BUDDHA SERIES

(Unit Wise Solved Question & Answers)

Course – B.Sc. Botany2nd year (3rd semester)

College – Buddha Degree College

(DDU Code-859)

Department: Science

Subject:Microbiology and Plant Pathology

Faculty Name: Dr. Satya Prakash Singh

Unit 1

1□□ Viruses are considered obligate parasites because:

A) They can live independently
B) They reproduce only inside host cells
C) They are always beneficial to the host
D) They contain both DNA and RNA
Answer: B) They reproduce only inside host cells

2□□ Viral genome may consist of:

A) Only DNA
B) Only RNA
C) Either DNA or RNA
D) Both DNA and RNA simultaneously
Answer: C) Either DNA or RNA

3□□ Protein coat of a virus is called:

A) Envelope
B) Capsid
C) Core
D) Peplomer
Answer: B) Capsid

4□□ Subunits of capsid are called:

A) Peptones
B) Capsomeres
C) Plasmids
D) Prions
Answer: B) Capsomeres

5□□ The envelope of some animal viruses is derived from:

A) Host cell wall
B) Host cell plasma membrane
C) Viral genome
D) Mitochondria
Answer: B) Host cell plasma membrane

6□□ Viruses are usually cultured using:

A) Nutrient agar
B) Embryonated eggs
C) Simple glucose broth
D) Soil medium
Answer: B) Embryonated eggs

7□□ Plaque assay is used to estimate:

A) Bacterial colonies
B) Viral titre
C) Prion concentration
D) Viroid replication
Answer: B) Viral titre

8□□ Continuous cell lines are preferred for virus culture because:

A) They are expensive
B) They grow indefinitely
C) They cannot be infected
D) They do not divide
Answer: B) They grow indefinitely

9□□ T4 bacteriophage infects:

A) Plant cells
B) Bacteria (E. coli)
C) Fungi
D) Protozoa
Answer: B) Bacteria (E. coli)

The head of T4 phage contains:

A) RNA only
B) DNA only
C) Protein only
D) Lipid only
Answer: B) DNA only

1□□1□□ The tail fibers of T4 phage function in:

A) DNA replication
B) Host cell recognition and attachment
C) Viral genome packaging
D) Protein synthesis
Answer: B) Host cell recognition and attachment

1□□2□□ λ (lambda) phage genome is:

A) Double-stranded DNA
B) Single-stranded RNA
C) Circular RNA
D) Fragmented DNA
Answer: A) Double-stranded DNA

1□□3□□ In lytic cycle, viral DNA:

A) Integrates into host genome
B) Immediately directs synthesis of new virions
C) Remains dormant
D) Gets destroyed quickly
Answer: B) Immediately directs synthesis of new virions

1□□4□□ Prophage is associated with:

A) Lytic cycle
B) Lysogenic cycle
C) Both cycles equally
D) Prions only
Answer: B) Lysogenic cycle

1□□5□□ Lysogeny can convert bacteria into:

A) More sensitive strains
B) Virulent strains
C) Less resistant strains
D) Saprophytic forms
Answer: B) Virulent strains

1□□6□□Viroids contain:

A) Protein only
B) DNA only
C) RNA only
D) Lipids only
Answer: C) RNA only

1□□7□□ Prions are:

A) Infectious DNA molecules
B) Infectious proteins without nucleic acid
C) Viral envelopes
D) Bacterial cell walls
Answer: B) Infectious proteins without nucleic acid

1□□8□□ Prions cause diseases such as:

A) Common cold
B) Mad cow disease (BSE)
C) Influenza
D) Typhoid
Answer: B) Mad cow disease (BSE)

1□□9□□ Mycoplasma lack:

A) Ribosomes
B) Cell wall
C) Plasma membrane
D) Nucleic acid
Answer: B) Cell wall

2□□0□□ Diseases like little leaf of brinjal are caused by:

A) Viruses
B) Bacteria
C) Phytoplasma
D) Algae
Answer: C) Phytoplasma

2□□1□□ Mycoplasma are sensitive to:

A) Penicillin
B) Tetracycline
C) Lysozyme
D) All antibiotics equally
Answer: B) Tetracycline

2□□2□□ Mycoplasma are also known as:

A) PPLO (Pleuropneumonia-like organisms)
B) Phages
C) Plasmids
D) Actinomycetes
Answer: A) PPLO

2□□3□□ Actinomycetes resemble:

A) Algae
B) Fungi
C) Protozoa
D) Viruses
Answer: B) Fungi

2□□4□□ An important antibiotic produced by Actinomycetes is:

A) Penicillin
B) Streptomycin
C) Tetracycline
D) Both B and C
Answer: D) Both B and C

2□□5□□ Actinomycetes are important in:

A) Soil nutrient recycling
B) Causing viral diseases
C) Degrading plastics only
D) None of these
Answer: A) Soil nutrient recycling

2□□6□□ Plasmids are:

A) Linear DNA molecules only
B) Circular, extra-chromosomal DNA
C) RNA molecules only
D) Part of nuclear genome
Answer: B) Circular, extra-chromosomal DNA

2□□7□□ Plasmids are important in:

A) Viral replication only
B) Genetic engineering
C) Food preservation
D) ATP synthesis
Answer: B) Genetic engineering

2□□8□□ Plasmids can carry genes for:

A) Antibiotic resistance
B) Photosynthesis only
C) Viral coat proteins
D) Cell wall synthesis only
Answer: A) Antibiotic resistance

2□□9□□ Actinomycetes help in producing:

A) Insecticides
B) Antibiotics
C) Beverages
D) Plastics
Answer: B) Antibiotics

3□□0□□ Mycoplasma can be economically important because:

A) Used in antibiotics production
B) Help in nitrogen fixation
C) Cause economic losses in crops and animals
D) Source of vitamins
Answer: C) Cause economic losses in crops and animals

Unit 2

1□□ Prokaryotic cells differ from eukaryotic cells by lacking:

A) DNA
B) Plasma membrane
C) Nucleus with nuclear membrane
D) Ribosomes
Answer: C) Nucleus with nuclear membrane

2□□ Ribosomes in prokaryotes are of type:

A) 80S
B) 60S
C) 70S
D) 90S
Answer: C) 70S

3□□ Cell wall of most bacteria is made of:

A) Cellulose
B) Chitin
C) Peptidoglycan
D) Lignin
Answer: C) Peptidoglycan

4□□ Eukaryotic cells possess:

A) Plasmids
B) Membrane-bound organelles
C) 70S ribosomes only
D) Nucleoid region
Answer: B) Membrane-bound organelles

5□□ Gram-positive bacteria have:

A) Thin peptidoglycan layer
B) Thick peptidoglycan layer
C) Outer membrane
D) No cell wall
Answer: B) Thick peptidoglycan layer

6□□ Gram-negative bacteria are characterized by:

A) Presence of teichoic acid
B) Absence of outer membrane
C) Presence of lipopolysaccharides
D) Staining purple in Gram stain
Answer: C) Presence of lipopolysaccharides

7□□ The Gram stain was developed by:

A) Koch
B) Gram
C) Pasteur
D) Jenner
Answer: B) Gram

8□□ The genetic material in bacteria is present in:

A) True nucleus
B) Nucleoid region
C) Chloroplast
D) Mitochondria
Answer: B) Nucleoid region

9□□ The structure used for bacterial motility is:

A) Pili
B) Capsule
C) Flagella
D) Ribosome
Answer: C) Flagella

A bacterial capsule mainly functions in:

A) Energy production
B) Protection against phagocytosis
C) DNA replication
D) Nutrient synthesis
Answer: B) Protection against phagocytosis

1□□1□□ Chemotaxis in bacteria refers to:

A) Movement towards light
B) Movement in response to chemicals
C) Random movement
D) Only upward movement
Answer: B) Movement in response to chemicals

1□□2□□ Bacteria detect chemical gradients using:

A) Flagella only
B) Chemoreceptors
C) Capsules
D) Pili only
Answer: B) Chemoreceptors

1□□3□□ The phase where bacteria adapt to new environment is:

A) Lag phase
B) Log phase
C) Stationary phase
D) Death phase
Answer: A) Lag phase

1□□4□□ Maximum exponential growth occurs during:

A) Lag phase
B) Log (exponential) phase
C) Stationary phase
D) Decline phase
Answer: B) Log (exponential) phase

1□□5□□ Nutrient depletion and waste accumulation lead to:

A) Lag phase
B) Log phase
C) Stationary phase
D) Exponential phase
Answer: C) Stationary phase

1□□6□□ Mesophilic bacteria grow best at:

A) 0–15 °C
B) 20–45 °C
C) Above 55 °C
D) Below 0 °C
Answer: B) 20–45 °C

1□□7□□ Extreme halophiles require:

A) High temperature
B) High salt concentration
C) Low pH
D) Low oxygen
Answer: B) High salt concentration

1□□8□□ Facultative anaerobes can:

A) Only grow without oxygen
B) Only grow with oxygen
C) Grow with or without oxygen
D) Require extreme heat
Answer: C) Grow with or without oxygen

1□□9□□ Turbidity measurement using a spectrophotometer estimates:

A) Cell mass
B) Cell shape
C) Cell motility
D) Cell capsule size
Answer: A) Cell mass

2□□0□□ Viable count method counts:

A) All cells
B) Only dead cells
C) Only living cells capable of forming colonies
D) DNA molecules only
Answer: C) Only living cells capable of forming colonies

2□□1□□ Dry weight measurement is useful for:

A) Bacteria only
B) Filamentous microbes
C) Viruses only
D) All prokaryotes equally
Answer: B) Filamentous microbes

2□□2□□ Batch culture is:

A) Continuous supply of nutrients
B) Closed system with no new medium added
C) Open system
D) Chemostat operation
Answer: B) Closed system with no new medium added

2□□3□□ In synchronous growth, all cells:

A) Are in different stages
B) Divide at the same time
C) Are non-dividing
D) Are dead
Answer: B) Divide at the same time

2□□4□□ Synchronous growth is useful for studying:

A) Sporulation only
B) Specific cell cycle events
C) Antibiotic resistance only
D) Capsule synthesis only
Answer: B) Specific cell cycle events

2□□5□□ Sporulation in bacteria usually occurs under:

A) Optimal conditions
B) Starvation or stress conditions
C) Abundant water
D) High nutrient availability
Answer: B) Starvation or stress conditions

2□□6□□ Bacterial spores are resistant to:

A) Heat
B) Desiccation
C) Chemicals
D) All of the above
Answer: D) All of the above

2□□7□□ The core of bacterial endospores contains:

A) High water content
B) Calcium dipicolinate
C) Lipid granules only
D) No DNA
Answer: B) Calcium dipicolinate

2□□8□□ Transfer of DNA via bacteriophage is called:

A) Conjugation
B) Transformation
C) Transduction
D) Transposition
Answer: C) Transduction

2□□9□□ Direct transfer of DNA using a pilus is:

A) Transformation
B) Conjugation
C) Transduction
D) Sporulation
Answer: B) Conjugation

3□□0□□ Uptake of naked DNA from the environment by a bacterium is:

A) Transduction
B) Conjugation
C) Transformation
D) Mutation
Answer: C) Transformation