,

B-As an immunosuppressive agent,

C-Yeast (Fungus),

D-Lowering of blood chloesterol

B. A-Trichoderma polysporum,

B-Lowering of blood cholesterol,

C-Yeast (Fungus),

D-As an immunospressive agent

C. A-Yeast (Fungus), B-Lowering of blood cholesterol,

C-Trichoderma polysporum,

D-As an immunosuppressive agent

D. A-Streptococcus,

B-As an immunosuppressive agent,

C-Bacterium, D-Lowering of blood cholesterol

Answer: A

# 32. Identify the blanks spaces A,B,C and D in the following table and select

the correct answer.

| Type of microbe | Scientific name     | Commercial product |
|-----------------|---------------------|--------------------|
| Bacterium       | A                   | Lactic acid        |
| Fungus          | B                   | Cyclosporin A      |
| C               | Monascus purpureus  | Statins            |
| Fungus          | Penicillium notatum | D                  |

A. A-Lactobacillus B-Trichoderma polysporum

C-Yeast D-Penicillin

B. A-Acetobacter B-Trichoderma polysporum

C-Yeast D-Streptomycin

C. A-Lactobacillus B-Aspergillus niger

C-Algae D-Penicillin

D. A-Lactobacillus B-Trichoderma polysporum

C-Agaricus D-Penicillin

# Answer: A



## Answer: C



**34.** During the primary treatment of sewage, solid paricles that settle down are called

A. flocs

B. primary sludge

C. activated sludge

D. anaerobic sludge

Answer: B

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35. The purpose of biological treatment of waste water is to

A. reduce BOD

B. increase BOD

C. reduce sedimentation

D. increase sedimentation

Answer: A

Watch Video Solution

36. The masses of bacteria held together by slime and fungal filaments to

form mesh-like structures are called as

A. primary sludge

B. floces

C. activated sludge

D. anaerobic sludge

Answer: B

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**37.** Read the following statements and select the correct option.

Statement 1: BOD represents the amount of dissolved oxygen that would

be consumed if all the organic matter in one litre of water were oxidised

by microorganisms.

Statement 2 : High value of BOD indicates that water is highly polluted by organic matter.

A. Both statements 1 and 2 are correct

B. Statement 1 is correct but statement 2 is incorrect

C. Statement 1 is incorrect but statement 2 is correct

D. Both statements 1 and 2 are incorrect

## Answer: A

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**38.** BOD is\_\_\_\_\_in polluted water and \_\_\_\_\_\_in potable water.

A. more, less

B. less, more

C. less in both

D. medium in both

# Answer: A

**Watch Video Solution** 

39. Biochemical oxygeb demand (BOD) in a river water

A. has no relatiship with concentration of oxygen in the water

B. gives a measure of Salmonella in the water

C. increases when sewage gets mixed with river water

D. remains unchanged when algal bloom occurs.

Answer: C

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40. When domestic sewage mixes with river water

A. small animals like rats will die after drinking river water

B. the increased microbial activity releases micronutrients such as iron

C. the increased microbial activity uses up dissolved oxygen

D. the river water is still suitable for drinking as impurities are only

about  $0.1\,\%$  .

### Answer: C



**41.** A sewage treatement process in which a part of decomposer bacteria present in the waste is recycled into the starting of the process is called

as

A. primary treatment

B. activated sludge treatment

C. tetriary treatment

D. none of these

## Answer: B

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**42.** In the sewage treatment, bacterial flocs are allowed to sediment in a setting tank. This sediment is called as

A. inactivated sludge

B. activated sludge

C. primary sludge

D. secondary sluge

Answer: B



43. Match column I with column II and select the correct answer from the

given codes.

ColumnI ColumnII A. The stage in which of physical treatment of sewage is done (i)Anaerob B. The stage in which biological treatment of sewage is done (ii)Activat C. Name of the sediment in primary treatment (iii)Aeratio D. It is carried to aeration tanks from primary (iv)Primar E. Name of the sediment in secondary treatment (v)Primary F. site of flocs growth (vi)seconda (vii)Prima G. Function of sludge digester

$$A-(vii),B-(vi),c-(v),D-(iv),E-(ii),F-(iii),G-(i)$$

Β.

$$A-(i), B-(iii), C-(v), D-(vii), E-(ii), F-(iv), G-(vi)$$

C.

$$A-(i), B-(ii), C-(iii), D-(iv), E-(v), F-(vi), G-(vii)$$

D.

$$A-(vii),B-(vi),C-(i),D-(ii),E-(iii),F-(iv),G-(v)$$

#### Answer: A

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44. Given below is the flow chart of sewage treatement. Identify A,B,C and

D and select the correct option.



A. A-Mechanical agitation, B-Increased BOD C-Activated sludge, D-Aerobic sludge digesters

B. A-Mechanical agitation, B-Reduced BOD C-Activated sludge, D-

Anaerobic sludge digesters

C. A-Microbial digestion, B-Activated sludge C-Reduced BOD, D-

Anaerobic sludge digesters

D. A-Microbial digestion, B-Mechaical agitation C-Reduced BOD, D-

Aerobic sludge digesters

Answer: B

**45.** Read the following statements and select the incorrect one.

- A. Little decomposition occurs during the formation of primary sludge
- B. Formation of primary sludge requires ample aeration
- C. Activated sludge posses flocs of decomposer microbes
- D. Formation of activated sludge required aeration

#### Answer: B

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**46.** Select the correct statement regarding activated sludge formed during secondary sewage treatment.

A. A small part of it is rapidly pumped back from sedimentation to

aeration tank

B. It absorbs pathogenic bacteria present in waste water while sinking

to the bottom of the settling tank

C. A major part of it is anaerobically digested

D. Both (a) and (c)

### Answer: D



47. Which of the following steps is taken by the Ministry of Enviornment

and Forests to protect rivers from water pollution?

A. Ganga Action Plan

B. Narmada Action Plan

C. Yamuna Action Plan

D. Both (a) and (c)

Answer: D

48. Mach column I with column II and select the correct answer from the

given codes.

| ColumnI                   | ColumnII                               |
|---------------------------|--|
| A. Methanogens            | (i)BOD                                 |
| B. Fermentors             | (ii)Methane rich fuel gas              |
| C. Organic waste in water | (iii)Production of methane             |
| D. Biogas                 | (iv)Large vessels for growing microbes |

A. 
$$A-(ii), B-(iv), C-(iii), D-(i)$$

B. 
$$A-(iv),B-(iii),C-(ii),D-(i)$$

C. 
$$A-(ii),B-(i),C-(iv),D-(iii)$$

D. 
$$A-(iii), B-(iv), C-(i), D-(ii)$$

## Answer: D

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**49.** Study the following statements and select the incorrect ones.

(i) Physical removal of large and small particles through filtration and sedimentation is called primary sewage treatment.

(ii) Secondary sewage treatment is mainly a mechanical process.

(iii) Activated sludge sediment in a sewage treatment plant is a rich source of aeroic bacteria.

(iv) Biogas, commonly called as gobar gas, is pure methane.

A. (i) and (ii)

B. (ii) and (iv)

C. (ii) and (iii)

D. (iii) and (iv)

#### Answer: B

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50. Methanogens, growing anaerobically on cellulosic material produce
A. methane

- B. methane and carbon dioxide
- C. methane and hydrogen
- D. methane, carbon dioxide and hydrogen

### Answer: D

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# 51. Which of the following bacteris is present in the rumen of cattle?

A. Azotobacter

B. Rhizobium

C. Methanobacterium

D. Azospirillum

### Answer: C

52. Process of biogas production is

A. aerobic process

B. anaerobic process

C. active process

D. passive process

#### Answer: B

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53. Biogas is produced by

A. aerobic breakdown of biomass

B. anaerobic breakdown of biomass

C. with the help of methanogenic bacteria

D. both (b) and (c)

### Answer: D



54. Match column I with column II and select the correct option from the

codes given below.

| ColumnI               | ColumnII                    |
|-----------------------|-----------------------------|
| A. Statins            | (i)Biogas                   |
| B. Dung               | (ii)Saccharomyces cerevisae |
| C. Ethanol production | (iii)Monascus purpureus     |
| D. CyclosporinA       | (iv)Trichoderma polysporum  |

A. 
$$A-(iii), B-(i), C-(iv), D-(iii)$$

B. 
$$A-(i),B-(iii),C-(iv),D-(ii)$$

C. 
$$A-(iii), B-(ii), C-(iv), D-(i)$$

D. 
$$A-(iii),B-(i),C-(ii),D-(iv)$$

#### Answer: D

**55.** These bacteria grow anaerobically on cellulosic material, produce large amount of methane along with  $CO_2$  and  $H_2$ , and are collectively called as methanogens. Examples of such bacteria are

A. Methanobacterium

B. Methanobrevibacter

C. Methanococcus

D. all of these

Answer: D

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**56.** The given figure represents a typical biogas plant. Select the correct option for A,B and C respectively.



## A. A is the inlet for cattle dung

B. C is the outlet for the release of biogas

C. B is the chamber which contains leftover slurry

D. All of these

Answer: A

57. Which of the following statements is incorrect ?

- A. Word antibiotic is a misnomer. Anti is a Greel word that means 'orgainst' and bios means 'life' together they mean against life (in the context of disease causing organisms), whereas with reference to human beings, they are pro-life and not agnist
- B. Flocs are masses of bacteria with interwoven fungal filaments which

form mesh-like structures.

C. Componenets of biogas are methane (50-70~%), carbon dioxide

(30-40~% ) and traces of hydrogen, nitrogen and  $H_2S$ 

D. None of these

#### Answer: D

**58.** Biogas generation is a three stage anaerobic digestion of animal and other organic wastes. Study the following flow chart and select the correct option for stages I, II and III.



A. In stage -I, anaerobic microorganisms bring about enzymatic breakdown of complex organic compounds into simple soluble compounds or monomers

- B. In stage -II, monomers are converted into organic acids by fermentation causing microbes
- C. In stage-III, organic acids are acted upon by methanogenic bacteria
  - to produce biogas

### D. All of these

#### Answer: D

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59. Read the following statements and select the correct option.

Statement 1 : Biocontrol refers to the use of biological methods for controlling plant diseases and pests.

Statement 2 : Use of biocontrol measures will greatly reduce our dependence on toxic chemicals and pesticides.

A. Both statements 1 and 2 are correct

B. Statement 1 is correct but statement 2 is incorrect

C. Statement 1 is incorrect but statement 2 is correct

D. Both statements 1 and 2 are incorrect

#### Answer: A

60. Biopesticides are

A. the chemicals which are used to destroy the pests

B. the living organisms or their prducts which are used for the pest

control

C. the organisms which denstroy the crops

D. none of these

#### Answer: B

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**61.** When a natural predator (living organism) is applied on the other pathogen organisms to control them, this process is called as

A. biological control

B. genetic engineering

C. arifificial control

D. confusion technique

## Answer: A

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62. Dragonflies are used to get rid of

A. mosquitoes

B. aphids

C. butterfly caterpillars

D. both (a) and (b)

### Answer: A

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63. A microbial biocontrol agent that can be used to control butterfly

caterpillars is

- A. Trichoderma polysporum
- B. Bacillus thuringiensis
- C. Streptococcus
- D. mycorrhiza

## Answer: B

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64. Bacillus thuringiensis is used to control

A. bacterial pathogens

- B. fungal pathogens
- C. mematodes
- D. insect pests

## Answer: D



65. Bacillus thuringiensis (Bt) strains have been used for designing novel

A. biofertilisers

B. bio-metallurgical techniques

C. bio-mineralisation process

D. bio-insecticidal plants

### Answer: D

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**66.** Fill up the blanks by selecting the correct option.

(i) Biogas is a mixture of gases which predominantly contains\_\_\_\_\_and is

used as\_\_\_\_\_

(ii) Methanogens are commonly found in the\_\_\_\_\_during sewage treatment.

(iii) \_\_\_\_\_\_species are free-living fungi and effective biocontrol agents of several plant pathogens.

A. (i) methane, fuel, (ii) anaerobic sludge, (iii) Trichoderma

B. (i)  $CO_2$ , fuel, (ii) primary sludge, (iii) Trichoderma

C. (i) mathane, fuel, (ii) anaerobic sludge, (iii) Baculoviruses

D. (i) methane, fuel, (ii) aerobic sludge, (iii) Trichoderma

### Answer: A

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**67.** Which of the following statements is correct with regard to biocontrol agents ?

A. Ladybird and dragonifies are used to get rid of aphids and

mosquitoes respectively.

B. Bacillus thuringiensis bacteria are used to control butterfly

caterpillars

C. Trichoderma species are used to control several plant pathogens

D. All of these

## Answer: D



68. Trichoderma harizianum has proved to be a useful microorganism for

A. gene transfer in higher plants

B. biological control of soil-borne plant pathogens

C. bioremediation of contaminated soils

D. reclamation of wastelands.

### Answer: B



69. Baculoviruses (Nucleopolyhedrobirus) do not show

A. host specificity

B. narrow spectrum applications

C. effects on non-target pathogens

D. utility in IPM programme

### Answer: C

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**70.** Which of the following statements regarding baculoviruses as biocontrol agents is/are correct ?

A. The majority of baculovirus used as biocontrol agents are included

in the genus-Nucleopolyhedrovirus

B. Infection with baculoviruses occurs when susceptible hosts (e.g.,

some specific insects) eat virus particle present on foliage and dies.

C. These are important in organic farming because of their specific

action on harmful insects without causing and damage to beneficial

insects as well as to the environment

D. All of these

Answer: D

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71. Integrated Pest Mangement (IPM) discourages the excessive use of

A. biological methods

B. chemical pesticides

C. mechanical methods

D. all of these

## Answer: B



**72.** Which of the following is not used as a biopesticide ?

- A. Trichoderma harzianum
- B. Nucleopolyhedrovirus
- C. Xanthomonas campestris
- D. Bacillus thuringiensis

### Answer: C



73. The reason that the chemical/synthetic fertilisers should be replaced

by biofertilisers is that the former

A. are source of environmental pollution

B. are expensive

C. axaust the valuable energy resources for their manufacture

D. all of these

Answer: D

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74. Organic farming does not include

A. green manures

B. chemical fertilisers

C. farmyard manures

D. compost

Answer: B



75. Organic farming includes

A. use of fertilisers and pesticides of biological origin

B. IPM (Integrated Pest Management)

C. locally developed pest resistance varieties

D. all of these

Answer: D

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76. Living organisms used to enrich the nutrient quality of the soil are

called as

A. bicontrol agents

B. biofertillsers

C. synthetic fertilisers

D. natural ferilisers

### Answer: B



77. Biofertilisers are prganisms that enrich the nutrient quality of the soil.

Which of the following can be used as biofertilisers ?

A. Nitrogen fixing cyanobacteria

B. Nitrogen fixing bacteria

C. Mycorrhizae

D. All of these

Answer: D

## 78. Biofertilisers are

- A. some bacteria and cyanobacteria
- B. fertilisers formed by ploughing in barseem
- C. fertilisers obtained by decay of dead organisms
- D. fertilisers prepared by mixing cattle dung with crop residues.

## Answer: A

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79. Biofertilisers are the living organisms which

A. bring about soil nutrient enrichment

B. maximise the ecological benefits

C. minimise the environmental hazards

D. all of these

## Answer: D

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80. Unicellular symbiotic organisms improve yield of legumes by

A. fixing atmospheric nitrogen without colonising roots of host plant

B. fixing atmospheric nitrogen and colonising roots of host plant

C. inducing the host plant to absorb more phosphours

D. stimulating the host plant to become tolerant to drought

#### Answer: B



**81.** Match column I with column II and select the correct answer from the gives codes.

ColumnIColumnIIA. Trichoderma(i)Free living nitrogen fixing bacteriaB. Streptomyces(ii)Biocontrol agentC. Azospirillum(iii)Lactic acidD. Lactobacillus(iv)Source of antibiotic

A. 
$$A-(ii),B-(iii),C-(iv),D-(i)$$

B. 
$$A-(ii),B-(iv),C-(i),D-(iii)$$

C. 
$$A-(iii),B-(i),C-(ii),D-(iv)$$

D. 
$$A-(iv),B-(ii),C-(i),D-(iii)$$

#### Answer: B

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82. Which one of the following can be used as biofertiliser in cotton field?

A. Azolla-Anabaena

**B. Streptococcus** 

C. Azospirillum

D. Azotobacter chroococcum

## Answer: D



83. The symbiotic association between fungi and roots of higher plants is

referred to as

A. lichen

B. mycorrhiza

C. biofertiliser

D. biocontrol agent

Answer: B

**84.** Which one of the following microorganisms forms symbiotic assocation with plants and helps them in their nutrition?

A. Glomus

B. Azotobacter

C. Klebsiella

D. Azospirillum

Answer: A

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**85.** Which of the following statements is not correct regarding mycorrhiza ?

A. It helps in absorption of phosphous from the soil.

B. It is a symbiotic assocaition of fungi with the roots of higher plants

C. It helps the plant in developing resistance to rootborne pathogens

D. None of these

## Answer: D



86. Which one of the following pairs is correctly matched?

A. Rhizobium - Parasite in the roots of leguminous plants

B. Mycorrhizae- Mineral uptake from soil

C. Yeast - Production of biogas

D. Azospirillum - Symbiotic  $N_2$ - fixing bacterium

### Answer: B



87. Match column I with column II and select the correct answer from the

given codes.

| ColumnI                   | ColumnII                 |
|---------------------------|--------------------------|
| A. Mycorrhizae            | (i)Azadirachtin          |
| B. Bacillus thuringiensis | (ii)Phosphours nutrition |
| C. Root nodules           | (iii)Leghaemoglobin      |
| D. Biopesticide           | (iv)Bioinsecticide       |

A. 
$$A-(iii), B-(i), C-(ii), D-(iv)$$

B. 
$$A-(ii), B-(iii), C-(iv), D-(i)$$

C. 
$$A-(ii),B-(iv),C-(iii),D-(i)$$

D. 
$$A-(iii), B-(iv), C-(ii), D-(i)$$

## Answer: C



88. Cyanobacteria are

## A. heterotrophs

B. chemotrophs

C. autotrophs

D. organotrophs

Answer: C

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89. A nitrogen fixing microbe associated with the fern Azolla in rice fields

is

A. Frankia

B. Rhizobium

C. Spirunlina

D. Anabaena

Answer: D

**90.** Azolla pinnata has been found to be an important biofertiliser for paddy crops. This quality is due to the presence of

A.  $N_2$  fixing bacteria

B.  $N_2$  fixing cyanobacteria

C. mycorrhizae

D. all of these

Answer: B

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91. Which of the following is widely used as a successful biofertiliser in

Indian rice fields ?

A. Rhizobium

B. Acacia arabica

C. Acalypha indica

D. Azolla pinnata

Answer: D

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92. Study the following statements and select the correct ones

(i) Methanogens are archeabacteria which produce methane in marshy

areas

(ii) Nostoc is a filamentous blue green alga which fixes atmospheric nitrogen.

(iii) Many membres of the genus Glomus form my corrhiza.

A. (i) and (ii)

B. (i) and (iii)

C. (ii) and (iii)

D. (i),(ii) and (iii)

## Answer: D

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93. Which of the following statements is/are correct ?

A. In paddy fields, cyanobacteria serve as an important biofertiliser.

B. Vermicompost consists of organic metter prepared by the action of

earthworms on human or animal waste.

C. The important examples of cyanobacteria as biofertilisers are

Anabaena, Nostoc and Oscillatoria.

D. All of these

#### Answer: D

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94. Which of the following options includes biofertilisers ?

A. Cowdung manure and farmyard waste

B. A quick growing crop ploughed back into the field

C. Nostoc, Oscillatoria

D. All of these

### Answer: C

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# 95. Which of the following is a non-symbiotic biofertiliser ?

A. VAM

B. Azotobacter

C. Anabaena

D. Rhizobium

#### Answer: B

96. Nitrogen fixation in root nodules of Alnus is brought about by

A. Frankia

B. Azorhizobium

C. Bradyrhizobium

D. Clostridium

Answer: A

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97. Farmers have reported over 50~% higher yields of rice by using which

of the following biofertilisers ?

A. Bacillus thuringiensis

B. Lagume-Rhizobium symbiosis

C. Mycorrhizae

D. Azolla pinnata

## Answer: D



98. Match column I with column II and select the correct answer from the

given codes.

| ColumnI              | ColumnII                                |
|----------------------|---|
| A. Ganga action plan | $(i)N_2 { m fixing  cyanobacterium}$    |
| B. Bt cotton         | (ii)Ministry of environment and forests |
| C. Rhizobium         | (iii)Insect resistant plant             |
| D. Nostoc            | $(iv)N_2$ fixing bacterium              |

A. A - (ii), B - (iii), C - (iv), D - (i)

B. 
$$A - (iii), B - (i), C - (iv), D - (i)$$

C. 
$$A-(ii), B-(iv), C-(iii), D-(i)$$

D. 
$$A-(i),B-(iii),C-(ii),D-(iv)$$

#### Answer: A

99. Which of the following statements is/are incorrect?

(i) Cyanobacteria are autotrophic microbes widely distributed in aquatic and terrestrial habitats.

(ii) Anabaena, Nostoc and Oscillatoria are photosynthetic  $N_2$ -fixing cyanobacteria.

(iii) Tolypothrix (BGA) can increase rice production by about 20~%

(iv) BGA add organic matter to the soil and increase its fertility.

(v) In our country, biofertilisers are not available commercially in the markets for farmers.

A. (v) only

B. (iv) only

C. (iii) only

D. None of these

### Answer: A

100. Match column I with column II and select the correct answer from

the given codes.

| ColumnI              | ColumnII   |
|----------------------|--|
| A. Azolla            | $(i) { m symbiotic} N_2 - { m fixer}$                                  |
| B. Rotenone          | $(ii) { m Symbiotic} \ { m association} \ { m with} N_2 - { m fixing}$ |
| C. Crotolaria juncea | (iii)Natural insecticide   |
| D. Frankia           | (iv)Green manure   |

A. 
$$A-(ii), B-(iii), C-(iv), D-(i)$$

B. 
$$A-(iii), B-(iv), C-(iii), D-(i)$$

C. 
$$A-(ii),B-(i),C-(iv),D-(iii)$$

D. 
$$A-(i),B-(iii),C-(iv),D-(ii)$$

### Answer: A

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101. Which of the following curves correctly represents the process of

antibiotic production by Streptomyces sp?


#### Answer: D



**102.** In a microbiology laboratory, the technician uses heat to sterilise the nutrient solution that is used to grow a fungus. When the heating system broke down, he sterilised the solution by passing it (in a sterile

environment) through a sterile filter with a pore size of 0.2 micrometers. when the fungs was grown on the filtered nutrient solution, it stopped growing and looked unhealthy within a few days. which statements is the most likely explanation for the observed effects on the fungus ?

A. The nutrient solution contained a virus.

- B. Heating makes the glucose in the nutrient solution more digestible
- C. Filering removed one of the larger nutrient molecules
- D. The nutrient solution contained a bacterium that was pathogenic to the fungus.

## Answer: A

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**103.** Study the given differences between primary sludge and activated sludge and select the incorrect ones. Primary Sludge Activated sludge (i) It is sludge formed during primary sewage treatment. It is sludge formed during secondary sewage treatment. (ii) It possesses flocs of decomposer

microbes. It does not possess flocs of decomposer microbes. (iii) It does not require aeration. Formation of activated sludge requires aeration. (iv) A lot of decomposition occurs during formation of primary sludge. Very little decomposition occurs during formation of activated sludge.

A. (i) and (ii)

B. (ii) and (iv)

C. (i),(ii) and (iv)

D. (ii) and (iii)

Answer: B

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104. Microbe used for biocontrol of pest bufferfly caterpillars is

A. Saccharomyces cerevuisiae

B. Bacillus thuringiensis

C. Streptococcus sp

D. Trichoderma sp

#### Answer: B

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**105.** In batch fermentation: A) substrates are added to the system all at once and runs until product is harvested. B) nutrients are continuously fed into the reactor and the product is siphoned off during the run. C) new batches of microorganisms are screened for increase yield. D) smallscale production is used to synthesise product.

A. substrates are added to the system all at once and runs until

produce is harvested

B. nutrients are continuously fed into the reactor and the product is siphoned off during the run

C. new batches of microorganisms are screened for increase yield

D. small-scale production is used to synthesise product

# Answer: A

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106. The vitamin whos content increases following the conversion of milk

into curd by lactic acid bacteria is

A. vitamin C

B. vitamin D

C. vitamin  $B_{12}$ 

D. vitamin E

### Answer: C



107. Wastewater treatment generates a large quantity of sludge, which

can be treated by: 1. anaerobic digesters 2. floc 3. chemicals 4. oxidation

pond

A. anaerobic digesters

B. floc

C. chemicals

D. oxidation pond

## Answer: A

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108. Methanogenic bacteria are not found in

A. rumen of cattle

B. gobar gas plant

C. bottom of water-logged paddy fields

D. activated sludge

Answer: D

109. Match the following list of bacteria and their commercially important

products.

| Bacterium                  | Product         |
|----------------------------|-----------------|
| (i)Aspergillus niger       | (A)Lactic acid  |
| (ii)Acetobacter aceti      | (B)Butyric acid |
| (iii)Clostridium butylicum | (C)Acetic acid  |
| (iv)Lactobacillus          | (D)Citric acid  |

Choose the correct match.

$$\begin{array}{l} \mathsf{A}.\,i-(B),\,ii-(C),\,iii-(D),\,iv-(A)\\\\ \mathsf{B}.\,i-(B),\,ii-(D),\,iii-(C),\,iv-(A)\\\\ \mathsf{C}.\,i-(D),\,ii-(C),\,iii-(B),\,iv-(A)\\\\\\ \mathsf{D}.\,i-(D),\,ii-(A),\,iii-(C),\,-iv-(B) \end{array}$$

## Answer: C

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**110.** Match the following list of bioactive substances and their roles.

| Bioactive substance | Role                                    |
|---------------------|---|
| (i)Statin           | $(A) { m Removal} 	ext{ of oil stains}$ |
| (ii)CyclosporinA    | (B)Removal of clots from blood vessels  |
| (iii)Streptokinase  | (C)Lowering of blood cholesterol        |
| (iv)Lipase          | (D)Immuno-suppressive agent             |

Choose the correct match.

$$\begin{array}{l} \mathsf{A}.\,i-(B),\,ii-(C),\,iii-(A),\,iv-(D)\\\\ \mathsf{B}.\,i-(D),\,ii-(B),\,iii-(A),\,iv-(C)\\\\ \mathsf{C}.\,i-(D),\,ii-(A),\,iii-(B),\,iv-(C)\\\\\\ \mathsf{D}.\,i-(C),\,ii-(D),\,iii-(B),\,iv-(A) \end{array}$$

#### Answer: D



111. The primary treatement of wastewater involves the removal of

# A. dissolved impurities

B. stable particles

C. toxic substances

D. harmuf bacteria

#### Answer: B

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112. BOD of wastwater is estimated by measuring the amount of

A. total organic matter

B. biodegradable organic matter

C. oxygen evolution

D. oxygen consumption

Answer: D

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**113.** Which one of the following alcoholic drinks is produced without distillation? 1. Wine 2. Whisky 3. Rum 4. Brandy

A. Wine

B. Whisky

C. Rum

D. Brandy

Answer: A

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114. The technology of biogas production from cow dung was developed

in india largely due to the efforts of

A. Gas Autority of India

B. Oil and Natural Gas Commission

C. India Agricultural Research Institute and Khadi & Village Industries

Commission

D. India Oil Corporation

# Answer: C

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**115.** The free-living fungus Trichoderma can be used for 1) killing insects 2) biological control of plant diseases 3) controlling butterfly caterpillars 4) producing antibiotics

A. killing insects

B. biological control of plant diseases

C. controlling butterfly caterpillars

D. producing antibiotics

Answer: B



**116.** What would happen if oxygen availability to activated sludge flocs is reduced? 1) It will slow down the rate of degradation of organic matter 2) The center of flocs will becomes anoxic, which would cause death of bacteria and eventually breakage of flocs 3) Flocs would increase in size as anerobic bacteria would grow around flocs 4) Protozoa would grow in large numbers

A. It will slow down the rate of degradation of organic matter

B. The center of flocs will becoms anoxic, which would cause death of

bacteria and eventually breakage of flocs

- C. Flocs would increase in size as anerobic bacteria would grow around flocs
- D. Protozoa would grow in large numbers

#### Answer: A::B

**117.** Mycorrhiza does not help the host plant in: 1. enhancing its phosphorus uptake capacity 2. increasing its tolerance to drought 3. enhancing its resistance to root pathogens 4. increasing its resistance to insects

A. enhancing its phosphorus uptake capacity

B. increasing its tolerance to drought

C. enhancing its resistance to root pathogens

D. increasing its resistance to insects

Answer: D

Watch Video Solution

**118.** Which one of the following is not a nitrogen-fixing organism ?

A. Anabaena

**B.** Nostoc

C. Azotobacter

D. Pseudomonas

Answer: D

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119. Big holes in Swiss cheese are made by a

A. a machine

B. a bacterium that produces methane gas

C. a bacterium producing a large amount of carbon dioxide

D. a fungus that releases a lot of gases during its metabolic activities

Answer: C

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120. The residue left after methane production from cattle dung is

A. burnt

B. burried in land fills

C. used as manure

D. used in civil construction

## Answer: C

Watch Video Solution

121. Mathanogens do not produce

A. oxygen

B. methane

C. hydrogen sulphide

D. carbon dioxide

# Answer: A

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**122.** Activated sludge should have the ability to settle quickly so that it can

- A. be rapidly pumped back from sedimentation tank to aeration tank
- B. absorb pathogenic bacteria present in watewater while sinking to

the botton of the settling tank

- C. be discarded and anaerobically digested
- D. absorb colloidal organic matter

#### Answer: A



123. Match the items in column 'A' and column 'B' and choose correct

answer.

| ColumnA                 | ColumnB             |
|-------------------------|---------------------|
| (i)Lady bird            | (A)Methanobacterium |
| $(ii) { m Mycorrhiza}$  | (B)Trichoderma      |
| (iii)Biological control | (C)Aphids           |
| (iv)Biogas              | (D)Glomus           |

The correct answer is

A. 
$$(i) - B$$
,  $(ii) - D$ ,  $(iii) - (C)$ ,  $iv) - A$   
B.  $(i) - C$ ,  $(ii) - D$ ,  $(iii) - B$ ,  $(iv) - A$   
C.  $(i) - D$ ,  $(ii) - A$ ,  $(iii) - B$ ,  $(iv) - C$   
D.  $(i) - C$ ,  $(ii) - B$ ,  $(iii) - A$ ,  $(iv) - D$ 

#### Answer: B



124. Assertion : Nucleic acid complexes alone cannot cause diseases.

Reason : Only nucleoproteins can function as infectious agents.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

- C. If assertion is true but reason is false
- D. If both assertion and reason are false

### Answer: D

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**125.** Assertion : Streptococcus thermophilus increases nitritional value of

milk.

Reason : Curd and yoghurt have higher vitamin content than milk.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

#### Answer: A

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126. Assertion : Toddy becomes unpalatable after 24 hours.

Reason : The fermentation of toddy is continued by naturally occuring yeasts.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

### Answer: A



**127.** Assertion : Beer and wine are called soft liquors while gin,rum, etc., are hard liquors.

Reason : Beer and wine are made without distillation.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

- C. If assertion is true but reason is false
- D. If both assertion and reason are false

#### Answer: B



**128.** Assertion : Griseofulvin extracted from P.griseofulvum is used for ringworm treatment.

Reason : Trichopyton, Epidermophyton, etc., cannot grow well in presence of Penicillium griseofulvum.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: A



**129.** Assertion : Acetic acid production involves both aerobic and anaerobic processes.

Reason : Production of alcohol from glucose is an aerobic process and production of acetic acid from alcohol is an anerobic process

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

## Answer: C



**130.** Assertion : An organ transplant patient if not provided with cyclosporin A may reject the transplanted organ.

Reason : Cycosporin A inhibits activation of T-cells and interferes with destruction of non-self cells.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

## Answer: A



**131.** Assertion : Rennet and fruit extract of Withania somnifera have antagonistic functions.

Reason : Rennet is obtained from calf's liver and is used for curding of milk.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

## Answer: D



**132.** Assertion : Secondary treatement of sewage is also called biological treatment while primary treatment is called physical treatment.

Reason : Primary sewage treatment depends only upon sedimentation properties of materials present in sewage and filtration.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

## Answer: A



**133.** Assertion : Energy value of biogas is lower than that of organic matter.

Reason : Biogas minimises the chances of spread of fecal pathogens.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

#### Answer: B

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**134.** Assertion : Dragonflies can be used to decrease occurrence of diseases like malaria, dengue, etc.

Reason : Baculoviruses are effective in controlling may insects and other arthropods.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

## Answer: B

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**135.** Assertion : Integrated pest management (IPM) programme at the same time deals with conservation of insects and destruction of insects. Reason : IPM programmes are specially used in dealing with ecologically sensitive areas. A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

- C. If assertion is true but reason is false
- D. If both assertion and reason are false

### Answer: B

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136. Assertion : Biofertilisers are preferred to chemical fertilisers.

Reason : Chemical fertilisers are generally more expensive and hazardous

to environment.

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

#### Answer: A

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**137.** Assertion : Most orchid seedlings cannot develop well in the absence of fungal mycelium.

Reason : Fungal mycelium increases efficiency of absorption only

A. If both assertion and reason are true and reason is the correct

explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

#### Answer: C

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**138.** Assertion : Nitrogenase enzyme gets inactivated in presence of oxygen yet  $N_2$  fixation occurs in aerobic cells of legume nodules. Reason : Laghaemoglobin allows presence of oxygen just sufficient for cellular respiration only.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct

explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

# Answer: A

