

**R6742**

**Sub. Code**

**530201**

**M.Sc. DEGREE EXAMINATION, APRIL – 2022**

**Second Semester**

**Microbiology**

**MICROBIAL GENETICS**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. Integrase.
2. Transposable elements.
3. Hypermutation.
4. DNA methylation.
5. Structural genes.
6. Catabolite activator protein.
7. ColE1.
8. CsCl
9. Site-specific recombination.
10. Int protein.

**Part B**

(5 × 5 = 25)

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

11. (a) Write the direct and indirect methods of mutant selection.

Or

- (b) Write an essay on mutagenesis and mutagenic agent.

12. (a) How photo reactivation recover the cell from biological damage?

Or

- (b) Illustrate the mechanism of SOS repair.

13. (a) Write notes on catabolite repression.

Or

- (b) Give an account on *ara* operon.

14. (a) Discuss on transfer of plasmid DNA.

Or

- (b) Describe (i) rolling circle (ii) ColE1, and (iii) Iteron containing replication.

15. (a) Summarize the enzymes and proteins involved in recombination.

Or

- (b) Write the process of conjugation.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Give detailed notes on origin of mutation.

17. Write an essay on DNA damage.

18. Illustrate the positive and negative regulation of *lac* operon.
  19. Write an essay on detection and purification of plasmid DNA.
  20. Give detailed notes on types of recombination.
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**R6743**

**Sub. Code**

**530202**

**M.Sc. DEGREE EXAMINATION, APRIL – 2022**

**Second Semester**

**Microbiology**

**rDNA TECHNOLOGY**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. *Hae III*
2. Klenow fragment
3. IPTG.
4. Reverse transcriptase.
5. GC clamp
6. Fluorochromes.
7. *melC*.
8. 3-phosphoglycerate kinase.
9. Position effect.
10. RISC.

**Part B**

(5 × 5 = 25)

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

11. (a) Explain the structure and mechanism of T4 polynucleotide kinase.

Or

- (b) Differentiate the plasmids and phagemids.

12. (a) Discuss on shotgun cloning.

Or

- (b) Write the principle and detailed protocol of protein immunoblot.

13. (a) Discuss on automated sequencing with suitable example.

Or

- (b) Give an account on principle and application of microarray.

14. (a) Write short notes on production and application of Xanthum gum.

Or

- (b) Illustrate the cloning of human insulin in bacterial host.

15. (a) Illustrate the mechanism of Si RNA gene silencing.

Or

- (b) Give an account on organization of Ti plasmid and T-DNA transfer.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Describe the expression level of promoters
  - (a) T7
  - (b) Sp6
  - (c) SV-40
  - (d) CaMV 35s.
17. Explain the process of genomic DNA cloning and library construction.
18. Illustrate the Sanger and Maxam Gilbert's sequencing methods.
19. How metabolic engineering helps in melanin synthesis in *E.coli*?
20. Give detailed notes on DNA delivery methods.

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**R6744**

**Sub. Code**

**530203**

**M.Sc. DEGREE EXAMINATION, APRIL – 2022**

**Second Semester**

**Microbiology**

**FOOD MICROBIOLOGY**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Section A**

(10 × 2 = 20)

Answer **all** questions.

1. How do you measure and express *aw* of food?
2. Why banana should not be kept in refrigerator?
3. What is Radurization?
4. What are the preservative effect of curing agents?
5. How does water is made unavailable in food?
6. What is Appertization?
7. Name federal Food control agencies confined to shipment of food samples.
8. Name the sanitizing agents used in food industry.
9. What is leavening?
10. What is Camembert Cheese?

**Section B**

(5 × 5 = 25)

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

11. (a) Give an account on extrinsic factors affecting the microbial survival in food.

Or

- (b) Give an account on food preservation using UV radiation.

12. (a) Briefly describe the various sources of contamination of food.

Or

- (b) Describe about the aseptic packing and mono-thermo-sonication of food samples.

13. (a) Outline the production and spoilage of sauerkraut.

Or

- (b) Briefly describe the spoilage of milk and milk products.

14. (a) Describe about the manufacture of pickles.

Or

- (b) Give an account on the production of fermented meat.

15. (a) Give an account on spoilage of canned foods.

Or

- (b) Discuss on the spoilage of butter and frozen desserts.

**Section C**

(3 × 10 = 30)

Answer any **three** questions.

16. Substantiate - Food as substrate for microorganisms.
  17. How microbial growth in food is affected?
  18. Explain the food preservation using High temperature.
  19. What is Yoghurt? Explain the production and nutritional and therapeutic values of Yoghurt.
  20. Explain the bacterial food infections in detail.
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**R6745**

**Sub. Code**

**530503**

**M.Sc. DEGREE EXAMINATION, APRIL – 2022**

**Second Semester**

**Microbiology**

**AGRICULTURE AND ENVIRONMENTAL  
MICROBIOLOGY**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. What is Commensalism explain give example?
2. What uses of mycorrhizae?
3. What causes bacterial wilt in tomatoes?
4. Name free living and symbiotic nitrogen fixing bacteria.
5. What is denitrification?
6. What is ambient air quality?
7. Define Food web.
8. How do Halophiles survive in saltpan? Give examples?
9. What is Vermiwash?
10. What are chemical compositions of biogas?

**Part B**

(5 × 5 = 25)

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

11. (a) List out the characteristics of soil horizons.

Or

- (b) Differentiate the rhizosphere and phyllosphere.

12. (a) Describe the role of phytoalexins in plant protection.

Or

- (b) Give an account on production and applications of viral biopesticides.

13. (a) Summarize steps in Sulfur cycle.

Or

- (b) Briefly describe the Aerobiology and its role in the transmission of infectious diseases.

14. (a) Give an account on thermal stratification of a pond and distribution of microbial communities.

Or

- (b) What are Coral reefs? Describe the microbiology of coral reefs ecosystem.

15. (a) Write a short note on solid waste management by Thermal treatment.

Or

- (b) Describe the tricking filter in waste water treatment.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the mass production and uses of mycorrhizal biofertilizer.
  17. Discuss pathogen, symptoms, and control of bacterial diseases in Maize.
  18. Discuss the steps in Carbon cycle.
  19. Explain the factors affecting the microbial growth in aquatic habitats.
  20. Describe the production and uses of biogas from agriculture waste.
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**R6746**

**Sub. Code**

**530401**

**M.Sc. DEGREE EXAMINATION, APRIL – 2022**

**Fourth Semester**

**Microbiology**

**EXTREMOPHILES**

**(CBCS – 2019 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Name some examples of extremophilic environments.
2. *Dunaliella salina*.
3. Hydronium ions.
4. What do you mean by cytosolic acidification?
5. *Nitzschia*.
6. North Ronaldsay sheep.
7. Peat bogs.
8. *Sulfolobus*.
9. Sphingomonas.
10. *Fragilariopsis cylindrus*.

**Part B**

(5 × 5 = 25)

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

11. (a) Discuss on the extremophiles and the origin of life.

Or

- (b) List out the types and diversity of barophiles.

12. (a) Describe the alkaliphiles in soda lakes and deserts.

Or

- (b) Discuss the physiological features of alkaliphiles.

13. (a) Write about the purple membrane of halophiles.

Or

- (b) Give an account on life under pressure.

14. (a) How lignocellulose converting enzymes from thermophiles are used?

Or

- (b) Brief about the metalloproteins from hyperthermophiles.

15. (a) Elaborate on the adaptive mechanisms of psychro tolerant bacterial pathogens.

Or

- (b) Discuss on the ecology of permafrost environments.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Elaborate on the distribution of extremophiles and extremotrophs.

17. Illustrate on the adaptive mechanisms of extreme alkaliphiles.

18. Describe on the applications of halophiles and their extremoymses.
  19. Discuss on the enzymes involved in DNA amplification from thermophiles.
  20. What are all the physiological features and adaptation strategies of acidophiles.
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