Shiksha Classes, Bhandara

Biology

Microbes In Human Welfare

(1.) Which of the following kingdoms does not include microbes?

(a.) Monera (b.) Protista

(c.) Fungi (d.) Plantae

(2.) Match the terms in Column I with the correct description in Column II.

Column-I	Column-II
(A) Prions	**(1)** Acellular infectious agents with protein coat and genome.
(B) Protists	**(2)** Infectious agents consisting of only ss-RNA genome.
(C) Viruses	**(3)** Unicellular eukaryotes.
(D) Viroid	**(4)** The causative agent of spongiform encephalopathies.

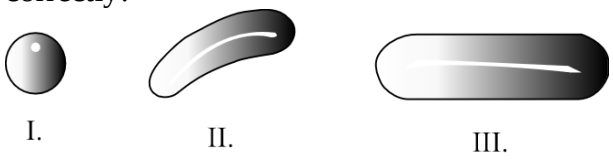
	A	B	C	D
(a.)	2	4	1	3
(b.)	4	3	1	2
(c.)	2	1	4	3
(d.)	2	3	1	4

(3.) Match the groups of organisms in Column-I with their suitable description in Column-II.

Column-I	Column-II
(A) Archaea	**(1)** Heterotrophic molds and mushrooms.
(B) Bacteria	**(2)** The domain of life with membrane-bound organelles in their cells.
(C) Eucarya	**(3)** Prokaryotic cells that lack peptidoglycan in their cell walls.
(D) Fungi	**(4)** Prokaryotic organisms with a cell wall made of peptidoglycan.

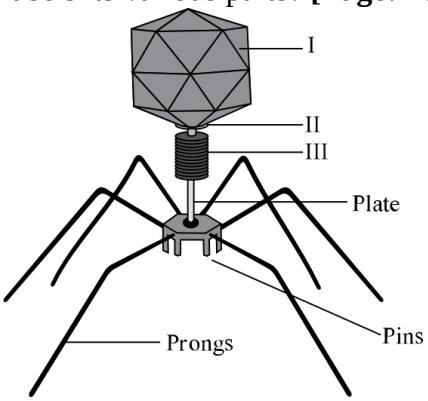
	A	B	C	D
(a.)	3	4	2	1
(b.)	2	4	1	3
(c.)	2	1	4	3
(d.)	2	3	1	4

(4.) Following are the bacteria of various shapes. Which of the following option labels them correctly?



(a.) I: Coccus, II: Vibrio, III: Bacillus
(b.) I: Vibrio, II: Coccus, III: Bacillus
(c.) I: Bacillus, II: Coccus, III: Vibrio
(d.) I: Bacillus, II: Spirillum, III: Vibrio

(5.) Following is the image of a bacteriophage. Which of the following options correctly labels its various parts? **[Page: 180]**



(a.) I: Head, II: Collar, III: Tail
(b.) I: Collar, II: Head, III: Tail
(c.) I: Collar, II: Tail, III: Head
(d.) I: Tail, II: Collar, III: Head

(6.) Statement I: Microbes are used in the production of several household products. Statement II: Yeast species are used in the production of curd. Which of the given statements is/are correct?

(a.) I and II
(b.) Only I
(c.) Only II
(d.) None of the above

(7.) Which of the following microbes is useful in the production of fermented dairy products?

(a.) E. coli
(b.) Clostridium botulinum
(c.) Lactobacillus
(d.) Mycobacteria

(8.) How does lactic acid bacteria facilitate the conversion of milk into curd?

(a.) By providing acidic conditions as required by enzyme rennin.
(b.) By providing alkaline conditions as required by enzyme rennin.
(c.) By inhibition of the action of enzyme rennin on the milk protein.
(d.) Both B and C are correct.

(9.) The vitamin whose content increases during curd formation by lactic acid bacteria is

(a.) Vitamin C
(b.) Vitamin D
(c.) Vitamin B12
(d.) Vitamin E

(10.) The small amount of curd added to the fresh milk to convert it into curd is called

(a.) starter (b.) inoculum

(c.) implant (d.) both (a) and (b)

(11.) Several species of lactate fermenters, collectively known as lactic acid bacteria are useful for humans. Select the function that is not performed by lactic acid bacteria.

(a.) Conversion of milk into curd (b.) Prevent growth of pathogens in the stomach

(c.) Formation of yogurt (d.) Ripening of Roquefort cheese

(12.) Baking industries rely on the process of

(a.) dairy fermentation (b.) photophosphorylation

(c.) both (a) and (b) (d.) non-dairy fermentation

(13.) The metabolic pathway that imparts puffed-up appearance to the dough of fermented foods such as dosa and idli is

(a.) aerobic respiration (b.) fermentation

(c.) oxidative phosphorylation (d.) beta oxidation

(14.) Yeast is used in the production of

(a.) citric acid and lactic acid (b.) lipase and pectinase

(c.) bread and beer (d.) cheese and butter

(15.) Which of the following statement about Saccharomyces cerevisiae is false?

(a.) It can grow under both aerobic and anaerobic conditions. (b.) It is also called as Baker's yeast.

(c.) It can grow indefinitely under anaerobic conditions. (d.) It is one of the lactate fermenters.

(16.) Statement I: Microbes are used in baking industries. Statement II: Sugars present in the dough of bread are digested by yeasts through the process of fermentation. Statement III: Aerobic respiration by yeasts causes the rise of bread dough. Which of the given statements is/are correct?

(a.) Statement I, II and III (b.) Statement I and II

(c.) Statement II and IIII (d.) Statement I and III

(17.) Which of the following microbes is used in baking industries?

(a.) Yeast (b.) Bacteria

(c.) Mycoplasma (d.) Virus

(18.) Which of the following is most commonly used as a leavening agent in baking bread?

(a.) Saccharomyces cerevisiae (b.) Lactobacillus

(c.) E. coli (d.) Clostridium

(19.) Which of the following conditions is required for the formation of fermented drinks using yeasts?

(a.) Aerobic
(b.) Anaerobic
(c.) Light
(d.) Lower temperature

(20.) Big holes in Swiss cheese are made by a

(a.) a machine
(b.) methanogens
(c.) the bacterium Propionibacterium sharmanii producing a large amount of carbon dioxide
(d.) Lactobacillus

(21.) Match the terms in Column-I with a suitable description in Column-II.

Column-I	Column-II
(A) Roquefort cheese	**(1)** Propionibacterium sharmanii
(B) Swiss cheese	**(2)** Penicillium mold
(C) Curd	**(3)** Fermented palm sap
(D) Toddy drink	**(4)** Lactobacillus

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

(22.) Fresh lemon slices are often served with raw or steamed seafood (oysters, crab, shrimp). Select the correct scientific explanation for this.

(a.) Seafood does not become spoiled in alkaline pH.
(b.) The acidic pH inhibits the growth of harmful microbes on the seafood.
(c.) The alkaline pH inhibits the growth of harmful microbes.
(d.) It is a taste enhancer only.

(23.) Match the terms in Column I with a suitable description in Column II.

Column-I	Column-II
(A) Swiss cheese	**(1)** Soft cheese
(B) Curd	**(2)** Large holes
(C) Roquefort cheese	**(3)** Vitamin B12
(D) Fermented food	**(4)** Puffy appearance

	A	B	C	D
(a.)	2	4	1	3
(b.)	4	3	1	2

(c.) 2 1 4 3

(d.) 2 3 1 4

(24.) Before cooking enhances taste. Use of alcohol in a marinade

(a.) kills harmful bacteria

(b.) facilitates faster cooking.

(c.) provides alcohol for fermentation.

(d.) increases the pH of the food.

(25.) **Assertion:** Microorganisms are placed in kingdoms Monera, Protista, Fungi.
Reason: Fungal cell walls are made of chitin.

(a.) Both assertion and reason are true but reason is the correct explanation of assertion.

(b.) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c.) Assertion is true but reason is false.

(d.) Both assertion and reason are false.

(26.) **Assertion:** Curd is nutritionally rich food produced by the action of certain lactate fermenters.
Reason: Curd is a rich source of albumin.

(a.) Both assertion and reason are true but reason is the correct explanation of assertion.

(b.) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c.) Assertion is true but reason is false.

(d.) Both assertion and reason are false.

(27.) **Assertion:** The yeast, Saccharomyces cerevisiae, is mixed with the dough in baking.
Reason: The yeast cells break down carbohydrates present in the dough to release CO_2 resulting in the rise of the dough.

(a.) Both assertion and reason are true but reason is the correct explanation of assertion.

(b.) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c.) Assertion is true but reason is false.

(d.) Both assertion and reason are false.

(28.) **Assertion:** Some of the lactate fermenters are food spoilers while others help in food preservation.
Reason: Some of the species of yeast preserve pickles.

(a.) Both assertion and reason are true but reason is the correct explanation of assertion.

(b.) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c.) Assertion is true but reason is false.

(d.) Both assertion and reason are false.

(29.) **Assertion:** Different varieties of cheese are known by their specific features and taste.
Reason: The large holes in 'Swiss cheese' are due to the production of a large amount of CO_2 by a bacterium named Lactobacillus.

(a.) Both assertion and reason are true but reason is the correct explanation of assertion.

(b.) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c.) Assertion is true but reason is false.

(d.) Both assertion and reason are false.

(30.) The scientific name of Brewer's yeast is

(a.) Saccharomyces cerevisiae (b.) E. coli

(c.) Cryptococcus neoformans (d.) Candida albicans

(31.) Statement I: Fermenters refer to very large vessels used for growing microbes to get industrial products. Statement II: Microbes are used to synthesize industrial products such as beverages and antibiotics. Which of the given statements is/are correct?

(a.) Only I (b.) Only II

(c.) I and II (d.) Both I and II are incorrect

(32.) Which of the following is not a criterion to distinguish various fermented beverages from each other?

(a.) Type of raw material used for fermentation (b.) Process of distillation

(c.) Process of anaerobic respiration (d.) Both a and b

(33.) Statement I: The process of production of fermented drinks always includes distillation. Statement II: Wine and beer are produced by distillation of fermented broth. Which of the given statements is/are correct?

(a.) I and II (b.) Only I

(c.) Only II (d.) None of these

(34.) Which of the metabolic process is involved in the production of alcoholic beverages?

(a.) Alcoholic fermentation (b.) Lactic acid fermentation

(c.) Oxidative phosphorylation (d.) Both (a) and (b)

(35.) Statement I: Whiskey and rum are the alcoholic drinks produced by the distillation of fermented broth. Statement II: The chemicals that prevent or retard the growth of pathogenic microbes are called antibiotics. Which of the given statements is/are correct?

(a.) I and II (b.) Only I

(c.) Only II (d.) None of these

(36.) Penicillin was the first antibiotic to be discovered. Who among the following scientist discovered it?

(a.) Ernest Chain (b.) Howard Florey

(c.) Alexander Fleming (d.) Thomas Morgan

(37.) Which of the following bacteria was used as experimental material by Alexander Flaming during his discovery of Penicillin?

(a.) Staphylococci (b.) E.coli

(c.) Staphylococci (d.) Cellulomonas

(38.) Commercial production of antibiotics was introduced

(a.) after World War II (b.) after World War I

(c.) before World War II (d.) before World War I

(39.) In 1945, who among the following scientists were awarded the Nobel Prize in Physiology and Medicine for the discovery of antibiotics?

(a.) Alexander Fleming, Ernest Chain and Howard Florey (b.) Alexander Fleming only

(c.) Ernest Chain only (d.) Gregor John Mendel

(40.) Statement I: Organic acids, alcohols and enzymes are commercially produced using microbes. Statement II: The bacterial species Acetobacter aceti is used for large scale production of acetic acid. Which of the given statements is/are correct?

(a.) Only I (b.) Only II

(c.) Both I and II (d.) Neither I nor II

(41.) Which of the following option incorrectly match the microbes with the products obtained from them?

(a.) Aspergillus niger: citric acid (b.) Acetobacter aceti: acetic acid

(c.) Clostridium butylicum: butyric acid (d.) Lactobacillus: glutamic acid

(42.) A good producer of citric acid is

(a.) Pseudomonas (b.) Clostridium

(c.) Saccharomyces (d.) Aspergillus

(43.) Which of the following is correctly matched for the product produced by them?

(a.) Acetobacter aceti: Antibiotics (b.) Methanobacterium: Lactic acid

(c.) Penicillium notatum: Acetic acid (d.) Saccharomyces cerevisiae: Ethanol

(44.) Which of the following is wrongly matched in the given table? Microbe Product Application A. Trichoderma polysporum i. Cyclosporin A
(1) Immuno suppressive B. Monascus purpureus ii. Statins
(2) Lowering blood cholesterol C. Streptococcus iii. Streptokinase
(3) Removal of clot from blood vessels D. Clostridium acetobutylicum iv. Lipase
(4) Removal of oil stains

(a.) A (b.) B

(c.) C (d.) D

(45.) Match Column-I with Column-II and select the correct option using the codes.

Column-I	Column-II
(A) Citric acid	**(1)** Trichoderma
(B) Cyclosporin	**(2)** Clostridium

(C) Statins

(D) Butyric acid

(3) Aspergillus

(4) Monascus

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

(46.) Match the following list of microbes and their importance:

Column-I	Column-II
(A) Saccharomyces	**(1)** Production of immunosuppressive agents
(B) Monascus purpureus	**(2)** Ripening of Swiss cheese
(C) Trichoderma polysporum	**(3)** Commercial production of ethanol
(D) Propionibacterium sharmanii	**(4)** Production of blood cholesterol-lowering agent

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

(47.) **Assertion:** Malted cereals with starch digesting enzymes are used as a raw material in brewing industries.
Reason: Brewer's yeast cannot ferment starch present in cereals.

(a.) Both assertion and reason are true but reason is the correct explanation of assertion.

(b.) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c.) Assertion is true but reason is false.

(d.) Both assertion and reason are false.

(48.) **Assertion:** Unicellular fungus Saccharomyces cerevisiae is used in brewing industries.
Reason: Fruit juices and malted cereals serve as raw material for the production of alcoholic beverages.

(a.) Both assertion and reason are true but reason is the correct explanation of assertion.

(b.) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c.) Assertion is true but reason is false.

(d.) Both assertion and reason are false.

(49.) **Assertion:** Lipases are the fat-digesting enzymes that breakdown fats into fatty acid and glycerol.
Reason: Lipases are used in detergent formulations to remove proteinaceous stains.

(a.) Both assertion and reason are true but reason is the correct explanation of assertion.

(b.) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c.) Assertion is true but reason is false.

(d.) Both assertion and reason are false.

(50.) **Assertion:** Bottled fruit juices are clearer than the homemade juices.
Reason: Pectinases are the protein-digesting enzymes.

(a.) Both assertion and reason are true but reason is the correct explanation of assertion.

(b.) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c.) Assertion is true but reason is false.

(d.) Both assertion and reason are false.

ANSWER

(1.)	d	**(2.)**	b	**(3.)**	a	**(4.)**	a	**(5.)**	a
(6.)	b	**(7.)**	c	**(8.)**	a	**(9.)**	c	**(10.)**	d
(11.)	d	**(12.)**	d	**(13.)**	b	**(14.)**	c	**(15.)**	c
(16.)	b	**(17.)**	a	**(18.)**	a	**(19.)**	b	**(20.)**	c
(21.)	a	**(22.)**	b	**(23.)**	d	**(24.)**	a	**(25.)**	b
(26.)	c	**(27.)**	a	**(28.)**	c	**(29.)**	c	**(30.)**	a
(31.)	c	**(32.)**	c	**(33.)**	d	**(34.)**	a	**(35.)**	a
(36.)	c	**(37.)**	c	**(38.)**	a	**(39.)**	a	**(40.)**	c
(41.)	d	**(42.)**	d	**(43.)**	d	**(44.)**	d	**(45.)**	a
(46.)	d	**(47.)**	a	**(48.)**	a	**(49.)**	c	**(50.)**	c

EXPLANATION

(1.) **(d)** Kingdom Plantae includes all green plants which can be easily seen with naked eyes.
(2.) **(b)** Prions are the infectious particles that cause diseases of nervous system while viruses are acellular microbes with proteinaceous capsid and genome. Viruses without capsid are called viroids. Protists are the unicellular eukaryotes.
(3.) **(a)** Bacteria and Archaea are two groups of prokaryotic organisms. Bacterial cell walls are made of peptidoglycan which is absent in that of Archaea. Domain Eucarya includes eukaryotic organisms while molds and mushrooms are classified as fungi.
(4.) **(a)** A spherical bacterial cell is known as coccus while a rod-shaped bacterium is called bacillus. Vibrio is the term used for 'comma' shaped bacteria.
(5.) **(a)** The given bacteriophage has an icosahedron head and helical tail. Collar connects the head with a tail.
(6.) **(b)** Microbes and their products are used in daily lives. Some of the examples are dough for fermented food, fermented drinks, cheese, curd, yogurt, etc. Yeast is used in baking and brewing industries while curd production uses lactic acid bacteria.
(7.) **(c)** Lactobacillus is one of the lactic acid bacteria and serves to facilitate the conversion of fresh milk into curd by partial digestion of milk protein.
(8.) **(a)** Lactic acid bacteria such as Lactobacillus are lactate fermenters. These bacteria lower down the pH of milk which is required by enzyme rennin to digest the milk protein for the conversion of milk into curd.
(9.) **(c)** Curd is rich in vitamin B12. Partial digestion of milk protein as facilitated by lactic acid bacteria is accompanied by increased levels of vitamin B12 in curd.
(10.) **(d)** Starter or inoculum is the small amount of curd that is added to the fresh milk. The starter serves as a source for lactic acid bacteria which in turn facilitate the conversion of fresh milk into curd.
(11.) **(d)** Roquefort cheese is a variety of soft cheese and is ripened by growing specific fungal species on them. Mostly, species of Penicillium are grown on these soft cheese to impart them a particular flavour.
(12.) **(d)** Baking industries use the ability of baking yeast to ferment the sugar present in the bread dough. This makes the bread dough rise. Since the fermentation process does not use milk or milk products as a substrate, it is nondairy fermentation.
(13.) **(b)** Fermentation is the incomplete oxidation of nutrients such as carbohydrates present in dough in absence of oxygen. The process releases CO_2 and gives puffed up appearance to the dough.
(14.) **(c)** Saccharomyces cerevisiae is known as baker's yeast and is used in baking industries. Likewise, Saccharomyces ellipsoidens, the wine yeast is used in the brewing industry.
(15.) **(c)** Though Saccharomyces cerevisiae thrives under both aerobic and anaerobic conditions, it cannot grow indefinitely under anaerobic conditions.
(16.) **(b)** The baking yeast is used in baking industries. Bread dough has carbohydrates which are oxidized by yeast through the process of fermentation. Fermentation releases a large amount of CO_2 leading to rising of the dough.
(17.) **(a)** Saccharomyces cerevisiae is the yeast species used in baking industries as it releases CO_2 during anaerobic respiration. The released CO_2 makes the dough to rise and facilitate the baking process.
(18.) **(a)** Saccharomyces cerevisiae carries out aerobic cellular respiration followed by anaerobic one once the oxygen is depleted. The process produces carbon dioxide that forms bubbles in the dough making it rise.

(19.) (b) Formation of fermented drinks using yeast species requires anaerobic conditions. These microbes produce ethanol by the process of fermentation under anaerobic conditions.
(20.) (c) Propionibacterium sharmanii is a lactate fermenter and produces a large amount of CO_2 during the process. The released CO_2 is responsible for the production of large holes in Swiss cheese.
(21.) (a) Roquefort cheese is soft cheese and is ripened using Penicillium mold. The Swiss cheese with large holes is ripened using bacterial species Propionibacterium sharmanii which imparts large holes to the cheese. Toddy drink is a traditional drink of south India and is made by fermentation of sap from the palm tree. Partial digestion of milk proteins by Lactobacillus leads to the formation of curd.
(22.) (b) Lemon juice lowers down the pH of the food and does not allow the growth of harmful bacteria.
(23.) (d) Swiss cheese is a cheese variety with large holes in it. Curd is a rich source of vitamin B12 and protein casein. Roquefort cheese is a type of soft cheese. Its soft texture allows the entry of oxygen to support the growth of aerobic fungus. Fermented food items such as dosa and idli are made using a fermented dough. Lactate fermenter bacteria are used to carry out fermentation and release of CO_2 in the dough.
(24.) (a) Marination is incubation of food before cooking in a sauce of specific composition. Alcohol is used in the process as it kill the bacteria present in the uncooked food.
(25.) (b) The living organisms that cannot be seen with unaided eyes are known as microorganisms. Except for the acellular pathogens such as viruses, microbes are classified under kingdoms Monera, Protista, Fungi.
(26.) (c) Lactic acid bacteria such as Lactobacillus facilitate the partial digestion of milk protein by the action of enzyme rennin and thereby leading to curd formation. Curd is a rich source of vitamin B12 and casein protein.
(27.) (a) Saccharomyces cerevisiae initially carries out aerobic cellular respiration followed by anaerobic one to breakdown carbohydrates. During the process, CO_2 is released which in turn makes the dough to rise. This property is used in baking industries.
(28.) (c) Some of the microbes carry out anaerobic cellular respiration by the process of lactic acid fermentation. Some of these species of the microbes are useful for humans as they are used in preserving the food items. Other species such as Rhizopus spoil the food items (bread, fruits and vegetables).
(29.) (c) Various varieties of cheese exhibit specific features such as texture, taste, flavour, hardness, etc., which in turn are impacted by specific microbe used in the process of cheese production. Propionibacterium sharmanii is the bacteria species that is responsible for the production of large holes in Swiss cheese by the production of a large amount of carbon dioxide gas through the process of anaerobic fermentation.
(30.) (a) Saccharomyces cerevisiae is used to ferment various substrates such as malted cereals and fruit juices to produce fermented beverages. So, it is also called as Brewer's yeast.
(31.) (c) Microbes are used for the production of various industrial products such as fermented beverages, antibiotics, enzymes, chemicals, etc. The large vessels that are used for growing microbes to obtain these products are called fermenters.
(32.) (c) All the fermented drinks are produced by the fermentation of various types of raw materials. Brewer's yeast ferments the substrate to produce ethanol.
(33.) (d) Fermented drinks are produced with or without distillation. Wine and beer are produced without distillation.
(34.) (a) Breakdown of glucose during glycolysis forms two molecules of pyruvate. Alcoholic fermentation of pyruvate in the absence of oxygen forms ethyl alcohol. The process is carried out by Brewer's yeast that ferments the substrates to produce alcoholic drinks.

(35.) (a) Alcoholic drinks such as whiskey, brandy and rum are produced by distillation of the fermented broth. Antibiotics are the chemicals that are produced naturally by some microbes to prevent the growth of other microbes. Example: Penicillin.

(36.) (c) Alexander Fleming discovered Penicillin accidentally when he observed that the colony of Staphylococci bacteria could not be formed in unwashed culture plates.

(37.) (c) Alexander Fleming discovered Penicillin during his experiments on Staphylococci bacteria. He observed that the growth of the colony of Staphylococci bacteria was prevented by a chemical secreted by the fungus Penicillium notatum in his unwashed culture plate.

(38.) (a) A sulfanilamide-containing dye was used to cure systemic bacterial infections during World War II. Antibiotic penicillin was widely used by soldiers to cure bacterial infections. After World War II, commercial production of penicillin was started by pharmacy companies.

(39.) (a) Alexander Fleming was awarded the Nobel Prize in 1945 for his discovery of antibiotic penicillin. Ernest Chain and Howard Florey shared the Nobel Prize with him for their work on large scale production of penicillin.

(40.) (c) Microbes are used for large scale production of several chemicals such as organic acids, alcohols and enzymes. Acetic acid is obtained from bacterium Acetobacter aceti.

(41.) (d) The bacterium Lactobacillus is used for industrial and commercial production of lactic acid.

(42.) (d) Aspergillus niger is a fungal species and serves as a source for commercial production of citric acid.

(43.) (d) The yeast species Saccharomyces cerevisiae serves as a source of ethanol that is produced as by product of ethanol fermentation by the species.

(44.) (d) The bacterial species Clostridium acetobutylicum serves as a source for butyric acid. The enzyme lipase is obtained from the pathogenic yeast species Candida albicans.

(45.) (a) Fermentation of various substrates by different microbial species produce different by products which are useful for human. For example, citric acid and butyric acid are produced by Aspergillus niger and Clostridium butylicum respectively. Cyclosporin is an immunosuppressive agent produced by Trichoderma fungus while statins are obtained from Monascus purpureus.

(46.) (d) Yeast Saccharomyces produces ethanol by the process of alcoholic fermentation. The ability of the bacterial species Propionibacterium sharmanii to produce large amount of carbon dioxide is exploited to impart large holes to the 'Swiss cheese'. Cyclosporin A is an immunosuppressive agent produced by Trichoderma polysporum while statins, the blood cholesterol-lowering agents are obtained from Monascus purpureus.

(47.) (a) Yeast cannot digest starch directly. The sprouted cereal grains are dried and grounded to produce malted grains that contain starch digesting enzyme amylase.

(48.) (a) Saccharomyces cerevisiae performs alcoholic fermentation of substrates and produces ethanol. The fermentation of fruit juices and malted cereals is carried out by brewer's yeast to produce alcoholic drinks.

(49.) (c) Lipases are the fat-digesting enzymes. They break down the lipids into fatty acid and glycerol. They are used in detergents to remove the oily stains from the clothes.

(50.) (c) Bottled fruit juices are made clearer than the homemade juices by the use of enzymes pectinases and proteases. The proteases are the protein-digesting enzymes. Pectinases digest pectin which is a polysaccharide present in the cell walls of plants.