



3rd Semester Examination –2021-22

Subject : General Microbiology
Course : B.Sc. Biotechnology
Full Marks : 60

Roll No:

Time : 3 Hours.

Instructions to the Candidates:

- Read the question paper very carefully.
- Candidates are required to give their answers in their own words as far as practicable.
- Question Paper is divided into Three Parts –A, B & C.
- Part-A is containing 10 multiple choice questions & 5 very Short Answer Question.
- Part- B containing SIX questions out of which FOUR questions are to be answered.
- Part C containing FOUR questions out of which TWO questions are to be answered.
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PART A

MULTIPLE CHOICE QUESTIONS

(10x1=10)

1. Separation of a single bacterial colony is called
 - a. Isolation
 - b. Separation
 - c. Pure culturing
 - d. All of these
2. Which of the following is ionizing radiation?
 - a. U.V. rays
 - b. IR
 - c. γ -rays
 - d. None of these
3. Agar is obtained from
 - a. Brown algae
 - b. Red algae
 - c. Green algae
 - d. Blue-green algae
4. Which of the following is not a water borne disease?
 - a. Typhoid
 - b. Cholera
 - c. Scabies
 - d. Hepatitis
5. Presence of flagella all over the surface of bacteria is called
 - a. Lophotrichous
 - b. Peritrichous
 - c. Monotrichous
 - d. Amphitrichous
6. Any change that renders food unfit for human consumption is called
 - a. Processing
 - b. Spoilage
 - c. Deterioration
 - d. Preservation
7. The process by which foreign DNA is introduced into bacteria from environment directly is called
 - a. Transduction
 - b. Transformation
 - c. Replication
 - d. Conjugation
8. Amphi-catabolic pathway is
 - a. Glycolysis
 - b. Krebs's Cycle
 - c. Gluconeogenesis
 - d. Fermentation
9. The generation time is
 - a. The time required for the cell to divide
 - b. The total division of the cell during its life time
 - c. The total no. of cells formed
 - d. The time taken by the bacteria to double in number

10. In which stage of the growth in bacteria, cells are dividing regularly by binary fission and are growing by geometric progression

- a. Log phase
- b. Lag phase
- c. Stationary phase
- d. None of these

VERY SHORT QUESTION

(5x2=10)

- 1. Generation Time
- 2. Microbial phylogeny
- 3. Amphi-catabolic
- 4. Fermented Foods
- 5. Pasteurization

PART B

ANSWER ANY FOUR OUT OF SIX

(4x5=20)

- 1. Write short notes on
 - a) Endospore and
 - b) Transduction
- 2. Describe different nutritional categories of bacteria.
- 3. Write the difference between Prokaryotic and Eukaryotic cells.
- 4. What is endospore? Describe the structure of endospore.
- 5. Describe the different methods of preservation of bacteria?
- 6. Describe the different methods of preservation of various types of foods.

PART C

ANSWER ANY TWO OUT OF FOUR

(2x10=20)

- 1. What is transformation? Describe the mechanism of transformation in gram negative bacteria.
- 2. Describe different methods of bacterial growth measurement.
- 3. What is swage? Describe different methods of sewage treatment.
- 4. Discuss the Chemical method of control of microorganisms.



3rd Semester Examination –2021-22

Subject : Molecular Diagnostics
Course : B.Sc. Biotechnology
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PART A

MULTIPLE CHOICE QUESTIONS

(10x1=10)

1. The PCR cycle have following steps
 - a. Annealing, Denaturation, Elongation
 - b. Denaturation, Annealing, Elongation
 - c. Elongation, Annealing, Denaturation
 - d. Denaturation, Elongation, Annealing
2. Variation between individuals due to single base change is called as
 - a. SNPs
 - b. ESTs
 - c. Contigs
 - d. None of these
3. Western blotting is the technique for the detection of
 - a. Specific DNA in a Sample
 - b. Specific RNA in a Sample
 - c. Specific Protein in a Sample
 - d. Specific glycolipid in a Sample
4. Enzyme immunoassays is widely used for molecular diagnosis because
 - a. Safe
 - b. High- throughput
 - c. High sensitivity
 - d. All of these
5. Which of the following is the first step in immunohistochemistry?
 - a. Treating samples with fixative
 - b. Blocking binding sites with low-fat milk
 - c. Antigen retrieval
 - d. Applying the primary antibody
6. The concentration of antibiotic which show no visible growth of bacteria is called
 - a. Minimum inhibitory concentration
 - b. Maximum inhibitory concentration
 - c. Maximum bactericidal concentration
 - d. All of these
7. Which of the following can influence the level and pattern of transgene expression?
 - a. If the location(s) of transgene insertion is random
 - b. If the number of transgene copies that integrate into the genome is random
 - c. If the transgene may be inserted into a region of transcriptionally silent DNA
 - d. All of the above
8. Which fluorescent dye can be used for red fluorescence?
 - a. Rodamine
 - b. Carmine
 - c. DAPI
 - d. Fluorescein

9. Which among the following helps us in getting a three-dimensional picture of the specimen?
a. TEM
b. SEM
c. Both of these
d. None of these
10. RIA was developed by
a. Berson & Yalow
b. Chals & Wastone
c. Vector & Logan
d. Lewis & Bronstand

VERY SHORT QUESTION

(5x2=10)

- a) Enzyme immunoassays
- b) Transgenesis
- c) Epitope
- d) Horse reddish peroxidase
- e) Monoclonal antibody

PART B

ANSWER ANY FOUR OUT OF SIX:

(4x5=20)

- 1. Write short notes on
 - a) DNA hybridization and
 - b) Single nucleotide polymorphism
- 2. What is PCR? Write the steps of PCR.
- 3. What is an enzyme immunohistochemically technique?
- 4. What is a transgenic animal? Write the application of transgenic animals.
- 5. Describe different methods of technical purification of antigen.
- 6. Describe micro-dilution and macro-dilution broth procedures of antibiotic susceptibility test.

PART C

ANSWER ANY TWO OUT OF FOUR:

(2x10=20)

- 1. What is Electron microscopy? Describe the working principal of Electron microscopy with labeled diagram.
- 2. What is enzyme immunoassay? Write the different enzymes available for enzyme immunoassays.
- 3. Describe different methods of technical purification of antibody.
- 4. Describe the different methods of laboratory tests in chemotherapy?



3rd Semester Examination –2021-22

Subject : Bacteriology & Virology
Course : B.Sc. Biotechnology
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PART A

MULTIPLE CHOICE QUESTIONS

(10x1=10)

1. Which is the reserved food material of bacteria
a. Polyhydroxybutyrate
b. Cyanophycin granules
c. Oil droplets
d. All of these
2. The media which allow to grow a specific type of bacteria is called
a. Differential Media
b. Enriched Media
c. Selective Media
d. None of these
3. Which of the following does not kill Endospores?
a. Autoclave
b. Pasteurization
c. Hot air sterilization
d. Incineration
4. Nitrogen-rich, polypeptide-like storage material of cyanobacteria and heterotrophic bacteria is called
a. Poly- β -hydroxybutyrate (PHB)
b. Cyanophycin (CGP)
c. Sulphur globules
d. Polyphosphate granules
5. Which of the following is vapor-phase disinfectant?
a. Hypochloric acid
b. Ethylene oxide
c. Iodophores
d. None of these
6. A fully formed infectious viral particle is called as
a. Viroid
b. Capsid
c. Virion
d. Virusoid
7. The receptor recognized by HIV for the attachment to the host cell is
a. ICAM-1
b. CD46
c. CD4 & CXCR4
d. DC-SIGN
8. The best accepted hypothesis for virus origin is
a. The Progressive Hypothesis
b. The Regressive Hypothesis
c. The Virus-First Hypothesis
d. None of these
9. The envelope of an enveloped virus is derived from
a. Cell membrane
b. Mitochondrion of the cell
c. Endoplasmic reticulum of the cell
d. None of these

10. Which of these infectious agents do not have nucleic acid?
- a. Viroid
 - b. Viruses
 - c. Bacteria
 - d. Prions

VERY SHORT QUESTION

(5x2=10)

1. Magnetosomes
2. HIV
3. Unique feature of virus
4. Synchronous culture
5. Endospore

PART B

ANSWER ANY FOUR OUT OF SIX:

(4x5=20)

1. Write short notes on
 - a) Carboxysomes and
 - b) Transduction
2. Describe the mechanism of attachment and penetration of virus to host cell.
3. Write the factors affecting growth of bacteria.
4. Describe different therapeutics drug used for the treatment of viruses.
5. Describe different mode of transport mechanisms in prokaryotes.
6. Describe the emerging viruses with example.

PART C

ANSWER ANY TWO OUT OF FOUR:

(2x10=20)

1. What is transformation? Describe the mechanism of transformation in gram negative bacteria.
2. Describe different reserve food material of bacteria.
3. Describe the different classes of virus on the basis of their genetic material with example
4. Describe any viruses causing diseases in man.



3rd Semester Examination –2021-22

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Course : B.Sc. Biotechnology
Full Marks : 60

Roll No:

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MULTIPLE CHOICE QUESTIONS:

[10x1=10]

1. When heterozygous is crossed with homozygous recessive, the cross is called
 - a. Back cross
 - b. Test cross
 - c. Lethal cross
 - d. None of these
2. In incomplete dominance _____
 - a. Phenotype of only one allele is expressed
 - b. Phenotype of both allele is expressed
 - c. Phenotype of both allele is partially expressed
 - d. Phenotype of neither of the alleles are expresses
3. The “one gene – one polypeptide” theory states that
 - a. The synthesis of each gene is catalyzed by one specific enzyme.
 - b. The synthesis of each enzyme is catalyzed by one specific gene.
 - c. The function of an individual gene is to dictate the production of a specific polypeptide.
 - d. Each polypeptide catalyzes a specific reaction.
4. Which of the following has beads on a string structure?
 - a. Chromosomes
 - b. Chromatin
 - c. Nucleosomes
 - d. Heterochromatin
5. What is the maximum number of allele that monohybrid cross can consider?
 - a. 1
 - b. 2
 - c. 4
 - d. 8
6. Mutation in a codon leads to the substitution of one amino acid with another. What is the name for this type of mutation?
 - a. Nonsense mutation
 - b. Missense mutation
 - c. Frameshift mutation
 - d. Promoter mutation
7. The appearance of a recessive phenotype due to deletion of dominant gene is called _____
 - a. Hemi-dominance
 - b. Pseudo dominance
 - c. Imperfect dominance
 - d. Co-dominance
8. Which of the followings is male in grasshopper?
 - a. XX
 - b. XY
 - c. X
 - d. Y
9. How many linkage group are present in human (male)
 - a. 23
 - b. 46
 - c. 24
 - d. none of the above

10. Genes located on Y chromosomes are

- a. Autosomal genes
- c. holandric genes

- b. sex influenced gene
- d. mutant genes

VERY SHORT QUESTIONS

[5x2=10]

1. Define Paracentric inversion and pericentric inversion.
2. Define frameshift mutation and gametic mutation.
3. Define Law of segregation.
4. Define SINE and LINE elements.
5. Incomplete Penetrance and its example.

PART B

ANSWER ANY FOUR OUT OF SIX:

[4x5=20]

1. Discuss complete and incomplete linkage.
2. Discuss Robertsonian translocation.
3. Differentiate between Euchromatin and heterochromatin.
4. Define monoplody, polyploidy and their significance.
5. What is dominant epistasis, Discuss with punnet square.
6. Discuss Eukaryotic genome organization.

PART C

ANSWER ANY TWO OUT OF FOUR:

[2x10=20]

1. What are model organism, why are they used in genetic research, Discuss any three.
2. Discuss about polytene and lampbrush chromosome.
3. Discuss Mechanism of sex determination.
4. Discuss about Structural chromosomal mutation (Any Two Aspects).