R8394	Sub. Code
	530201

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Microbiology

MOLECULAR BIOLOGY AND MICROBIAL GENETICS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** questions.

1. Left handed double helix is a feature of

   (a) B DNA (b) Z DNA

   (c) C DNA (d) A ADNA

2. Chemical compound produced by wounded plants which attracts bacteria is

   (a) Terpenes (b) Acetocarmine

   (c) Opines (d) Acetosyringone

3. Key enzyme associate with blue-White screening is

   (a) β Galactosidase (b) X - gal

   (c) Amylase (d) HGPRT

4. Photo lyase is associated with

   (a) Mutation (b) Recombination

   (c) Polymerisation (d) DNA repair

5. Klenow fragment is a part of

(a) Polymerase II (b) Polymerase III

(c) Polymerase I (d) Polymerase IV

6. Rho proteins are involved in

(a) Termination (b) Polymerisation

(c) Initiation (d) Elongation

7. Wobble hypothesis is regarding

(a) Base pairing in rRNA

(b) Base pairing in mRNA

(c) Base pairing in tRNA

(d) Base pairing in RNA

8. Which of the following is an example for repressible operon

(a) Ara operon (b) Lac operon

(c) Trp operon (d) None of them

9. A process of genetic recombination in bacteria in which genes from host bacteria is incorporated in to bacteriophage is

(a) Transduction (b) Conjugation

(c) Recombination (d) Transformation

10. Rec A function as

(a) Ligase

(b) DNA repair protein

(c) Transcription factor

(d) Translation factor

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a short note on types of vectors.

Or

(b) What is Ti plasmid? Explain its features.

12. (a) With example mention about any five mutagens.

Or

(b) Describe about UV induced mutation and its repair mechanism.

13. (a) Briefly explain various models of DNA replication.

Or

(b) Differentiate - Prokaryotic and eukaryotic ribosomes.

14. (a) Explain about chaperons and the role in metabolism.

Or

(b) Briefly describe Wobble hypothesis.

15. (a) What is recombination? Explain its significance.

Or

(b) Write a short note on Holliday model of recombination.

Part C

$(5 \times 8 = 40)$

Answer any **five** questions.

16. Discuss in detail about mechanism of Agrobacterium mediated gene transfer.

17. What is DNA repair mechanism? Write its importance.

18. Elaborately discuss the post translational modification of proteins.

19. Write an essay on operon concept with Trp operon as example.

20. Explain site specific recombination in a bacterial cell with diagram.

21. Explain in detail about enzymes involved in prokaryotic DNA replication.

22. Describe in detail about the signal transduction and protein degradation.

23. Explain in detail about the methods of selecting bacterial variants.

———————

R8395	Sub. Code 530202

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Microbiology

rDNA TECHNOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. SV 40 stands for

   (a) Salmonella Virus 40

   (b) Shigella Virus 40

   (c) Strepto Virus 40

   (d) Simian Virus 40

2. Cosmids are Plasmids with sequences of

   (a) Lambda phage (b) BAC

   (c) YAC (d) None of them

3. Northern blotting is used to detect

   (a) DNA (b) RNA

   (c) Proteins (d) Antibodies

4. Insertional inactivation is observed in

(a) Sequencing

(b) Recombination

(c) α Complementation

(d) DNA repair

5. A primer can be ———— bp in length.

(a) 15 – 25 (b) 10 – 15

(c) 20 – 30 (d) 40 – 45

6. Suitable method to obtain multiple copies from RNA genome virus

(a) RAPD (b) RFLP

(c) PCR (d) RT-PCR

7. Human insulin is a ———— hormone.

(a) Steroid hormone

(b) Peptide hormone

(c) Glycoprotein hormones

(d) Amino acid derived

8. Chemically Xanthum gum is

(a) Polysaccharide (b) Glycolipid

(c) Glycoprotein (d) Disaccharide

9. Competent cells are prepared by incubating them with

(a) Sodium Chloride

(b) Potassium Fluoride

(c) Calcium chloride

(d) Calcium Fluoride

10. RNAi technology involves inhibition of

(a) Gene expression (b) DNA Replication

(c) Transcription (d) Recombination

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Write briefly about features of pBR322.

Or

(b) Explain about various enzymes used in rDNA technology.

12. (a) Write about mechanism of southern blotting.

Or

(b) What is cDNA library? Explain the applications of cDNA?

13. (a) Differentiate – Sanger's Sequencing and NGS.

Or

(b) Briefly describe the applications of RAPD.

14. (a) What are the benefits of using biopolymers over synthetic counter parts?

Or

(b) Give an account on human insulin synthesis.

15. (a) Write a short note on Ti plasmid with the help of diagram.

Or

(b) Briefly explain microinjection procedure.

Part C

$(5 \times 8 = 40)$

Answer any **five** questions.

16. Write an essay on the advantages of artificial chromosome vectors over plasmids and its disadvantages.

17. What are shuttle vectors? Describe with example and its importance.

18. Write an essay on Human Genome Project and advantages of human gene database.

19. What are the steps involved in designing a Vector system? Explain.

20. What are the advantages of using *E.coli* as expression system for various industrial and research purpose?

21. Explain in detail about bio steroid transformation procedure.

22. Write essay on gene therapy and its mechanism of gene incorporation.

23. Write an essay on "rDNA technology and advancement in field of medical science".

———————

R8396

Sub. Code
530203

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Microbiology

FOOD MICROBIOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Food spoilage refers to
   (a) Breakdown of nutrients
   (b) Microbial action
   (c) Enzymatic degradation
   (d) All of the above

2. Common chemical food preservatives are
   (a) Oxides (b) Benzoates
   (c) Chlorides (d) None of them

3. Factors affecting microbial growth includes
   (a) pH (b) Humidity
   (c) Temperature (d) All of them

4. Microbial growth is maximum in
   (a) Lag phase (b) Log phase
   (c) Decline phase (d) Stationary phase

5. ISI stands for

(a) Indian Standards Institute

(b) Indian Statistical Institute

(c) International Statistical Institute

(d) International Standards Institute

6. Irradiation is a method of preservation by

(a) UV rays (b) IR rays

(c) Gamma rays (d) X rays

7. Kumiss is produced from

(a) Cow milk (b) Buffalo milk

(c) Goat milk (d) Mare milk

8. Bacterial species which can resist high temperatures are collectively called as

(a) Thermoduric (b) Thermophilic

(c) Thermostatic (d) Barophilic

9. Reo viruses transmitted by

(a) Air

(b) Droplets

(c) Contaminated food

(d) Insects

10. Botulinum toxin is produced by

(a) Fungus (b) Bacteria

(c) Plant (d) Virus

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Common bacterial species in soil – Explain.

Or

(b) What causes food spoilage? Mention any two chemical methods of preservation.

12. (a) Briefly explain about intrinsic factors favouring microbial growth.

Or

(b) How do temperature influence fungal growth? Describe.

13. (a) Give an account on physical methods of food preservation.

Or

(b) Write a short note on AGMARK

14. (a) What is Fermentation? Explain any five fermented milk products and its usage.

Or

(b) Explain the sources and possibilities of milk spoilage.

15. (a) What is food borne bacterial disease? Explain with one example.

Or

(b) Briefly explain Aflotoxicosis.

Part C

$(5 \times 8 = 40)$

Answer any **five** questions.

16. Compare and elaborate on traditional and modern methods of food preservation.

17. Mention about advantages and disadvantages of chemical methods of food preservation.

18. What all parameters can be controlled in order to prevent microbial growth in foods?

19. What is the role of FDA in marketing food products?

20. Discuss in detail about cold storage and mechanism of preservation.

21. Briefly discuss on cheese production with two examples.

22. Write essay on 'Lactobacilli and dairy industry'.

23. What are the fungal pathogens associated with food borne disease? With example explain in detail.

———————

R8397	Sub. Code
	530503

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Microbiology

AGRICULTURE AND ENVIRONMENTAL MICROBIOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** questions.

1. Which of the following is called Joker of microbiological park?

   (a) Bacteria (b) Fungi

   (c) Mycoplasma (d) Virus

2. The endomycorrhiza is also called

   (a) Mat forming

   (b) Hartig nets

   (c) VAM

   (d) Glomeromycetes mycorrhizas

3. Find the odd one from the given option

   (a) Downy mildew (b) Blast of paddy

   (c) Citrus canker (d) Soft rot

4. Phytoalexins are produced

(a) During flowering (b) Throughout life cycle

(c) During early stage (d) During infection

5. Which one is represent the fossil fuel?

(a) Oxygen (b) Nitrogen

(c) Carbon (d) Phosphorus

6. In nitrification ammonia is converted into

(a) Nitrogen (b) Nitrite

(c) Ammonia nitrite (d) Nitrate

7. Secondary metabolites are produced in

(a) Lag phase (b) Log phase

(c) Stationary phase (d) Decline phase

8. The coastal adjunct of the marine ecosystem is

(a) Stream (b) Estuary

(c) Pond (d) Lakes

9. Biomass gastification product is

(a) Carbon (b) Nitrogen

(c) Ammonia (d) Hydrogen

10. Activated sludge process is the best method to removal of

(a) Bacteria (b) Fungi

(c) Virus (d) All of the above

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write about the scope of soil microflora.

Or

(b) Give a brief account on the role of rhizosphere and its symbiotic association in root nodules.

12. (a) Define phytoalexins and their role in defence against plant disease.

Or

(b) List out the application of NPV in crop protection.

13. (a) Write a brief notes on droplet and droplet nuclei.

Or

(b) Definition, process and improvement of sulphur cycle.

14. (a) Explain the types of hydrothermal vents and its importance.

Or

(b) Write short notes on microbial consortium.

15. (a) Differentiate between vermicompost and termicompost.

Or

(b) Illustrate the purpose of landfills in solid waste disposal.

Part C

$(5 \times 8 = 40)$

Answer any **five** questions.

16. Write an essay on the classification properties and structure of soil.

17. Give an account of blast of paddy with reference to casual organism, symptoms and control measure.

18. Define biological nitrogen fixation and explain its importance.

19. Explain the different types of aquatic habitats.

20. Define biogas. How its produced from solid waste?

21. Explain the different types of microbial interaction.

22. Discuss about the spread, types and how to prevent the airborne transmission of microbes.

23. What are the factors affecting microbial growth?

———————