



BUDDHA SERIES

(Unit Wise Solved Question & Answers)

Course – B.Sc (Bio)

College – Buddha Degree College

(DDU Code-859)

Department: Science

Subject: Microbiology & Plant Pathology

Faculty Name: Ms Sandhya Nishad

Unit – 1

1. **Which microorganism is commonly used for the production of penicillin?**

- A) *Bacillus subtilis*
- B) *Streptomyces griseus*
- C) *Penicillium chrysogenum*
- D) *Aspergillus niger*

Answer: C

2. **Streptomycin is produced by:**

- A) *Streptococcus pneumonia*
- B) *Streptomyces griseus*
- C) *Penicillium notatum*
- D) *Saccharomyces cerevisiae*

Answer: B

3. **The first antibiotic discovered was:**

- A) Tetracycline
- B) Penicillin
- C) Erythromycin
- D) Streptomycin

Answer: B

4. **Which medium component is often used to induce penicillin biosynthesis?**

- A) Glucose
- B) Corn steep liquor
- C) Lactose
- D) Phenylacetic acid

Answer: D

5. **Cephalosporin is produced by:**

- A) *Cephalosporium acremonium*
- B) *Streptomyces venezuelae*
- C) *Bacillus subtilis*
- D) *Penicillium chrysogenum*

Answer: A

6. **Actinomycetes are predominantly known for producing:**

- A) Alcohol
- B) Antibiotics
- C) Enzymes
- D) Organic acids

Answer: B

7. **A semi-synthetic antibiotic is:**

- A) Natural antibiotic with enhanced activity
- B) Fully synthetic
- C) Genetically engineered
- D) Not effective

Answer: A

8. **Beta-lactam antibiotics include:**

- A) Tetracycline
- B) Penicillin
- C) Chloramphenicol
- D) Rifampicin

Answer: B

9. **Antibiotic production is usually associated with which growth phase?**

- A) Lag phase
- B) Log phase
- C) Stationary phase
- D) Decline phase

Answer: C

10. **Antibiotics inhibit microbial growth by affecting:**

- A) DNA synthesis
- B) Protein synthesis
- C) Cell wall synthesis
- D) All of the above

Answer: D

11. **Amylase is primarily used for:**

- A) Protein breakdown
- B) Starch hydrolysis
- C) Lipid digestion
- D) DNA replication

Answer: B

12. Which microorganism is widely used for commercial protease production?

- A) *Saccharomyces cerevisiae*
- B) *Aspergillus niger*
- C) *Bacillus subtilis*
- D) *E. coli*

Answer: C

13. Lipase catalyzes the hydrolysis of:

- A) Carbohydrates
- B) Proteins
- C) Fats
- D) Nucleic acids

Answer: C

14. Invertase enzyme is used in the conversion of:

- A) Glucose to alcohol
- B) Sucrose to glucose and fructose
- C) Starch to glucose
- D) Protein to peptides

Answer: B

15. A thermostable DNA polymerase used in PCR is obtained from:

- A) *E. coli*
- B) *Thermus aquaticus*
- C) *Aspergillus niger*
- D) *Streptomyces*

Answer: B

16. Solid-state fermentation is ideal for producing:

- A) Organic acids
- B) Alcohols
- C) Enzymes
- D) Antibiotics

Answer: C

17. Pectinase is used in:

- A) Bread making
- B) Clarification of fruit juices
- C) Beer brewing
- D) Antibiotic production

Answer: B

18. Which of the following is a fungal source of cellulase?

- A) *E. coli*
- B) *Bacillus cereus*
- C) *Trichoderma reesei*
- D) *Streptococcus pyogenes*

Answer: C

19. Ethanol is produced by:

- A) *Penicillium chrysogenum*
- B) *Saccharomyces cerevisiae*
- C) *Aspergillus niger*
- D) *Streptococcus lactis*

Answer: B

20. Wine is primarily made by fermenting:

- A) Rice
- B) Grapes
- C) Barley
- D) Corn

Answer: B

21. Beer is made using the fermentation of:

- A) Grapes
- B) Wheat
- C) Barley malt
- D) Sugarcane

Answer: C

22. Distilled alcoholic beverage production involves:

- A) Pasteurization
- B) Filtration
- C) Distillation after fermentation
- D) Centrifugation

Answer: C

23. In wine making, malolactic fermentation is carried out by:

- A) Yeasts
- B) Lactic acid bacteria
- C) Molds
- D) Algae

Answer: B

24. The key fermenting sugar in brewing is:

- A) Maltose
- B) Lactose
- C) Fructose
- D) Cellulose

Answer: A

25. Citric acid is commercially produced using:

- A) *Lactobacillus*
- B) *Clostridium*
- C) *Aspergillus niger*
- D) *Penicillium chrysogenum*

Answer: C

26. Lactic acid is primarily produced by:

- A) *Saccharomyces cerevisiae*
- B) *Lactobacillus* spp.
- C) *Aspergillus niger*
- D) *Penicillium notatum*

Answer: B

27. Which acid is used in the production of biodegradable plastic (PLA)?

- A) Citric acid
- B) Acetic acid
- C) Lactic acid
- D) Oxalic acid

Answer: C

28. Acetic acid bacteria include:

- A) *Lactobacillus*
- B) *Acetobacter*
- C) *Escherichia coli*
- D) *Penicillium*

Answer: B

29. Which organic acid is commonly used as a food preservative?

- A) Citric acid
- B) Tartaric acid
- C) Acetic acid
- D) Butyric acid

Answer: C

30. The pH of the medium is critical in the production of which acid?

- A) Lactic acid
- B) Citric acid
- C) Acetic acid
- D) Oxalic acid

Answer: B

Unit - 2

1. **Which indicator organism is commonly used to assess water quality?**

- A) *Vibrio cholerae*
- B) *Escherichia coli*
- C) *Staphylococcus aureus*
- D) *Salmonella typhi*

Answer: B

2. **Total coliform count in potable water should be:**

- A) <10 per 100 mL
- B) 0 per 100 mL
- C) <100 per mL
- D) 10–50 per mL

Answer: B

3. **Which method is used to detect coliforms in water?**

- A) Streak plate method
- B) MPN (Most Probable Number) test
- C) Gram staining
- D) PCR only

Answer: B

4. **Which of the following is not a coliform?**

- A) *Klebsiella*
- B) *Enterobacter*
- C) *E. coli*
- D) *Vibrio cholerae*

Answer: D

5. **Presence of coliform bacteria in water indicates:**

- A) Algal contamination
- B) Chemical contamination
- C) Fecal contamination
- D) None of the above

Answer: C

6. **Which technique uses membrane filters to detect microbes in water?**

- A) MPN method
- B) Filtration method
- C) Most viable count
- D) Spread plate method

Answer: B

7. **Fecal coliforms are best differentiated from other coliforms by growth at:**

- A) 35°C
- B) 44.5°C
- C) 25°C
- D) 20°C

Answer: B

8. **Which of the following is a common protozoan contaminant in water?**

- A) *E. coli*
- B) *Cryptosporidium parvum*
- C) *Salmonella*
- D) *Shigella*

Answer: B

9. **Which virus is most commonly associated with waterborne outbreaks?**

- A) HIV
- B) Norovirus
- C) Influenza virus
- D) Rabies virus

Answer: B

10. **The standard indicator for viral contamination in water is:**

- A) *E. coli*
- B) Coliphages
- C) *Salmonella*
- D) *Staphylococcus*

Answer: B

11. Which of the following is a waterborne bacterial disease?

- A) Tuberculosis
- B) Cholera
- C) Malaria
- D) Tetanus

Answer: B

12. Giardiasis is caused by:

- A) Virus
- B) Bacteria
- C) Protozoa
- D) Fungus

Answer: C

13. Typhoid fever is caused by:

- A) *Salmonella typhi*
- B) *Shigella dysenteriae*
- C) *E. coli*
- D) *Pseudomonas*

Answer: A

14. Which of the following is *not* a waterborne disease?

- A) Cholera
- B) Dysentery
- C) Hepatitis A
- D) Measles

Answer: D

15. Hepatitis A is mainly transmitted by:

- A) Respiratory droplets
- B) Insect bite
- C) Fecal–oral route through water
- D) Blood transfusion

Answer: C

16. Which organism causes amoebic dysentery?

- A) *Giardia lamblia*
- B) *Entamoeba histolytica*
- C) *Cryptosporidium*
- D) *E. coli*

Answer: B

17. Which step is the first in water purification at treatment plants?

- A) Chlorination
- B) Sedimentation
- C) Coagulation
- D) Filtration

Answer: B

18. What is used as a coagulant in water treatment?

- A) Sodium chloride
- B) Alum (Aluminum sulfate)
- C) Bleaching powder
- D) Lime

Answer: B

19. The most effective method for killing pathogens in drinking water is:

- A) Filtration
- B) Aeration
- C) Boiling
- D) Chlorination

Answer: D

20. Which of the following removes *both* bacteria and viruses from water?

- A) Sand filtration
- B) Chlorination
- C) Reverse osmosis
- D) Coagulation

Answer: C

21. The acceptable residual chlorine level in drinking water is:

- A) 0.2–0.5 mg/L
- B) 1.5–2.0 mg/L
- C) 5–10 mg/L
- D) 10–15 mg/L

Answer: A

22. **Slow sand filters work mainly through:**

- A) Physical filtration
- C) Chemical reaction

- B) Biological action
- D) UV exposure

Answer: B

23. **Primary treatment of sewage involves:**

- A) Disinfection
- C) Biological oxidation

- B) Removal of suspended solids
- D) Chemical precipitation

Answer: B

24. **Activated sludge process is a part of:**

- A) Primary treatment
- C) Tertiary treatment

- B) Secondary treatment
- D) Filtration

Answer: B

25. **Anaerobic digestion of sewage produces:**

- A) Nitrogen gas
- C) Oxygen

- B) Methane
- D) Carbon monoxide

Answer: B

26. **Tertiary treatment of wastewater includes:**

- A) Screening and grit removal
- C) Sedimentation

- B) Disinfection and nutrient removal
- D) Aeration

Answer: B

27. **Bioremediation refers to:**

- A) Removing large solids from water
- C) Adding chlorine to water

- B) Using microorganisms to degrade pollutants
- D) Filtration through membranes

Answer: B

28. **Oil spills in water can be cleaned using:**

- A) Detergents
- C) Hydrocarbonoclastic bacteria

- B) Biodegradable plastics
- D) Cyanobacteria

Answer: C

29. **Phytoremediation is a type of bioremediation that uses:**

- A) Bacteria
- C) Fungi

- B) Algae
- D) Plants

Answer: D

30. **Which of the following microbes is used in bioremediation of heavy metals?**

- A) *Bacillus subtilis*
- C) *E. coli*

- B) *Pseudomonas putida*
- D) *Clostridium botulinum*

Answer: B

Unit – 3

1. **A plant disease is best defined as:**

- A) Injury to a plant by mechanical means
- B) Any deviation from normal physiological function
- C) Nutrient deficiency
- D) Insect infestation

Answer: B

2. **A symptom characterized by yellowing of leaves is called:**

- A) Chlorosis
- B) Necrosis
- C) Wilting
- D) Blight

Answer: A

3. **Wilting in plants is mainly due to:**

- A) Lack of nitrogen
- B) Disruption of water transport
- C) Over-fertilization
- D) High temperature

Answer: B

4. **A localized dead area on leaf tissue is known as:**

- A) Rust
- B) Blight
- C) Spot
- D) Canker

Answer: C

5. **Systemic infection in plants indicates:**

- A) Infection limited to one leaf
- B) Only roots are infected
- C) Infection spreads throughout the plant
- D) Infection without symptoms

Answer: C

6. **Galls or tumors on plants are symptoms caused by:**

- A) Fungi
- B) Bacteria
- C) Nematodes
- D) Viruses

Answer: B

7. **Leaf curling is typically associated with:**

- A) Viral infection
- B) Iron deficiency
- C) Herbicide injury
- D) Excess irrigation

Answer: A

8. **Etiology refers to:**

- A) Treatment of diseases
- B) Study of symptoms
- C) Study of disease causes
- D) Disease prevention

Answer: C

9. **Which of the following can be a primary inoculum?**

- A) Conidia from last year's infected leaves
- B) New fungal spores formed after infection
- C) Pesticide residues
- D) Saprophytic fungi

Answer: A

10. **Secondary inoculum causes:**

- A) Initial infection of the season
- B) Repeated infections within the same season
- C) Symptoms in animals
- D) Soil degradation

Answer: B

11. **Infection is defined as:**

- A) The presence of an organism on plant surface
- B) The entry and establishment of a pathogen in host tissue

- C) Plant wilting due to heat
- D) Mechanical injury

Answer: B

12. The term 'pathogenicity' means:

- A) The ability to cause disease
- B) Production of spores
- C) Fungal reproduction
- D) Host resistance

Answer: A

13. Pathogenesis involves:

- A) Host defense development
- B) The entire process of disease development
- C) Chemical application
- D) Secondary growth

Answer: B

14. Koch's first postulate is:

- A) Isolate the suspected pathogen in pure culture
- B) Inoculate a healthy host with the pathogen
- C) Re-isolate the pathogen from inoculated host
- D) The suspected pathogen must be present in all diseased plants

Answer: D

15. Koch's postulates are not easily applicable to:

- A) Bacteria
- B) Viruses
- C) Fungi
- D) Nematodes

Answer: B

16. In Koch's postulates, a pathogen must be:

- A) Isolated and genetically modified
- B) Eliminated using chemicals
- C) Cultured and used to infect a healthy plant
- D) Observed microscopically

Answer: C

17. Re-isolation in Koch's postulates confirms:

- A) Host immunity
- B) Causative nature of the microorganism
- C) Contamination
- D) Symbiosis

Answer: B

18. Which scientist proposed Koch's postulates?

- A) Louis Pasteur
- B) Antonie van Leeuwenhoek
- C) Robert Koch
- D) Heinrich Anton de Bary

Answer: C

19. Fungal pathogens typically enter plants through:

- A) Cell walls
- B) Root hairs only
- C) Natural openings and wounds
- D) Phloem vessels

Answer: C

20. Appressorium is a structure used by fungi for:

- A) Nutrient absorption
- B) Spore production
- C) Host penetration
- D) Movement

Answer: C

21. Bacterial infection often occurs through:

- A) Leaf abscission zones
- B) Stomata or wounds
- C) Root hairs
- D) Direct DNA insertion

Answer: B

22. **Viruses infect plant cells by:**

- A) Digesting the cell wall
- C) Mechanical injury or vector transmission

- B) Active transport
- D) Producing toxins

Answer: C

23. **Monocyclic diseases are also known as:**

- A) Multiple cycle diseases
- C) Simple interest diseases

- B) Polyetic diseases
- D) Compound interest diseases

Answer: C

24. **Polycyclic diseases are more dangerous because:**

- A) They occur once per season
- B) They can complete multiple infection cycles in one season
- C) They are only caused by nematodes
- D) They can't be controlled

Answer: B

25. **A polyetic disease continues over:**

- A) One growing season
- C) One week

- B) Multiple growing seasons
- D) One day

Answer: B

26. **The source of primary inoculum is often:**

- A) Current season's infection
- C) Wind

- B) Infected seeds or soil from previous season
- D) Rain

Answer: B

27. **Phytoimmunology is the study of:**

- A) Plant nutrition
- C) Photosynthesis

- B) Plant responses to pathogens
- D) Transpiration

Answer: B

28. **Which of the following is a structural defense in plants?**

- A) Phytoalexins
- C) Enzymes

- B) Cuticle
- D) Toxins

Answer: B

29. **Phytoalexins are:**

- A) Hormones
- C) Induced antimicrobial compounds

- B) Preformed defense chemicals
- D) Insect repellents

Answer: C

30. **A hypersensitive response in plants involves:**

- A) Overgrowth of tissue
- C) Water logging

- B) Localized cell death at infection site
- D) Chlorophyll production

Answer: B

Unit – 4

1. **Late blight of potato is caused by:**

- A) *Alternaria solani*
- C) *Rhizoctonia solani*

- B) *Phytophthora infestans*
- D) *Pseudomonas syringae*

Answer: B

2. **Characteristic symptom of late blight of potato is:**

- A) Wilting of leaves
- C) Brown-black lesions with white margins

- B) White mildew on stem
- D) Red streaks on petioles

Answer: C

3. **False smut of rice is caused by:**

- A) *Ustilaginoidea virens*
- C) *Magnaporthe oryzae*

- B) *Tilletia indica*
- D) *Fusarium oxysporum*

Answer: A

4. **False smut of rice is characterized by:**

- A) Entire panicle turns black
- C) Yellowing of lower leaves

- B) Greenish fungal ball replacing grains
- D) White cottony growth on stem

Answer: B

5. **Causal organism of brown spot of rice:**

- A) *Xanthomonas oryzae*
- C) *Magnaporthe oryzae*

- B) *Helminthosporium oryzae* (*Bipolaris oryzae*)
- D) *Pythium aphanidermatum*

Answer: B

6. **White rust of crucifers is caused by:**

- A) *Puccinia graminis*
- C) *Fusarium solani*

- B) *Albugo candida*
- D) *Sclerotinia sclerotiorum*

Answer: B

7. **White rust primarily affects which plant family?**

- A) Solanaceae
- C) Brassicaceae

- B) Cucurbitaceae
- D) Poaceae

Answer: C

8. **Red rot of sugarcane is caused by:**

- A) *Colletotrichum falcatum*
- C) *Rhizoctonia solani*

- B) *Fusarium oxysporum*
- D) *Pythium debaryanum*

Answer: A

9. **Symptom of red rot in sugarcane is:**

- A) Red lesions with white cross bands
- C) Canker on cane

- B) Leaf blight
- D) Tip rot

Answer: A

10. **Wilting of Arhar (pigeon pea) is caused by:**

- A) *Fusarium udum*
- C) *Verticillium albo-atrum*

- B) *Pseudomonas solanacearum*
- D) *Colletotrichum capsici*

Answer: A

11. **Tobacco mosaic disease is caused by:**

- A) Bacterium

- B) Fungus

C) Virus

Answer: C

D) Nematode

12. **Mosaic disease of cucumber is transmitted by:**

A) Aphids

C) Leafhoppers

Answer: A

B) Mites

D) Whiteflies

13. **Yellow vein mosaic of bhindi (okra) is caused by:**

A) Fungi

C) Bacteria

Answer: B

B) Virus (transmitted by whitefly)

D) Nematodes

14. **Citrus canker is caused by:**

A) *Xanthomonas citri*

C) *Phytophthora infestans*

Answer: A

B) *Fusarium oxysporum*

D) *Rhizobium* spp.

15. **Little leaf disease of brinjal is caused by:**

A) Virus

C) Fungus

Answer: B

B) Phytoplasma (mycoplasma-like organisms)

D) Bacterium

16. **Damping-off of seedlings is caused mainly by:**

A) *Fusarium udum*

C) *Rhizoctonia solani*

Answer: B

B) *Pythium* spp.

D) *Albugo candida*

17. **A preventive measure against damping off:**

A) Excess watering

C) Use of sterilized soil and fungicide seed treatment

Answer: C

B) Dense sowing

D) Using fresh manure

18. **Which method prevents entry of exotic plant pathogens?**

A) IPDM

C) Quarantine

Answer: C

B) Crop rotation

D) Fertilizer application

19. **Biological control involves use of:**

A) Insecticides

C) Beneficial organisms like *Trichoderma*

Answer: C

B) Synthetic chemicals

D) Irrigation

20. **Chemical control of fungal diseases often involves:**

A) Bactericides

C) Fungicides

Answer: C

B) Herbicides

D) Insecticides

21. **Integrated Disease Management (IDM) combines:**

A) Only chemical control

C) Cultural, biological, and chemical approaches

Answer: C

B) Mechanical and manual methods

D) No intervention

22. **Fungicide effective against fungal leaf spots and blights:**

A) Bordeaux mixture

B) Glyphosate

C) Neem oil

Answer: A

D) Insecticidal soap

23. **Bordeaux mixture contains:**

A) Copper sulfate + Lime

C) Lime + Potassium nitrate

Answer: A

B) Sulfur + Iron

D) Copper + Phosphorus

24. **Lime sulfur is used primarily for:**

A) Viral diseases

C) Insect control

Answer: B

B) Fungal and mite control

D) Nematode management

25. **Tobacco decoction is traditionally used as a:**

A) Fertilizer

C) Botanical insecticide

Answer: C

B) Growth hormone

D) Fungicide

26. **Neem cake is effective as:**

A) A pesticide only

C) Only a soil conditioner

Answer: B

B) A biofertilizer and nematicide

D) A plant growth inhibitor

27. **Neem oil is mainly used to control:**

A) Soil-borne fungi

C) Insects and mites

Answer: C

B) Viral infections

D) Iron deficiency

28. **Copper-based fungicides are effective against:**

A) Viral infections

C) Nematodes

Answer: B

B) Bacterial and fungal diseases

D) Insect pests

29. **Which natural pesticide has antifungal and insecticidal properties?**

A) Neem oil

C) Urea

Answer: A

B) Sodium bicarbonate

D) Iron sulfate

30. **A major advantage of integrated pest and disease management is:**

A) Maximum use of chemicals

C) Sustainable and eco-friendly control

Answer: C

B) Greater resistance development in pests

D) Higher cost