

R-3031

Sub. Code

530201

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Microbiology

MICROBIAL GENETICS

(CBCS – 2018 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define mutation rate.
2. Role of mutagens.
3. Importance of Phosphodiesterase.
4. What are the enzyme involved in excision repair?
5. Functions of gene.
6. What is operator gene?
7. What is episome?
8. Define drug resistant.
9. Role of Hfr cell.
10. What is homologous recombination?

Part B

(5 × 5 = 25)

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

11. (a) Write short notes on replica plate technique.

Or

- (b) What are the methods used to detection mutagen?

12. (a) What are the agents causes to damage of DNA? Justify.

Or

- (b) Give a brief account on nucleotide excision repair system.

13. (a) Write short notes on Tryptophan operon concept.

Or

- (b) Give a brief account of Arbinose operon and its regulation.

14. (a) Explain the structure of Ti plasmid.

Or

- (b) Explain the transfer of plasmid DNA in living cells.

15. (a) List out the general characters of recombination.

Or

- (b) Explain the double strand model of recombination.

Part C

(3 × 10 = 30)

Answer any **three** of the following.

16. How do chemical mutagens cause mutation? Explain with suitable example.
17. Write an essay on the types of DNA repair system in living cells.

18. Explain the positive and negative regulation in prokaryotes.
 19. Give an account of plasmid amplification, curing and incompatibility.
 20. Explain the bacterial transformation with neat diagram.
-

R-3032

Sub. Code

530202

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Microbiology

rDNA TECHNOLOGY

(CBCS – 2018 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define plasmids.
2. Define promoters.
3. What is phenotypic expression?
4. Comment on recombination.
5. RT-PCR.
6. Define nucleoside.
7. Write a note on biopolymers.
8. Comment on recombinant vaccines.
9. Write a note on antisense technology.
10. Write a note on CaMV vector.

Part B

(5 × 5 = 25)

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

11. (a) Write short notes on ligases.

Or

- (b) Comment on expression vectors.

12. (a) Explain in detail about the cloning.

Or

- (b) List out the uses of r-DNA technology in agriculture.

13. (a) Explain in detail about the automated sequencing.

Or

- (b) Give an account on RFLP.

14. (a) Write short notes on live recombinant viral vaccines.

Or

- (b) Explain in detail about melanin biosynthesis in *E. coli*.

15. (a) Give an account on the Si RNA.

Or

- (b) Give an account on electroporation.

Part C

(3 × 10 = 30)

Answer any **three** of the following.

16. Give a detailed account on enzymes involved in r-DNA technology.

17. Give an account on Human Genome Project.

18. Give an account on Microarray technology.
 19. Describe in detail about the production of recombinant pharmaceuticals.
 20. Give a detailed account on Gene Therapy.
-

R-3033

Sub. Code

530203

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Microbiology

FOOD MICROBIOLOGY

(CBCS – 2018 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Any two example of Phylloplane Pathogen.
2. What is aeroallergens?
3. Define microaerophilic.
4. What is intrinsic factor?
5. What is asepsis?
6. Define Canning.
7. What is Roquefort?
8. Mention any four fermented dairy products.
9. Define Botulism.
10. Define putrefaction.

Part B

(5 × 5 = 25)

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

11. (a) Soil is substrate for microbes – substantiate.

Or

- (b) What do you know about rhizosphere region. Write in detail the reason of increased microbial activity in these region.

12. (a) Give a brief account of microbial growth.

Or

- (b) Write short notes on pH as an intrinsic factor.

13. (a) Explain the physical methods of food preservation.

Or

- (b) Write in detail about the chemical preservatives.

14. (a) Give an account of Fermented Indian foods.

Or

- (b) Explain the production of fermented dairy products of Yoghurt.

15. (a) Give an account of spoilage of cereal products.

Or

- (b) Write short notes on Food Poisoning with suitable example.

Part C

(3 × 10 = 30)

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

16. Write an essay on microorganisms of water and their importance.
 17. Explain how extrinsic and intrinsic factors for microbial growth in food.
 18. Describe the various methods of food preservation.
 19. Write an essay on the production of Soya Sauce with their flow chart.
 20. Describe in general how food spoilage occurs. What factors influence the nature of two spoilage organisms responsible.
-

R-3034

Sub. Code

530503

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Microbiology

**AGRICULTURE AND ENVIRONMENTAL
MICROBIOLOGY**

(CBCS – 2018 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is Synergism?
2. Define VAM.
3. Comment on Fungal bioinsecticides.
4. What is angular leaf spot disease?
5. Define Nitrification.
6. What is droplet nuclei?
7. What is the role of light in microbial growth?
8. What are streams?
9. What is Saccharification?
10. Comment on Methanogenesis.

Part B

(5 × 5 = 25)

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

11. (a) Write short notes on the chemical properties of soil.

Or

- (b) Write briefly on Cyanobacteria.

12. (a) Comment on Viral insecticides.

Or

- (b) Write short notes on phytoalexin.

13. (a) Write short account on assessment of air quality.

Or

- (b) What are aerosols? Justify the role of air in transmission of disease.

14. (a) Write short notes on Estuaries.

Or

- (b) Comment on fresh water food chain.

15. (a) Comment on gasification process.

Or

- (b) Write briefly the Vermicomposting process.

Part C

(3 × 10 = 30)

Answer any **three** of the following.

16. Elaborate on the inoculum preparation, Mass production, and cultivation of *Rhizobium* for biofertilizer production. Add account on its field application, storage, and quality assurance.
 17. Write detailed account on the pathogen, Symptom and disease control of *Xanthomonas* sp.
 18. Write elaborately on the Carbon cycle.
 19. Write detailed notes on factors affecting the growth of Microorganisms in Aquatic environments.
 20. Explain in detail how biogas is produced from waste and add note on the types of wastes that can be used in biogas production.
-

R-3035

Sub. Code

530401

M.Sc. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Microbiology

EXTREMOPHILES

(CBCS – 2016 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is extremotrophs?
2. Mention any four barophilic microbes.
3. Define extremophiles.
4. Role of alkaliphilic bacteria.
5. Any two example for halotolerant microbes.
6. Define Haloarchaeae.
7. Function of Ribozyme.
8. Define obligate thermophiles.
9. What is psychrophiles?
10. Importance of psychrophilic enzyme.

Part B

(5 × 5 = 25)

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

11. (a) Explain the different categories of extremophiles.

Or

- (b) How halophiles tolerate to extreme salt environment?

12. (a) Outline the different classes of alkalophiles.

Or

- (b) In what kind of environment to the alkalophiles prepare to live-Justify.

13. (a) Explain the nature of cellwall membrane in halophiles.

Or

- (b) Classify Barophiles from deep sea with suitable example.

14. (a) List out the carbohydrate active enzyme from hyperthermophiles and their industrial application.

Or

- (b) Give a detailed account of metalloproteins from hyperthermophiles.

15. (a) What kinds of physiological adaptation are common in psychotoleran bacteria?

Or

- (b) Give a brief account on the ecology of psychrophiles.

Part C

(3 × 10 = 30)

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

16. Write an extended note on the genetic relevance with regard to origin of life in relation to extremophiles.
 17. Outline the process of isolation of enzymes from alkalophiles for industrial application.
 18. How barophile is able to regulate the metabolic process under extreme high pressure?
 19. Define Taq polymerase? Explain their mode of action in PCR. List out the application in molecular biology.
 20. Explain the physiological mechanism, adaptive strategies and growth kinetics of acidophiles.
-

R-3540

Sub. Code

530101

M.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Microbiology

GENERAL MICROBIOLOGY

(CBCS – 2018 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is spontaneous generation?
2. Write a note on the contribution of Robert Koch.
3. Comment on peptidoglycan layer in gram positive bacteria.
4. Write a note on periplasmic space.
5. Give short note on Phycoerythrin.
6. What is basidiocarp?
7. Comment on viroid.
8. What are plaques?
9. Write a note on refractive index.
10. What are fluorochromes?

Part B**(5 × 5 = 25)**

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

11. (a) Write few historic events in the development of microbiology.

Or

- (b) Explain about the Whittaker's five kingdom classification.

12. (a) Explain with a diagram about the structure of bacterial cell.

Or

- (b) Write the functions of flagella in bacterial cell.

13. (a) Write about the general characters of algae.

Or

- (b) Explain in detail about the chemical composition of fungal cell wall.

14. (a) Explain about the classification of virus.

Or

- (b) Write in brief about the hemagglutination assay for counting virus.

15. (a) Write a short note on bright field microscopy.

Or

- (b) Give an account on the application of fluorescence microscopy.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the contributions of Leeuwenhoek and Louis Pasteur to the development of Microbiology.
 17. Describe the process of cell wall formation in bacteria.
 18. Describe the life cycle pattern of *Aspergillus*.
 19. Give an detailed account on the ultra-structure of virus.
 20. Describe in detail about the principle and application of Scanning Electron Microscope.
-

R-3541

Sub. Code

530102

M.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Microbiology

MICROBIAL BIOCHEMISTRY

(CBCS – 2018 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

Define/Comment/Write short notes on :

1. Amylopectin
2. Mutarotation
3. Isoelectric point
4. Polypeptide
5. Lecithin
6. Fatty acid radical
7. Cyanocobalamine
8. Abzymes
9. Streptomycin
10. Aflatoxin

Part B

(5 × 5 = 25)

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

11. (a) Glucose and Galactose are epimers to each other – prove.

Or

- (b) Provide the outline of glycolysis.

12. (a) Explain the secondary structure of protein.

Or

- (b) Comment on the chemical properties of aminoacids.

13. (a) Citing example classify lipids as proposed by Bloor.

Or

- (b) Depict and explain the chemical structure of DNA.

14. (a) Comment on fat soluble vitamin.

Or

- (b) Classify enzymes based on the reactions they catalyse.

15. (a) Explain the synthesis of Chlorophyll II by microbes.

Or

- (b) Comment on microbial toxins.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Acetyl CoA plays a significant role in the formation of oxaloacetate to oxaloacetate through a cyclic process in mitochondria – Elucidate.
17. Describe the biosynthetic pathway of aminoacids.

18. Explain the denova synthesis of purines.
 19. The activity of the enzyme could be inhibited in more than one way – classify.
 20. Explain the biosynthesis and regulation of penicillin.
-