Biology
Classified MCQ
Unit 9
2000 - 2020

Unit 9 – Microbiology

Diversity and nature of microorganisms.

(1) Which of the following is correct regarding chemo-autotrophic bacteria?
(1) They use organic compounds as the source of energy.
(2) They obtain carbon from organic compounds.
(3) They use light as the source of energy.
(4) Some use nitrate as the source of energy.
(5) All fix atmospheric nitrogen. (2000)

(2) Which of the following is incorrect regarding viruses?
(1) They do not show a cellular organization.
(2) They are obligate parasites.
(3) DNA or RNA may exist as a double stranded or single stranded form in the viral genome.
(4) They are not found in the natural habitats like soil or water. (2000)

(3) Fungi differ from bacteria because fungi
(1) are saprophytic (2) have absorptive nutrition
(3) produce antibiotics (4) are eukaryotic
(5) reproduce asexually (2000)

(4) Various steps involved in the simple staining procedure of microorganisms in a sample of toddy are given below in an incorrect sequence.
A – Preparation of a thin smear on a slide
B – Heat fixing of the smear
C – Addition of methylene blue stain and leaving for 30 seconds
D – Air drying of the smear
E – Washing the smear with water, drying and microscopic examination
Which of the following represents the correct order of the steps of the simple staining procedure?
(1) A, B, C, D, E (2) A, D, C, B, E (3) A, C, D, B, E
(4) A, D, B, C, E (5) A, B, D, C, E (2000)

(5) Which of the following is incorrect regarding microorganisms?
(1) They are the most abundant group of organisms in the biosphere.
(2) They are the fastest reproducing organisms.
(3) They play an important role as primary producers in land ecosystems.
(4) They show four different types of nutrition.
(5) They are the major decomposers on earth. (2001)

(6) Which the following samples clearly shows the presence of both bacteria and yeast in unstained preparations under the high power of light microscope?
(1) Pond water sample (2) Vinegar sample (3) Toddy sample
(4) Dilute soil extract (5) Yoghurt sample (2001)

(7) Which of the following methods is suitable to sterilize a liquid culture medium containing blood serum?
(1) Pasteurization (2) Autoclaving at 121 ^{0}C for 10 minutes
(3) Boiling at 100 ^{0}C for 10 minutes (4) Filtration using a sterile membrane filter
(5) Freezing at -20 ^{0}C (2001)

(8) The correct statement/s
(A) All viruses are obligatory parasites.
(B) All viruses contain DNA and RNA.
(C) Some viruses contain enzymes.
(D) Most viruses that infect plants, contain RNA.
(E) All viruses can be grown in chicken fetuses. (2002)

(9) Which one of the following genera contains microorganisms that will not grow in the presence of molecular oxygen?
1) *Saccharomyces* 2) *Rhizobium* 3) *Clostridium*
4) *Pseudomonas* 5) *Acetobater* (2003)

(10) Agar is added to microbiological culture media
(1) To provide nutrients.
(2) To obtain colonies of microorganisms.
(3) To prevent the growth of unwanted microorganisms.
(4) To grow fungi
(5) To limit the growth of microorganisms. (2003)

(11) Which one of the following characteristics is common to all bacteria, fungi and virus
(1) DNA is the genetic material
(2) Non photosynthetic organisms
(3) Cannot be observed with the light microscope
(4) The most widespread organisms in the biosphere
(5) Causative agent of large number of diseases in plants and animals (2004)

(12) Which one of the following methods is usually used to sterilize water in a microbiological laboratory?
(1) Boiling at 100 ^{0}C
(2) Heat at 121 ^{0}C for 15 minute in a autoclave
(3) Filter using bacterial filters
(4) Expose to ultraviolet light for 10 minutes
(5) Pasteurize using high temperature short term method (2004)

- Questions No 13 and 14 are based on the following information.
Given below are methods used in microbiology to control microbial population at various situations.
A – Autoclaving at 121 ^{0}C
B – Membrane filtration
C – Pasteurization
D – Heating in hot-air oven at 160 ^{0}C
E – Addition of preservatives

(13) Which of the above can be used to sterilize a nutrient agar medium?
(1) A and C (2) A and B (3) D (4) A (5) C (2005)

(14) Which of the above can be generally used to control microorganisms in bottled fruit juice?
(1) A (2) B (3) C (4) B and C (5) C and E (2005)

(15) Which of the following is/are incorrect?
(A) All viruses are obligate parasites.
(B) All fungi are heterotrophs.
(C) All bacteria are heterotrophs.
(D) All microorganisms are prokaryotes.
(E) All fungi produce immotile reproductive structures. (2005)

(16) Microorganisms were first observed and recorded by:
(1) Louis Pasteur in France (2) Robert Kock in Germany
(3) Anton van Leewenhoek of Holland (4) Robert Hook in England
(5) Paul Ehrlich in Germany (2006)

• Question 17 and 18 are based on the following genera of microorganisms.
A) *Saccharomyces* B) *Anabaera* C) *Chlamydomonas*
D) *Mucor* E) *Clostridium*

(17) Which of the above shows eucaryotic cellular organisation?
(1) A, B, C and D (2) C and D (3) A, C and D
(4) B and C (5) B, C and D (2006)

(18) Which of the above can be cultivated under anaerobic conditions?
(1) A, B, and E (2) A and E (3) E
(4) A (5) B and E (2006)

(19) Which of the following statements is/are correct regarding viruses?
(A) All viruses are parasitic.
(B) Some viruses contain enzymes.
(C) All viruses contain RNA.
(D) Some viruses contain both RNA and DNA.
(E) Viruses can be found only in living cells. (2006)

(20) Which one of the following does not contain living microorganisms?
(1) pasteurized milk (2) sea water (3) spring water
(4) oral polio vaccine (5) tetanus toxoid (2007)

(21) Tobacco maosaic virus
(A) contains RNA (B) contains DNA (C) is a helical virus
(D) is transmitted by insects (E) is an enveloped virus (2007)

(22) An encapsulated, pathogenic bacterium can be more virulent because the capsule
(1) is made up of polypeptide or polysaccharide material
(2) acts as an endotoxin
(3) destroys host tissue
(4) interferes with physiological processes
(5) resists phagocytosis (2008)

(23) Fungi differ from bacteria in that fungi
(A) are heterotrophic organisms (B) produce extra-cellular enzymes
(C) have cell walls made up of chitin (D) are non motile organisms
(E) show mutualistic associations with other organisms (2008)

(24) Agar added to microbial culture media
(A) acts as a source of nutrients for microorganisms.
(B) is a polysaccharide.
(C) is used to make the medium coloured.
(D) solidifies approximately at 40 °C after liquification.
(E) provides substratum to observe colony formation, of bacteria and fungi. (2008)

(25) Which unit of measurement is usually used to indicate the size of a virus?
(1) Micrometer (2) Millimetre (3) Nanometre
(4) Picometre (5) Angstrom (2009)

(26) Which of the following takes place under aerobic conditions?
(1) Nitrogen fixation in legume root nodules.
(2) Biogas production in a sludge digestion system.
(3) Denitrification in aquatic environments.
(4) Production of botulin toxin by *Clostridium Botulinum*.
(5) Microbial reduction of BOD in a trickling filter system. (2009)

(27) *Clostridium tatanii* is best described as
(1) an obligate anaerobe. (2) a facultative anaerobe.
(3) an aerotolerant anaerobe. (4) an obligate aerobe.
(5) a micro-aerophilic organism. (2009)

(28) Which of the following is incorrect?
(1) All Cyanobacteria are photoautotrophs.
(2) All viruses are parasitic.
(3) All bacteria are not chemoautotrophic.
(4) All fungi are not filamentous.
(5) All bacteria reproduce by binary fission. (2010)

(29) Which of the following is normally used to demonstrate microscopically, the presence of live yeasts?
(1) Soil suspension (2) Toddy sample (3) Yoghurt
(4) Pond water (5) Piece of bread soaked in water (2013)

(30) Which of the following genera contains facultatively anaerobic microorganisms?
(1) *Acetobacter* (2) *Azotobacter* (3) *Clostridium*
(4) *Saccharomyces* (5) *Lactobacillus* (2013)

(31) Which of the following sites in a healthy human body is not a natural babitat of microorganisms?
(1) Skin (2) Lungs (3) Small intestine
(4) Buccal cavity (5) Genital organs (2013)

(32) Viruses are different from bacteria because viruses
(1) cause diseases in plants and animals. (2) have RNA and DNA.
(3) do not show a cellular organization. (4) cannot be cultivated in the laboratory.
(5) are widely distributed in nature. (2013)

(33) Which of the following microorganisms use/uses organic chemical compounds as sources of both energy and carbon for growth?
(A) *Nitrobacter* (B) *Nostoc* (C) *Saccharomyces*
(D) *Pseudomonas* (E) *Nitrosomonas* (2013)

(34) Which of the following is incorrect regarding fungi?
(1) All fungi are saprophytic.
(2) All fungi show asexual reproduction.
(3) All fungi contain glycogen as a storage material.
(4) All fungi have cell walls made up of chitin.
(5) All fungi are not terrestrial. (2015)

(35) Which of the following is incorrect regarding prions?
(1) They are infectious particles containing proteins.
(2) They self replicate in the host tissue using their own nucleic acids.
(3) They are smaller than viruses.
(4) They cause fatal degenerative brain diseases in mammals.
(5) Diseases caused by them can be transmitted humans from animals. (2016-37)

(36) Which of the following statements is not a reason for choosing microorganisms as an ideal tool for biological studies?
(1) They can be easily grown in small containers using simple techniques.
(2) They grow and reproduce rapidly.
(3) Their reproductive units are always identical.
(4) All of them are fundamentally similar in metabolism.
(5) They require very little space in laboratories due to small size. (2017-37)

(37) Which of the following is not related to prions?
(1) They are infectious particles made up of proteins.
(2) They can exist and replicate without nucleic acids.
(3) Protein coats give them a characteristic symmetry.
(4) They can be transmitted by transfusion of contaminated blood.
(5) They replicate with the help of mammalian genes that encode their proteins. (2017-39)

(38) Which of the following is not associated with pathogenicity of microorganisms?
(1) Ability to invade host cells.
(2) Ability to live within the body of the host.
(3) Ability to produce RNA polymerase.
(4) Ability to produce toxins.
(5) Ability to disrupt the normal functions of the host. (2017-40)

(39) If a component in a culture medium is liable to be destroyed when exposed to high temperature, the best way to prepare that culture medium is to
(1) heat the medium at 80°C for two hours.
(2) autoclave the medium and filter through a membrane filter with 0.45 μm pores.
(3) autoclave the medium without the heat labile component and the solution of heat labile component separately, and mix them after cooling.
(4) autoclave the medium without the heat labile component, filter the solution of heat labile component through a membrane filter with 0.45 μm pores and mix after cooling.
(5) mix all components of the medium in a glass flask and sterilize using ultraviolet radiation. (2018-37)

(40) Which of the following statements is correct regarding the culture media used to grow microbes in the laboratory?
(1) Agar in culture media provides the suitable pH range for the growth of microorganisms.
(2) Glucose is generally used to prepare culture media to grow fungi.
(3) Culture media for bacteria are prepared using potatoes.
(4) Any microorganism can be cultured in a culture medium.
(5) Sodium chloride is usually added to all culture media. (2019-39)

(41) Coliform bacteria were detected in a water sample obtained from a river. Drinking untreated water from this river may not likely to cause
(1) typhoid (2) cholera (3) dysentery
(4) paratyphoid (5) tetanus (2019-40)

(42) Which of the following statements regarding microorganisms is correct?
(1) Almost all mycoplasmas are parasites of animals and plants.
(2) Fungi are chemoheterotrophs which show saprophytic or parasitic modes of nutrition.
(3) Purple non-sulphur bacteria utilize light as the source of energy and CO_2 as the source of carbon.
(4) Streptococcus bacteria divide in multiple planes.
(5) In cyanobacteria, nitrogen fixation is catalyzed by nitrogenase enzyme present in akinetes. (2020-37)

Virus

(1) Tobacco mosai virus
(A) contains RNA (B) contains DNA (C) is a helical virus
(D) is transmitted through insects (E) is an enveloped virus (2007)

(2) Viruses are different from bacteria because viruses
(1) cause diseases in plants and animals.
(2) have RNA and DNA.
(3) do not show a cellular organization.
(4) cannot be cultivated in the laboratory.
(5) are widely distributed in nature. (2013)

Concepts and principles relevant to infectious diseases.

(1) Which of the following is incorrect regarding microorganisms and diseases?
(1) Microorganisms are also found in the intestine of healthy humans.
(2) Extracellular enzymes produced by some microorganisms are responsible for disease production.
(3) Endotoxins produced by bacteria are heat labile.
(4) Human skin prevents the establishment of some pathogenic microorganisms.
(5) Inflammatory response is a mechanism for prevention of the spread of an infection from the original site. (2000)

(2) Out of the following pathogens, which bacterium causes a disease mainly by the production of nervetoxins?
(1) *Corynebacterium diphtheriae* (2) *Vibrio Cholerae*
(3) *Clostridium tetani* (4) *Salomnella typhi*
(5) *Staphylococcus* (2002)

(3) Which one of the following groups of diseases is caused only by bacteria?
(1) Tetanus, measles, tuberculosis (2) Tetanus, typhoid, tuberculosis
(3) Typhoid, chicken pox, syphilis (4) Tetanus, pneumonia, measles
(5) Tuberculosis, pneumonia, measles (2003)

(4) Which one of the following bacteria produces a neurotoxin?
(1) *Salmonella typhi* (2) *Clostridium tetani*
(3) *Pseudomonas aeruginosa* (4) *Corynebacterium diphteriae*
(5) *Vibrio cholerae* (2004)

(5) Which of the following pathogenic bacterium produces an enodotoxin?
(1) *Clostridium tatani* (2) *Vibrio cholerae*
(3) *Corynebacterium diptheriae* (4) *Salmonella typhi*
(5) *Staphylococccus aureus* (2005)

(6) Which one of the following antibiotics, inhibits bacterial growth by damaging cell membrranes o bacteria?
(1) griseofulvin (2) penicillin (3) teracycline
(4) polymizin (5) erythomycin (2007)

(7) Many pathogenic bacteria produce toxins which disrupt normal function of cells during an infection. Which of the following bacteria produces a neurotoxin?
(1) *Corynebaterium diptheriae* (2) *Clostridium botulinum*
(3) *Salmonella typhi* (4) *Vibrio cholerae*
(5) *Stapylococcus aureus* (2010)

(8) Which of the following diseases is/are caused by bacteria?
(A) Typhoid (B) Poliomyelitis (C) Leptospirosis
(D) Botulism (E) Rabies (2012)

(9) A person who had an infection of measles rarely develpos the some infection again. This is an example of
(1) nonspecific immunity. (2) artificially acquired passive immunity.
(3) artificially acquired active immunity. (4) naturally acquired active immunity.
(5) naturally acquired passeive immunity. (2013)

(10) The bacterium which causes tetanus in man
A) is an acrobic organism. B) produces an enterotoxin
C) is an obligate anaerobic organism. D) produces a neurotoxin
E) is a facultative anaerobic organism. (2015)

(11) Some bacterial pathogens
(1) produce phospholipase which contributes to invasiveness.
(2) produce endotoxins which are thermolabile lipopolysaccharides.
(3) use the capsule and pili to enter host tissue.
(4) obtain nutrients from host cells without altering the metabolism of the host.
(5) produce lecithinase that breaks down the cementing substance between cells.
(2020-38)

(12) Select the response which correctly indicates the disease and its causative microorganism.
(1) Botulism – *Staphylococcus* sp.
(2) Tetanus – *Clostridium* sp.
(3) Cholera – *Shigella* sp.
(4) Dysentry – *Salmonella* sp.
(5) Typhoid – *Vibrio* sp. (2020-40)

Methods of controlling microbial infections.

(1) Anti bacterial action of penicillin lies in its ability to
(1) Inhibit protein synthesis of bacteria.
(2) Inhibit the synthesis of bacterial cell wall.
(3) Inhibit DNA synthesis, of bacteria.
(4) Harm the bacterial cell-membrane.
(5) Harm the bacterial ribosomes. (2002)

(2) The antibiotic erythromycin destroys bacteria by
(1) Inhibiting the cell wall synthesis.
(2) Inhibiting protein synthesis.
(3) Inhibiting DNA replication.
(4) Inhibiting synthesis of cell membrane.
(5) Causing leakages in cell membrane. (2003)

(3) Antimicrobial activity of penicillin depends on
(1) Inhibition of DNA replication in bacteria.
(2) Inhibition of synthesis cell walls of bacteria.
(3) Inhibition of protein synthesis in bacteria.
(4) Inhibition of folic acid synthesis in bacteria.
(5) Inhibition of membrane transport systems in bacteria. (2004)

(4) Which of the following antimicrobial drugs inhibit the growth of bacteria by inhibiting the synthesis to DNA?
(1) Penicillin (2) Crprofloxacin (3) Polymyxin
(4) Erythromycin (5) Clotrimazole (2011)

(5) Which of the following antibiotics inhibits bacteral growth by inhibiting DNA synthesis?
(1) Polymixin (2) Penicillin (3) Erythromycin
(4) Ciprofloxacin (5) Clotrimazole (2014)

(6) Which of the following 'antibiotic-inhibitory action' combinations is correct?

(1) Erythromycin - Inhibition of synthesis of bacterial cell walls.
(2) Ciprofloxacin - Inhibition of synthesis of bacterial DNA
(3) Clotrimazole - Inhibition of synthesis of bacterial cell membranes
(4) Polymyxin - Inhibition of synthesis of fungal cell membranes.
(5) Penicillin - Inhibition of synthesis of bacterial DNA (2017-38)

Use of microorganisms in industry.

(1) Microorganisms are made use of in the production of the following.

A – Wine B – Lactic acid C – Bread

Which of the above makes use of *saccharomyces cereviseae*?

(1) A only (2) A and B only (3) A and C only
(4) C only (5) A, B and C only (2000)

- Question 2 is based on the following bacteria which are used in microbial technology.

(1) *Lactobacillus bulgaricus* (2) *Bacillus thuringiensis*
(3) *Thiobacillus ferroxidans* (4) *Streptomyces griseus*
(5) *Corynebacterium glutamicus*

(2) Which of the above bacteria is used in an industrial proces for the extaction of metallic copper from low grade copper ores? (2001)

(3) Which pair of microorganisms plays a major role in the commercial production of vinegar from fruit juices?

(1) *Saccharomyces* and *Lactobacillus* (2) *Aspergillus* and *Acetobacter*
(3) *Lactobaillus* and *Acetobacter* (4) *Saccharomyces* and *Acetobacter*
(5) *Aspergillus* and *Lactobacillus* (2002)

(4) The incorrect statement about biological-pesticides is

(1) They are environmentally favourable.
(2) They are bio degradable.
(3) Their toxins do not get accumulated along the food – chain.
(4) Generally, there is no resistance in pests, against biological pesticides.
(5) Only bacteria are used as biological pesticides. (2002)

(5) Which one of the following genera of bacteria contains a speces eidely used for the industrial production of glutamic acid?

(1) *Corynebacterium* (2) *Pseudomonas* (3) *Escherichia*
(4) *Acetobacter* (5) *Clostridium* (2003)

(6) Which of the following major biochemical changes effected by microorganisms is/are involved in the production of vinegar from coconut sap (sweet toddy)?

(A) Conversion of sucrose to glucose by yeast
(B) Conversion of starch to glucose by yeast
(C) Conversion of glucose to ethanol by fermentation by yeast
(D) Oxidation of ethanol to acetic acid by *Acetobacter*
(E) Conversion of sucrose to lactic acid by lactic acid bacteria. (2003)

(7) The metabolic activities of which of the following organisms are used in the industrial manufactory of wine?

(1) *Acetobacter aceti* (2) *Lactobacillus bulganicus*
(3) *Aspergillus niger* (4) *Saccharomyces cerevisiae*
(5) *Streptococcus lactis* (2004)

- Question 8 is based on the following microrganisms.

A) *Saccharomyces cerevisiae* B) *Acetobacter aceti*
C) *Clostridium tetani* D) *Corynebacterium diptheriae*
E) *Salmonella typhi*

(8) Which of the above organisms is/are important for the production of vinegar from toddy (2011)

(9) Which of the following bacteria species is used in commercial extraction of copper from low grade ores containing iron sulphide?

(1) *Bacillus subtilis* (2) *Bacillus thuringiensis*
(3) *Thiobacillus ferroxidans* (4) *Pseudomonas denitrificans*
(5) *Bacillus polymyxa* (2014)

(10) Which of the following microorganisms is/are important in the production of vinegar from fruit juice?

(A) *Gluconobacter* (B) *Saccharomyces* (C) *Lactobacillus*
(D) *Acetobacter* (E) *Streptococcus* (2014)

(11) Growth of which of the following groups of organisms is not desirable in the production of compost?

(1) Thermophillic bacteria (2) Ammonifying bacteria
(3) Denitrifying bacteria (4) Nitrifying bacteria
(5) Proteolytic bacteria (2015)

(36) Which of the following microorganisms is not directly used as food or food supplements?

(1) *Aspergillus* (2) *Agaricus* (3) *Lentinus* (4) *Pleurotus* (5) *Spirulina*

(2017-36)

(49) Select the correct combination/combinations with respect to the use of microbes in industries.

	Product	Microorganism used in the production
(A)	Yoghurt	*Lactobacillus bulgaricus*
(B)	Vinegar	*Cluconobacter* sp
(C)	Citric acid	*Spirulina* sp
(D)	Lipase	*Rhizopus* sp
(E)	Vitamin C	*Aspergillus oryaze*

(2019-49)

Functions of soil microorganisms.

- Question 1 is based on the following bacteria which are used in microbial technology.

(1) *Lactobacillus bulgaricus* (2) *Bacillus thuringiensis*
(3) *Thiobacillus ferroxidans* (4) *Streptomyces griseus*

(1) Which of the above bacteria is used as a biopesticide to control certain insect pests in crop plants? (2001)

(2) *Nirtobacter* and *Nitrosomonas* are best described as
(1) Chemohetertrophs (2) Chemoautotrophs (3) Photoautotroph
(4) Heterotrphs (5) Photoheterotrpphs (2005)

(3) Which one of the following bacteria can convert atmospheric nitrogen into NH_4^+?
(1) *Azotobacter* (2) *Nitrosomonas* (3) *Pseudomonas*
(4) *Nitrobacter* (5) *Acetobacter* (2007)

(4) Which one of the groups of microorganisms is found in highest numbers in one gram of fertile agricultural soil?
(1) Fungi (2) Cyanobacteria (3) Bacteria
(4) Unicellular algae (5) Protozoa (2008)

(5) Which one of the following stages of the nitrogen cycle in nature is carried out by chemoautorpphic bacteria?
(1) Proteolysis (2) Ammonification (3) Nitrification
(4) Denitrification (5) Nitrogen fixation (2011)

(6) Which of the following biochemical processes in the nitrogen cycle is carried out only by chemoautotrophic bacteria?
(1) Proteolysis (2) Nitrification (3) Denitrification
(4) Nitrogen fixation (5) Ammonification (2012)

(7) Which of the following combinations is correct in relatin to the nitrogen cycle?
1) *Thiobacillus* - conversion of atmospheric nitrogen to nitrates.
2) *Pseudomonas* - conversion of ammonia to nitrites.
3) *Nitrosomonas* - conversion of nitrites to nitrates.
4) *Azotobacter* - conversion of nitrates to atmospheric nitrogen.
5) *Clostridium* - conversion of atmospheric nitrogen to ammonia. (2015)

(8) Which of the following biochemical processes in the nitrogen cycle is effected by *Nitrosomonas*?
(1) Proteolysis (2) Nitrification (3) Denitrification
(4) Nitrogen fixation (5) Ammonification (2016-39)

(9) Which of the following microorganisms are used in biological extraction of metals from low grade metal ores?
(1) *Pseudomonas aeruginosa* (2) *Thiobacillus ferrooxidans*
(3) *Bacillus thuringiensis* (4) *Lactobacillus bulgaricus*
(5) *Aspergillus oryzae* (2016-40)

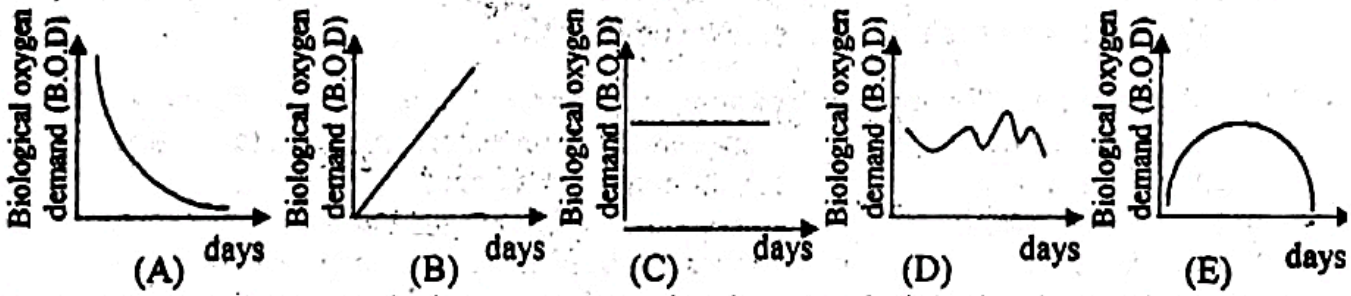
(10) *Nitrosomonas* is
(1) a chemoautotroph which reduces N_2, to NH_4^+
(2) a chemoheterotroph which oxidises NH_4^+ to NO_2^-
(3) a chemoautotroph which oxidises NH_4^+ to NO_2^-
(4) a chemoautotroph which reduces NO_3^- to NO_2^-
(5) a chemoheterotroph which reduces N_2 to NH_4^+ (2018-36)

(11) Which of the following statements regarding the roles of microorganisms is correct?
(1) When organic matter is mineralized by bacteria and fungi, oxygen, water and CO_2 are released.
(2) Methanotrophic microorganisms produce methane from ocean sediments.
(3) *Pseudomonas* sp. causes denitrification when oxygen is limited in soil.
(4) Rhizobia are free living nitrogen fixing bacteria in soil.
(5) All rhizosphere fungi are beneficial to plants. (2020-39)

Concepts and principles in drinking water.

(1) Which is the incorrect statement regarding bioremediation? It is currently being used to
(1) reduce organic pollution in aquatic environments.
(2) accelerate decomposition of effluents in purifiers during waste-water purification in the food industry.
(3) remove iol layers in aquatic environments.
(4) treat gastro-intestinal ailments of humans.
(5) remove poisonous metals like chromium from waste matter in metal – industry. (2002)

(2)



Which of the above graphs best represents the changes of Biological Oxygen Demand (B.O.D) with time in an activated sludge reactor in a waste water treatment plant?
(1) A (2) B (3) C (4) D (5) E (2004)

(3) Which of the following is the major objective of the secondary treatment stage in an industrial waste water treatment plant?
(1) Removal of toxic metals
(2) Destruction of pathogenic organisms
(3) Removal of sand
(4) Removal of floating material
(5) Lowering of Biochemical Oxygen Demand (BOD) by microbial oxidation (2005)

(4) Which of the following organisms is responsible for, infections due to the production of endotoxins in food spoilage?
(1) *Salmonella typhi* (2) *Vibrio cholerae* (3) *Pseudomonas aeruginosa*
(4) *Shigella dysenteriae* (5) *Escherichia Coli* (2006)

(5) Which one of the following, is the major objective of using an activated sludge system in an industrial waste water treatment plant?
(1) Destruction of pathogenic microorganisms.
(2) Reduction of the number of microorganisms in waste water.
(3) Encourage microbial oxidation to reduce biological oxygen demand' of waste water.
(4) Removal of heavy metals.
(5) Removal of nitrates and phosphates of waste water. (2007)

(6) Which of the following is/are important as causative agent/s of diseases, transmitted through drinking water?
(A) *Mycobacterium tuberculosis* (B) *Clostridium tetani*
(C) *Salamonella typhi* (D) *Shigella flexneri*
(E) *Staphylococcus aureus* (2008)

(7) Coliform bacteria are used as indicator organisms of faecal pollution because
(1) they are intestinal pathogens.
(2) they ferment lactose.
(3) they are the major inhabitants in the human intestine.
(4) they grow well in culture media within 48 hours.
(5) their major habitats are water and soil. (2009)

(8) Pollution of water bodies by sewage leads to
(A) Increase of cyanobacteria.
(B) Increase in primary productivity.
(C) Increase in chemical oxygen demand.
(D) Reduction of dissolved oxygen content.
(E) Increase of primary consumers. (2009)

(9) Given below are some of the major steps of general water purification system in a municipal water purification plant. Which of the following step/steps involves/involve in the removal of pathogenic microganisms?
(A) Addition of aluninium sulphate
(B) Allowing water to cascade in several steps
(C) Filtration using sand filters
(D) Disinfection using chlorine
(E) Keeping water in large reservoirs for a specific period (2010)

(10) Which of the following is not an application of bioremediation?
(1) Treatment of human disorders using products of genetically modified organisms.
(2) Decreasing organic waste content in aquatic environments.
(3) Removal of oil spills from aquatic environments.
(4) Removal of toxic metals from industrial waste.
(5) Accelerating the composting processes. (2012)

(11) Which of the following statements regarding the use of sanitary landfills is correct?
(1) It is not a good choice due to high operational costs.
(2) It involves dumping of municipal solid waste to wetland areas for land filling.
(3) It is a method of reducing the volume of solid waste.
(4) It is limited due to low ground water level in many regions.
(5) It does not involve decomposition of waste. (2018-39)

(12) Which of the following statements regarding drinking water treatment process is/are correct?
(A) Alum is added to remove suspended matter and microorganisms.
(B) Ozone is used to kill microorganisms.
(C) During filtration stage, microorganisms are removed by absorption into sand particles.
(D) Trickling filter method is used to filter microorganisms.
(E) During the primary treatment, about 90% of organic matter is removed.
(2020-50)

Impact of microorganisms on food.

(1) Out of the following food preservation methods, what is/are used in the powdered – milk industry?
(A) Irradiation (B) Membrane filtration (C) Dehydration
(D) Asepsis (E) Addition of sugar (2002)

(2) Which of the following bacteria is/are involved in food infections caused by the growth and activity of microorganisms present in the ingested food?
(A) *Salmonella typhi* (B) *Shigella* (C) *Staphylococcus aureus*
(D) *Vibrio Cholera* (E) *Clostridium botulinum* (2003)

(3) When presence of which one of the following bacteria, is examined routinely, in the confirmatory test for the sanitary quality of drinking water?
(1) *Salmonella typhi* (2) *Vibrio cholerae* (3) *Shigella dysenteriae*
(4) *Staphylococcus aureus* (5) *Clostridium botulinum* (2006)

(4) Which one of the following microorganisms is responsible for causing food poisoning?
(1) *Salmonella typhi* (2) *Shigella* (3) *Vibrio cholerae*
(4) *Clostridium tetani* (5) *Clostridium botulinum* (2007)

(5) Which of the following microorganisms cause/causes diseases when contaminated water and food are consumed?
(A) *Mycobacterium tuberculosis* (B) *Leptospira interrogans*
(C) Polio virus (D) *Salmonella typhi*
(E) *Clostridium tetani* (2013-48)

(6) Which of the following organisms causing food borne infections contain endotoxins?
(1) *Vibrio cholera* (2) *Staphylococus aureus* (3) *Clostridium botulinum*
(4) *Salmonella typhi* (5) *Shigella flexneri* (2016-36)

(7) Which of the following statements is/are correct regarding spoilage of food?
(A) Saccharolytic microorganisms are responsible for rancidity of food.
(B) Putrefaction occurs mainly due to breakdown of proteins.
(C) Lipolytic microorganisms are responsible for fermentation of food.
(D) Acids are formed during fermentation.
(E) Rancidity occurs due to generation of amines. (2019-50)

Global environmental problems.

(1) 5 (2) 3 (3) 4 (4) 5 (5) 1 (6) 4
(7) 2 (8) 4

main protocols and conventions and sustainable use of natural resources.

(1) 4 (2) 1 (3) 1 (4) 1 (5) 2 (6) 4
(7) 4 (8) 2 (9) 2 (10) 4 (11) 4 (12) 3

Unit 9 – Microbiology

Diversity and nature of microorganisms.

(1) 4 (2) 5 (3) 4 (4) 4 (5) 3 (6) 3
(7) 4 (8) 2 (9) 3 (10) 2 (11) 4 (12) 2/3
(13) 4 (14) 5 (15) 5 (16) 3 (17) 3 (18) 2
(19) 3 (20) 5 (21) 5 (22) 5 (23) 4 (24) 5
(25) 3 (26) 5 (27) 1 (28) 5 (29) 2 (30) 4
(31) 2 (32) 3 (33) 4 (34) 1 (35) 2 (36) 3
(37) 3 (38) 3 (39) 4 (40) 2 (41) 5 (42) 2

virus

1) 5 2) 3

Concepts and principles relevant to infectious diseases.

(1) 3 (2) 3 (3) 2 (4) 2 (5) 4 (6) 4
(7) all (8) 2 (9) 4 (10) 4 (11) 1 (12) 2

Methods of controlling microbial infections.

(1) 2 (2) 2 (3) 2 (4) 2 (5) 4 (6) 2

Use of microorganisms in industry.

(1) 3 (2) 3 (3) 4 (4) 5 (5) 1 (6) 2
(7) 4 (8) 5 (9) 3 (10) 1 (11) 3 (12) 1
(13) 1

Functions of soil microorganisms.

(1) 2 (2) 2 (3) 1 (4) 3 (5) 3 (6) 2
(7) 5 (8) 2 (9) 2 (10) 3 (11) 3

Concepts and principles in drinking water.

(1) 4 (2) 1 (3) 5 (4) 5 (5) 3 (6) 4
(7) 3 (8) 1 (9) 2 (10) 1 (11) 3 (12) 3

Impact of microorganisms on food.

(1) 4 (2) 1 (3) 1 (4) 5 (5) 4 (6) 4 (7) 5