R–4627

Sub. Code
530201

M.Sc. DEGREE EXAMINATION, APRIL 2021

Second Semester

Microbiology

MICROBIAL GENETICS

(CBCS 2019 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Retrotransposons.
2. Junk DNA.
3. Apurinic site.
4. recA protein.
5. Inducible enzyme.
6. Corepressors.
7. F factor.
8. Resistance transfer factor.
9. Replicative recombination.
10. IHF protein.

Part B (5 × 5 = 25)

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

11. (a) Explain adaptive mutation and mutation rates.

Or

(b) Discuss on detection of mutagen.

12. (a) How base excision repair alter the DNA?

Or

(b) How liquid holding recovery is important in mutation?

13. (a) How tryptophan operon controlled by attenuation?

Or

(b) Give an account on regulation of arabinose operon.

14. (a) Describe the properties of plasmid.

Or

(b) Describe

(i) plasmid incompatibility.

(ii) plasmid amplification,

(iii) control of copy number.

15. (a) Summarize the mechanism of bacterial transformation.

Or

(b) Illustrate the mechanism of Holliday model for reciprocal general recombination.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Give notes on mechanism of spontaneous mutation.

17. Write an essay on recombination and SOS repair process.

18. Illustrate the mechanism of gene induction and repression.

19. Write an essay on types of plasmid.

20. Give detailed notes on generalized and specialized transduction.

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R–4628

Sub. Code
530202

M.Sc. DEGREE EXAMINATION, APRIL 2021

Second Semester

Microbiology

rDNA TECHNOLOGY

(CBCS – 2019 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. *Smal*
2. 3'-5 exonuclease.
3. MCS.
4. PVDF.
5. T_m
6. Beacon designer.
7. Eumelanin
8. Hydrocortisone.
9. Histone modificaion.
10. Dicer.

Part B (5 × 5 = 25)

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

11. (a) Classify the restriction enzyme based on subunit composition and cleavage position.

Or

(b) Compare the DNA polymerases based on their structure and function.

12. (a) How bacterial transformation is confirmed by α –complernentation.

Or

(b) Illustrate the cDNA synthesis and library construction.

13. (a) Write notes on general concepts and tools used for primer designing.

Or

(b) How the genetic variation identified by RAPD.

14. (a) Discuss on types of reaction in bio steroid transformation.

Or

(b) Give short notes on HBs Ag production in yeast.

15. (a) Summarize the genetic factors of silencing.

Or

(b) Write the mechanism of antisense mRNA formation.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Describe the mechanism of
    (a) DNase
    (b) Methylase
    (c) Phosphatases
    (d) Ligases.

17. Write an essay on Northern and Southern blotting.

18. How mRNA detected and quantified by RT-PCR?

19. Write an essay on production of interferon in *E. coli*.

20. Give detailed notes on types and mechanism of gene silencing.

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R–4629

Sub. Code
530203

M.Sc. DEGREE EXAMINATION, APRIL 2021

Second Semester

Microbiology

FOOD MICROBIOLOGY

(CBCS-2019 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. How do bacterial contaminations occur in animal food samples?

2. Name the extrinsic factors affecting the grow of microbes in food.

3. How do coliform bacteria are important in food spoilage?

4. What is controlled atmosphere storage?

5. Name the curing agents of meat.

6. What are ISI and AGMARK standards of food?

7. What is sauerkraut?

8. What are the uses of blanching?

9. What are the use of Pasteurization?

10. List the south Indian probiotic food.

Part B (5 × 5 = 25)

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

11. (a) Write the role of food safety and microbiological quality assurance.

Or

(b) Give an account on chemical food preservatives.

12. (a) Briefly describe the contamination and spoilage of meat and meat products.

Or

(b) Define Canning. Write a note on biological spoilage of Canned foods.

13. (a) Describe the food, borne parasitic infections.

Or

(b) Briefly describe the fermented Indian Probiotic foods.

14. (a) What is Brucellosis? Give an account on milk borne diseases.

Or

(b) Write a short note on microbiological standards of food with reference to FDA, HACCP.

15. (a) Write a note on cheese production and their nutritional importance.

Or

(b) Briefly describe the production of bread.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the factors influencing microbial activity in foods.

17. Discuss the food preservation using low temperature.

18. Explain the contamination and spoilage of cereals product.

19. Describe the contamination and spoilage of Fruits and vegetables.

20. Discuss in detail about the bacterial food intoxication.

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R–4630

Sub. Code
530503

M.Sc. DEGREE EXAMINATION, APRIL 2021

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. Which culture media used for the isolation phosphate solubilizing bacteria?

2. Difference between Mutualism and Parasitism

3. What are the causative agents and symptoms of early and late blight of potato?

4. What is carbon sequestration?

5. How does Leghemoglobin protect nitrogenase?

6. Differentiate between food chain and food web.

7. What is maturation pond?

8. What are the functions of polysaccharide matrix of epilithic biofilm on rock surface?

9. Define pyrolysis.

10. What is Zoogloeal film?

Part B (5× 5 = 25)

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

11. (a) Describe the symbiotic association of *Frankia* in non leguminous actinorhizal plants.

Or

(b) Summarize the cultivation methods and uses of *Azolla biofertilizer*.

12. (a) Give an account on Citrus canker and Bacterial blight of cotton.

Or

(b) Describe the highlights phenolic compound in plant protection.

13. (a) Carbon is exchanged among the biosphere, pedosphere, geosphere, hydrosphere, and atmosphere of the Earth – justify.

Or

(b) How do you assess the air quality by liquid impingement method?

14. (a) Give an account on Hydrothermal vent microbial communities.

Or

(b) What is the role of microorganisms in the aquatic ecosystem? How can microorganisms such as green algae affect the health of organisms in aquatic ecosystems?

15. (a) Summarize the production and applications of biogas.

Or

(b) Give an account on activated sludge treatment and oxidation pond.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the isolation, screening and mass production of *Azospirillum bioferlizer* for paddy crops.

17. Discuss in detail about Phoma blight, Bacterial canker, Bacterial Black Spot, Anthracnose of mango.

18. Discuss the Nitrogen assimilation and dissimilation by bacteria and benthic microalgae.

19. Temperature and light have profound impact on both biotic and abiotic characteristic of lake- Justify.

20. What is Vermicomposting? Explain the requirements, production and technoeconomics of vermicomposting plant.

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R5468	Sub. Code
	530401

M.Sc. DEGREE EXAMINATION, APRIL – 2021.

Fourth Semester

Microbiology

EXTREMOPHILES

(CBCS – 2019 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Extremophiles
2. Pyschrophiles
3. Soda lakes
4. Alkalophiles
5. Halotolerence
6. Extremozymes
7. Barophily
8. Polymerases
9. Psychrotolerant
10. Ecology

Part B (5 × 5 = 25)

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

11. (a) Explain about categories of extremotrophs

Or

(b) Give an account on origin of extremophiles

12. (a) Write a brief note on classification of alkalophiles

Or

(b) Give a brief note on biotechnological applications of alkalophiles

13. (a) Explain about osmoadaptation

Or

(b) Give an account on classification of barophiles.

14. (a) Explain history of hyper thermophiles

Or

(b) Write a short note on Evolution of PCR enzymes

15. (a) Explain-Adaptation mechanisms of psychro tolerant pathogens

Or

(b) Give an account on growth kinetics of acidophiles

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about types and diversity of thermophiles

17. Give an brief note on adaptive mechanisms of extreme alkaliphiles

18. Explain about the application of halophiles and its extremozymes.

19. Write a brief note on enzymes involved in DNA amplification from thermophiles

20. Explain about the taxonomy of pschrophiles

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