

Nizam College (Autonomous)

Faculty of Science

B.SC. I- Semester Examinations, January - 2023

Microbiology : Paper-I

Time: 3 Hours

Max. Marks: 80

Section – A

I. Answer any *EIGHT* of the following questions.

[8 x 4 = 32]

1. Capsule Staining method
2. Robert Koch
3. Applications of Microorganisms in Medical field
4. HIV
5. Lyophilization
6. Enrichment Culture
7. ED pathway
8. Autotrophs
9. Simple & Complex Media
10. Autoclave
11. Micromanipulator
12. Viable Count

Section – B

II. Answer the following questions using internal choice.

[4 x 12 = 48]

- 13 (a) Discuss the importance and Applications of Microbiology in detail.
[OR]
(b) Give a suitable illustration of bright field Microscope and discuss the Functioning of its essential parts.
- 14 (a) Write an essay on General Characters of Viruses.
[OR]
(b) Explain Structure and Multiplication of Lambda Phage.
- 15 (a) Explain how TCA Cycle Works?
[OR]
(b) Write an essay on Electron Transport Chain.
- 16 (a) Explain Various Factors Influencing Bacterial Growth.
[OR]
(b) Write an essay on Chemical methods of Sterilization.

Time: 3 Hours

Max. Marks: 80

Section - A*I. Answer any EIGHT of the following questions.*

[8 x 4 = 32]

1. Dark Field Microscope
2. Hanging drop method
3. Microbes in Food industry
4. Enrichment culture
5. Cyanobacteria
6. Lyophilization
7. ED pathway
8. Growth Media
9. Mixotrophs
10. Radiation methods
11. Viable count
12. Continuous culture

Section - B*II. Answer the following questions.*

[4 x 12 = 48]

- 13 (a) Write an essay on fluorescent Microscopy?
[OR]
(b) Write about contributions of Louis Pasteur and Robert Koch?
- 14 (a) Explain Morphology & structure of TMV?
[OR]
(b) Describe ultra structure of bacteria.?
- 15 (a) Explain various nutritional methods in bacteria?
[OR]
(b) Describe oxidative and substrate level phosphorylation?
- 16 (a) Explain microbial growth curve in batch culture and explain the factors influencing growth curve?
[OR]
(b) Define sterilization. Explain different types of physical methods of sterilization.?

Nizam College (Autonomous)
Faculty of Science
B.S.C. I- Semester Examinations, December - 2023
Microbiology : Paper – 1
(General Microbiology)

Code No. 23D/129 /NC/MB

Time: 3 Hours

Max. Marks: 80

Answer any EIGHT of the following questions.

Section – A

1. Scope of Microbiology
2. Difference between SEM & TEM
3. Capsule staining
4. Mycoplasma
5. Bergey's Manual
6. TMV
7. Mixotrophs
8. Components of simple media for bacterial growth
9. Substrate level phosphorylation
10. Micromanipulator
11. Sand culture Preservation
12. Viable count

[8 x 4 = 32]

Section – B

Answer the following questions.

[4 x 12 = 48]

3. (a) Give a suitable illustration of a Bright field microscope & explain the functions of its essential parts?
[OR]
(b) Describe in detail the principle and procedure of differential staining?
4. (a) What is prokaryotes? Discuss the general characters of eubacteria in detail?
[OR]
(b) Explain the structure and multiplication of lambda bacteriophage.
5. (a) Write a detail note on nutritional groups of microorganisms.
[OR]
(b) Explain in detail about the ED Pathway.
6. (a) Define disinfection and explain in detail about disinfection agents?
[OR]
(b) Explain the microbial growth phases and factors influencing microbial growth, in detail.

CODE NO: 23M229/NC/MB-B/L

NIZAM COLLEGE (AUTONOMOUS)
FACULTY OF SCIENCE
B.SC. II-SEMESTER EXAMINATIONS MAY - 2023
MICROBIOLOGY : PAPER -II

[TIME: 2 HOURS]

SECTION-A
(Short Answer Questions)

[Max. MARKS=40]
[4x3=12]

1. Fatty acids
2. Enzymes
3. Methylotrophs
4. Growth curve

SECTION-B
(Essay Answer Questions)

[4x7=28]

5. (a) Write an essay on general characters of carbohydrates.

[OR]

(b) Discuss about Structure and synthesis of peptidoglycan in detail.

6. (a) What is pH. Describe the equipment used for measurement of pH in detail.

[OR]

(b) What are different types of Enzyme inhibition?

7. (a) Explain different types of nutrition in bacteria.

[OR]

(b) Write about different types of culture media used in microbiological laboratory.

8. (a) Define growth. Explain different factors affecting bacterial growth.

[OR]

(b) Write an essay on sporulation in bacteria.

Code No. 23J329 /NC/MB

Nizam College (Autonomous)
Faculty of Science

B.SC. III- Semester Examinations, January - 2023

Microbiology : Paper-3
(Food & Environmental Microbiology)

Time: 3 Hours

Max. Marks: 80

Section - A

Answer any **EIGHT** of the following questions.

[8 x 4 = 32]

1. Fermented foods
2. Significance of microorganisms in milk
3. Cheese
4. Canned foods
5. Microbial Spoilage of foods
6. Mycotxins
7. Impingement method
8. Foodborne pathogens
9. coliform test
10. Physical properties of soil
11. Microbial degradation
12. Carbon cycle

Section - B

Answer the following questions using internal choice

[4x12 = 48]

- 13 (a) Write about production process and microbes involved in of microbial products of Milk.
[OR]
(b) What is SCP? Add a note on Microorganisms as food.
- 14 (a) What are various methods of quality Assessment of food.
[OR]
(b) Write about various food preservation methods and safety issues.
- 15 (a) Define potable. Write about the microbial examination of water.
[OR]
(b) Define Sewage and its composition. Write about Biological Sewage Treatment Process.
- 16 (a) Briefly explain about Microbial Bioremediation.
[OR]
(b) Add a note on microbes and plant interaction Rhizosphere, Phyllosphere, Mycorrhizae.

CODE NO.23M329/NC/MB-3

NIZAM COLLEGE(AUTONOMOUS)
FACULTY OF SCIENCE
B.Sc. III-SEMESTER EXAMINATIONS MAY - 2023
MICROBIOLOGY: PAPER-3

Time: 2 Hours

Max. Marks: 40

SECTION-A (4 × 3=12)

(Short Answer Questions)

1. Micronutrients
2. Enriched media
3. HMP pathway
4. Allosteric inhibition

SECTION-B (4 × 7=28)

(Essay Questions)

5. a) Add a note on Photosynthetic apparatus in prokaryotes.
OR
b) Write about nutritional groups of bacteria.
6. a) Define Microbial Growth. Write about different phases of growth in batch culture
OR
b) Write about the different methods of measurement of bacterial growth.
7. a) Add a note on the TCA cycle and its significance.
OR
b) Add a note on the β -oxidation of fatty acid.
8. a) Define enzyme inhibition. Write about competitive, non competitive and uncompetitive inhibition.
OR
b) Write about biocatalysis of enzymes mechanism.

Nizam College (Autonomous)
Faculty of Science
B.SC. III- Semester Examinations, December - 2023
Microbiology : Paper – III
(Food and Environmental Microbiology)

Time: 3 Hours

Max. Marks: 80

Section – A

I. Answer any EIGHT of the following questions.

[8 x 4 = 32]

1. Microflora of Fermented food- Idly
2. Prebiotic
3. Significance of Dairy microorganisms
4. Food irradiation
5. Importance of quality control in Food industry
6. Microorganisms of Food spoilage
7. Water borne pathogens
8. Trickling filter
9. Indicator Microorganisms
10. Phyllosphere
11. Bioremediation
12. PGPR

Section – B

II. Answer the following questions.

[4 x 12 = 48]

13. (a) What is the name of fermented vegetable made of cabbage? Explain the process of fermentation and its health benefits.

[OR]

(b) Explain the process of cheese preparation, highlighting the steps involved, add a note on types of chesses available.

14. (a) Define Mycotoxins. Explain various types of mycotoxins and their toxicity.

[OR]

(b) Describe the methods used to detect the pathogens in food.

15. (a) Give a detailed discussion on airborne microorganisms and elaborate on their roles and significance in the environment.

[OR]

(b) What are the organic water pollutants and how do they contribute to water body pollution?

16. (a) What is mycorrhizae. Explain various types of Mycorrhizae and their significance in plant growth.

[OR]

(b) Describe the steps of the Carbon cycle using a schematic diagram? Add a note on the importance of microbes in facilitating the nitrogen cycle.

NIZAM COLLEGE (AUTONOMOUS)
FACULTY OF SCIENCE
B.Sc. IV-SEMESTER EXAMINATIONS, MAY - 2023
MICROBIOLOGY: PAPER-4

[Time: 2 Hours]

SECTION-A
(Short Answer Questions)

[Max.Marks.40]
(4x3=12)

1. Salmonellosis
2. Cheese
3. Carbon Cycle
4. Phyllosphere

SECTION-B
(Essay Questions)

(4x7=28)

- 5.a) Write an essay on food intoxication.
OR
b) Explain spoilage of meat and fish.
- 6.a) Describe different methods for food preservation
OR
b) Explain the concept of probiotics with suitable examples and health benefits.
7. a) Write an essay on sanitation of potable water.
OR
b) Describe different microorganisms present in environment.
8. a) Define biopesticide. Explain the role of biopesticides in protection of crops.
OR
b) Describe different plant growth promoting microorganisms.

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NIZAM COLLEGE (AUTONOMOUS)
FACULTY OF SCIENCE
B.SC. IV- SEMESTER EXAMINATIONS, MAY – 2023
MICROBIOLOGY : PAPER - IV
(MEDICAL MICROBIOLOGY)

TIME: 3 HOURS

MAX. MARKS: 80

SECTION – A

I. Answer any EIGHT of the following questions.

[8 x 4 = 32]

1. Drug resistance
2. Attenuation
3. Nosocomial infections.
4. Corona Virus
5. Dengue fever
6. Amocriasis
7. Natural killer cells
8. Active Immunity
9. Lymph nodes
10. Complement fixation pathway
11. Precipitation Test
12. Blood group

SECTION – B

II. Answer the following questions using internal choice.

[4 x 12 = 48]

13. (a) Write an account on nosocomial infections.

[OR]

- (b) Discuss etiological agent, pathogenesis, diagnosis, epidemiology , prophylaxis and treatment of tuberculosis.

14. (a) What is zoonosis? Write an account on Ralues.

[OR]

- (b) Write an account on causative agent, pathogenesis, diagnosis, epidemiology and control of poliomyelitis.

15. (a) Describe functions of B&T lymphocytes.

[OR]

- (b) Write an account on properties and types of antigens and factors affecting antigenicity.

16. (a) What is immunoflowrescence? explain in detail RIA

[OR]

- (b) What is ELISA? Explain different types of ELISA and their applications in diagnosis.

Code No. 23J529 /NC/MB

Nizam College (Autonomous)

Faculty of Science

B.SC. V- Semester Examinations, January - 2023

Microbiology : Paper-5

Time: 3 Hours

Max. Marks: 80

Section – A

I. Answer any EIGHT of the following questions.

[8 x 4 = 32]

1. Genomics
2. Transcriptomics
3. Proteomics
4. NMR
5. Homology modeling
6. Protein Markers
7. functional genomics
8. Transposon mutagenesis
9. Microbial genome projects
10. NCBI
11. BLAST
12. Phylogenetic Tree Construction

Section – B

II. Answer the following questions using internal choice

[4x 12 = 48]

13 (a) What is Next- Generation Sequencing. Write about basic methods for use in food-microbiology, diagnostics and Human health?

[OR]

(b) Add a note on Multi-omics approach for analysis of Microbial biology?

14 (a) What Proteins? Write about different Protein 3D structure prediction methods?

[OR]

(b) Define Protein Engineering. Write about different methods applied in Protein Engineering?

15 (a) Write about the DNA microarray?.

[OR]

(b) Discuss about Genome editing tools CRISPR/Cas9?

16 (a) Add a note Bioinformatics Secondary Databases UNIPROT and Structural Database PDB?

[OR]

(b) Add a note on Primer Designing in Bioinformatics?

Code No. 23M529 /NC/MB

Nizam College (Autonomous)
Faculty of Science
B.SC. V- Semester Examinations, May - 2023
Microbiology : Paper-5

Time: 3 Hours

Max. Marks: 80

Section – A

I. Answer any EIGHT of the following questions.

[8 x 4 = 32]

1. Metabolomics
2. Transcriptomics
3. Proteomics
4. NMR
5. Homology modeling
6. Prions
7. functional genomics
8. Site-directed mutagenesis
9. Microbial genome projects
10. NCBI
11. FASTA
12. Phylogenetic Tree Construction

Section – B

II. Answer the following questions using internal choice

[4x12 = 48]

13. (a) What is Next- Generation Sequencing. Write about basic methods for use in food-microbiology, diagnostics and Human health?
[OR]
(b) What is Multi-Omics? Write about various approach for analysis of Microbial Biology?
14. (a) What Proteins? Write about different Protein 3D structure prediction methods?
[OR]
(b) Define Protein Engineering. Write about different methods applied in Protein Engineering?
15. (a) Write about the Applications of functional genomics in vaccine and drug designing?
[OR]
(b) Discuss about Genome editing tools CRISPR/Cas9?
16. (a) Add a note Bioinformatics Secondary Databases UNIPROT and Structural Database PDB?
[OR]
(b) Add a note on Genome Annotation and Gene Prediction?

Nizam College (Autonomous)
Faculty of Science
B.SC. V- Semester Examinations, December - 2023
Microbiology : Paper-5
(Molecular Biology & Microbial Genetics)

Time: 3 Hours

Max. Marks: 80

Section – A
I. Answer any EIGHT of the following questions.

[8 x 4 = 32]

1. Law of Independent assortment
2. Incomplete DOMINANCE
3. Okazaki fragments
4. SOS repair
5. Transformation in bacteria
6. Base Substitution mutations
7. Peptidyl transferase
8. One Gene-One Product hypothesis
9. Cistron
10. Reverse transcriptase
11. Restriction endonucleases
12. c DNA

Section – B

II. Answer the following questions.

[4x 12 = 48]

13. (a) Explain the double helix model of DNA (Watson and Crick model) with the help of a suitable diagram.
[OR]
(b) What are Transposons. Write on types of transposons and mechanism of transposition and add a note on significance of transposons.
14. (a) Define mutagen. Discuss about chemical mutagens and their mode of action of induction of mutations.
[OR]
(b) Write about the process of gene transfer in bacteria by conjugation.
15. (a) What is genetic code? Explain characteristics of genetic code.
[OR]
(b) Define gene regulation. Explain gene regulation in transcription level in prokaryotes taking Lac operon as an example.
16. (a) What are vectors? Write about different types of gene cloning and gene expression vectors used in genetic engineering.
[OR]
(b) Discuss about applications of genetic engineering in Agriculture, medicine and industry.

NIZAM COLLEGE (AUTONOMOUS)
FACULTY OF SCIENCE
B.SC. VI- SEMESTER EXAMINATIONS, MAY – 2023
MICROBIOLOGY : PAPER - VI
(INDUSTRIAL MICROBIOLOGY)

TIME: 3 HOURS

MAX. MARKS: 80

SECTION – A

I. Answer any EIGHT of the following questions.

[8 x 4 = 32]

1. Yeast
2. Actinomycetes
3. Protoplast Fusion
4. Antifoams
5. Air lift fermentor
6. Downstream Processing
7. Diauxic growth
8. Solid State Fermentation
9. Lactic acid fermentation
10. Vitamin B₁₂
11. Recombinant vaccines
12. Citric acid

SECTION – B

II. Answer the following questions using internal choice.

[4 x 12 = 48]

13. (a) What is strain improvement? Explain various strategies for the improvement of industrially importance microorganisms.
[OR]
(b) Define immobilization. Write about various immobilization methods used.
14. (a) Discuss design of a bioreactor and its applications.
[OR]
(b) Write an essay on the raw materials used in the fermentation industry.
15. (a) What is Fed-batch Fermentation and explain various types of fed batch fermentation.
[OR]
(b) Explain in detail, various steps involved in Alcohol fermentation. Add a note on the microorganisms involved.
16. (a) What are antibiotics? Write in detail about the industrial production of Penicillin.
[OR]
(b) Explain different strategies for the disposal of industrial waste.
