

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Microbiology

MBG 5D 02—ENVIRONMENTAL MICROBIOLOGY

(2019 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A*Answer at least eight questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 24.*

1. Rhizosphere.
2. Humus.
3. Ammonification.
4. Indicator micro-organisms.
5. MPN index.
6. Coagulation.
7. Sewage.
8. Droplet nuclei.
9. COD.
10. Xenobiotics.
11. Biomagnification.
12. Depletion of ozone layer.

(8 × 3 = 24 marks)

Section B*Answer at least five questions.**Each question carries 5 marks.**All questions can be attended.**Overall Ceiling 25.*

13. Examine various types of micro-organisms in soil.
14. What are the various types of nitrogen fixation ? Explain.
15. Inspect various type of airborne bacterial and viral diseases.
16. Examine the major steps involved in the purification of water.
17. Outline the causes, concerns and issues of greenhouse effect.
18. Discuss production of biogas.
19. Explain the process of vermi-composting.

(5 × 5 = 25 marks)

Turn over

Section C

*Answer any **one** question.*

The question carries 11 marks.

20. Investigate the major methods used for microbial quality assessment of water.
21. What are the various methods used for the treatment of municipal sewage ? Discuss.

(1 × 11 = 11 marks)

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FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Microbiology

MBG 5D 01—PUBLIC HEALTH AND EMERGING MICROBIAL DISEASES

(2019 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A*Answer at least **eight** questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 24.*

1. Primary infection.
2. Paradoxical carriers
3. TAB vaccine.
4. Enterotoxin.
5. Preventive measures of dengue.
6. Biological vectors.
7. Epizootic infection.
8. Droplet nuclei.
9. Tuberculin.
10. Symptoms of pulmonary tuberculosis.
11. Define 'health'.
12. Symptoms of chikungunya.

(8 × 3 = 24 marks)

Turn over

Section B

Answer at least five questions.

Each question carries 5 marks.

All questions can be attended.

Overall Ceiling 25.

13. Write on various sources of infection.
14. Write on bioterrorism.
15. Weil's disease.
16. Write on the role of WHO in pandemic alert.
17. Write on gender empowerment measures.
18. Write notes on Hepatitis E infections in man.
19. What are the indicators of health ?

(5 × 5 = 25 marks)

Section C

Answer any one question.

The question carries 11 marks.

20. What is infection ? Write on classification of infection and different modes of transmission of infection.
21. Write an essay on emerging diseases.

(1 × 11 = 11 marks)

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Microbiology

MBG 5B 09—MEDICAL MICROBIOLOGY—I

(2019 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A*Answer at least **eight** questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 24.*

Write briefly on :

1. Septicemia.
2. Endotoxin.
3. Toxic shock syndrome.
4. Elek test.
5. Hide porter's disease.
6. Nosocomial infection and iatrogenic infection.
7. Rocky mountain spotted disease.
8. Epidemic disease.
9. Coagulase test.
10. PLET medium.
11. Widal reaction.
12. Leptospirosis.

(8 × 3 = 24 marks)

Turn over

Section B

*Answer at least **five** questions.*

Each question carries 5 marks.

All questions can be attended.

Overall Ceiling 25.

Write notes on :

1. List and explain the different sources of infection.
2. Explain the pathogenesis and clinical features of anthrax.
3. Give an account on typhus fever. Add a note on the pathogenesis of rickettsial diseases.
4. Write a note on the virulence factors and pathogenicity of *Streptococcus pneumoniae*.
5. Describe the various factors influencing virulence of pathogens.
6. Discuss the morphological features and cultural characteristics of *Corynebacterium diphtheriae*.
7. Give an account on the normal flora of mouth & gastrointestinal tract and its importance.

(5 × 5 = 25 marks)

Section C

*Answer any **one** question.*

The question carries 11 marks.

Write essay on :

1. Explain the pathogenesis and clinical features of cholera. Add a note on prophylactic measures and treatment.
2. Discuss the pathogenesis and symptoms of enteric fever. Add a note on its laboratory diagnosis.

(1 × 11 = 11 = marks)

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Microbiology

MBG 5B 08—IMMUNOLOGY

(2019 Admissions)

Time : Two Hours and a Half

Maximum : 80 Marks

Section A (Short Answer Type)*Answer at least ten questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 30.*

1. Variolation.
2. CALT.
3. Epitope.
4. Mast cells.
5. MHC.
6. HLA typing.
7. Opsonization.
8. Oncogenes.
9. Atopens.
10. CFT.
11. Neo-antigens.
12. Xenograft.
13. Paul Ehrlich.
14. Inflammation.
15. Racial immunity.

(10 × 3 = 30 marks)

Turn over

Section B (Paragraph Type)

Answer at least five questions.

Each question carries 6 marks.

All questions can be attended.

Overall Ceiling 30.

16. Allergy.
17. Components of blood.
18. Antigen presentation.
19. Agglutination.
20. GVH reactions.
21. Cell mediated immunity.
22. Factors influencing antigenicity.
23. Immunological properties of lymph.

(5 × 6 = 30 marks)

Section C (Essay Type)

Answer any two questions.

Each question carries 10 marks.

24. Explain the mechanism and classification of acquired immunity.
25. Explain Cancer immunology and also add a note on Cancer treatment.
26. Write an essay on autoimmunity.
27. Explain various organs of immune system.

(2 × 10 = 20 marks)

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Microbiology

MBG 5B 07—FOOD AND DAIRY MICROBIOLOGY

(2019 Admissions)

Time : Two Hours and a Half

Maximum : 80 Marks

Section A*Answer at least ten questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 30.*

1. Viable count.
2. Types of bacteria in milk.
3. COB.
4. Aerobic plate count.
5. SCP.
6. Prebiotics.
7. Spoilage of egg.
8. Yogurt.
9. Salmonellosis.
10. Fermented vegetables.
11. Mycotoxins.
12. Amoebiasis.
13. Radicidation.
14. Class II preservatives.
15. HACCP.

(10 × 3 = 30 marks)

Section B*Answer at least five questions.**Each question carries 6 marks.**All questions can be attended.**Overall Ceiling 30.*

16. Substantiate "Food as the substrate for microorganisms".
17. Briefly outline various methods involved in the microbial examination of food.
18. Discuss various types of molds and yeast present in food.
19. Elaborate the process involved in the fermentation of bread.

Turn over

20. What do you mean by food intoxication ? Discuss with examples.
21. Examine the process and mechanism of microbial spoilage of meat and meat products.
22. Inspects the various aspects of food preservation by high temperature.
23. Outline the various principles and approaches of GMP.

(5 × 6 = 30 marks)

Section C

*Answer any two questions.
Each question carries 10 marks.*

24. Elaborate the various approaches of the microbial analysis of milk.
25. Examine the general principles underlying the spoilage of food with suitable examples.
26. Classify and outline various types of food poisoning.
27. What are food additives ? Discuss about various types food preservatives.

(2 × 10 = 20 marks)

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Microbiology

MBG 5B 06—INDUSTRIAL MICROBIOLOGY

(2019 Admissions)

Time : Two Hours and a Half

Maximum : 80 Marks

Section A*Answer at least ten questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 30.*

1. Molasses.
2. Chemostat.
3. Sparger.
4. Crowded plate technique.
5. Cyanocobalamin.
6. Fed batch culture.
7. Brewer's Yeast.
8. Ion exchange chromatography.
9. Acetone butanol fermentation.
10. Inducers in fermentation medium.
11. Microbial transformation.
12. Sparkling wine.
13. Secondary screening.
14. Distillation.
15. Airlift fermenter.

(10 × 3 = 30 marks)

Section B*Answer at least five questions.**Each question carries 6 marks.**All questions can be attended.**Overall Ceiling 30.*

16. Discuss various types of cultures used in fermentation with appropriate examples.
17. Narrate the applications of solid-state fermentation with examples.

Turn over

18. Illustrate the industrial production of lactic acid.
19. What are the various approaches used for the improvement of strains for industrial fermentation ?
20. Discuss the industrial production of ethanol.
21. Investigate various processes involved in the extraction and purification of extracellular and intracellular products.
22. Elucidate the principle, upstream and downstream processing involved in the industrial production of Penicillin.
23. Write a relevant note on WIPO.

(5 × 6 = 30 marks)

Section C

Answer any two questions.

Each question carries 10 marks.

24. Discuss various control systems in fermentation with suitable mathematical formulations.
25. What are the various methods used for the preservation of cultures for industrial use ? Discuss.
26. Examine the steps involved in the industrial production microbial enzymes with suitable examples.
27. What do you mean by IPR ? Discuss various types of IPR with suitable examples.

(2 × 10 = 20 marks)

**FIFTH SEMESTER U.G. DEGREE (SPECIAL) EXAMINATION
NOVEMBER 2020**

(CUCBCSS—UG)

Microbiology

MBG 5D 01—PUBLIC HEALTH AND EMERGING MICROBIAL DISEASES

(2018 Admissions)

Time : Two Hours

Maximum : 40 Marks

Draw diagrams wherever necessary.

Part A

All questions to be attended.

Answer all questions.

Each question carries ½ mark.

1. The biomedical concept of health is based on _____.
2. The number of deaths in a particular population per unit time is referred as _____.
3. The year of introduction of human poverty index is _____.
4. Physician induced infection resulting from investigation or therapeutic procedures is called .
(Iatrogenic infection; Nosocomial infection; Cross infection; Subclinical infection)
5. Microorganisms capable of producing disease in host is called _____.
6. The outbreak of a disease in bird population is called :
(Epizootic infection ; Epornithic infection ; Zoonotic infection ; Enzootic infection)
7. The organism causing Weil's disease is :
(Treponema pallidum ; Borrelia burgdorferi ; Salmonella paratyphi A ; Leptospira icterohaemorrhagiae)
8. The vaccine for immunization against hepatitis B infection is _____.
9. The infection caused by an acid fast bacilli is :
(Traveller's diarrhoea ; Syphilis ; Typhoid fever ; Tuberculosis)
10. Name the vector transmitting Chikungunya.

(10 × ½ = 5 marks)

| **Turn over**

Part B

All questions can be attended and overall ceiling.

*Answer any **five** questions.*

Each question carries 2 marks.

11. Define Health.
12. What is the psychosocial concept of health ?
13. What is endogenous infection ?
14. Differentiate epidemic and endemic infection ?
15. Name any *two* airborne bacterial infections.
16. What is Botulism ?
17. What is Bioterrorism ?

(5 × 2 = 10 marks)

Part C

All questions can be attended and overall ceiling.

*Answer any **three** questions.*

Each question carries 5 marks.

Write notes on :

18. AIDS
19. Modes of transmission of infectious diseases.
20. Determinants of health.
21. Human poverty index.
22. Dengue Fever.

(3 × 5 = 15 marks)

Part D

All questions can be attended and overall ceiling.

*Answer any **one** question.*

The question carries 10 marks.

Write essays on :

23. Define Infection. Write note on different types and sources of infectious diseases.
24. Discuss the etiology, symptoms and prevention of tuberculosis.

(1 × 10 = 10 marks)

FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Microbiology

MBG 5D 01—PUBLIC HEALTH AND EMERGING MICROBIAL DISEASES

(2018 Admissions)

Time : Two Hours

Maximum : 40 Marks

*Draw diagrams wherever necessary.***Section A***Answer all questions.**Each question carries ½ mark.*

1. Human poverty index-2 measures poverty in _____ countries.
2. The cognitive aspect of health refers to _____.
(Physical health ; Mental health ; Social health ; Spiritual health)
3. The probability of death of children under one year of age per 1000 live births is referred as _____.
4. An infection which does not show the characteristic manifestations of a particular infectious disease is
(Subclinical infection ; Atypical infection ; Latent infection ; Primary infection)
5. What is a pandemic infection ?
6. Name one epornithic infection.
7. The serological test used for diagnosis of enteric fever is _____.
8. The causative agent of botulism is _____.
9. Among the following the retrovirus is :
(Polio virus ; HIV ; Rhabdovirus ; Hepatitis B virus)
10. The vector transmitting dengue fever is _____.

(10 × ½ = 5 marks)

Section B*Answer any five questions.**Each question carries 2 marks.*

11. What is the ecological concept of health ?
12. What is human development index ?

Turn over

13. Differentiate mechanical vector and biological vector.
14. What is zoonoses ?
15. What is western blotting ?
16. What are aerosols ?
17. Name microorganisms used as bioweapons.

(5 × 2 = 10 marks)

Section C

*Answer any three questions.
Each question carries 5 marks.*

Write notes on :

18. Indicators of health.
19. Human poverty index.
20. Classification of infectious diseases.
21. Infectious hepatitis.
22. Chickunguniya.

(3 × 5 = 15 marks)

Section D

*Answer any one question.
The question carries 10 marks.*

Write essay on :

23. Discuss about various sources of infectious diseases. Write on the reservoirs and vectors in transmission of infectious diseases.
24. Write a note on microbial food poisoning.

(1 × 10 = 10 marks)

FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS-UG)

Microbiology

MBG 5B 09—MEDICAL MICROBIOLOGY – I

(2018 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part A*Answer all questions in a word or sentence.**Each question carries ½ mark.*

1. Expand MRSA.
2. Scarlet fever is caused by _____.
3. _____ is called as *Klebs-Loefflers bacilli*.
4. Name *diplococci* showing lanceolate appearance.
5. Name the media used for the laboratory culture of *Vibrio cholerae*.
6. Name a bacterial STD.
7. Lock jaw is a symptom of _____.
8. Name the most common causative agent of nosocomial infection.
9. An epidemic occurring world wide is called as _____.
10. Name the test done to differentiate *Staphylococcus aureus* from other *staphylococci*.
11. Person who has recovered from illness but still carry the pathogen and capable of spreading disease to others is called _____.
12. DOTS is a treatment strategy for _____.

(12 × ½ = 6 marks)

Part B (Short Answer Questions)*Answer all questions.**Each question carries 2 marks.*

13. Differentiate between epizootic and enzootic.
14. Define LD50.
15. What is Septicaemia ?

Turn over

16. What are the diseases caused by *Staphylococcus aureus* ?
17. Write on WIDAL test.
18. What is an endemic infection ? Give an example.
19. What is UTI ? Name a bacteria that cause UTI.
20. Comment on the action of cholera toxin.
21. What is an opportunistic pathogen ? Give an example.
22. Name the media used to grow *Mycobacterium tuberculosis* in laboratory. Comment on its colony morphology.

(10 × 2 = 20 marks)

Part C (Short Essay Questions)

Answer any **six** questions.
Each question carries 5 marks.

23. Comment on the various methods of transmission of infection.
24. Write briefly about the normal flora of human gastrointestinal tract. Add a note on its merits.
25. Briefly explain the pathogenesis and symptoms of disease caused by *Leptospira interrogans*.
26. Explain the pathogenesis, symptoms and lab diagnosis of gonorrhoea.
27. Write a note on laboratory diagnosis of tuberculosis.
28. What are the various sources of Infection? Explain.
29. Explain the pathogenicity of *Clostridium tetani*.
30. Briefly explain the pathogenesis and symptoms of disease caused by *Corynebacterium diphtheriae*.

(6 × 5 = 30 marks)

Part D (Essay Questions)

Answer any **two** questions.
Each question carries 12 marks.

31. Write an essay on morphology, cultural characteristics, biochemical characters, pathogenicity, laboratory diagnosis and prevention of typhoid.
32. Explain in detail the methods used for collection and transport of various clinical specimens for microbiological examination.
33. Write an essay on the morphology, culture, biochemical, pathogenicity, laboratory diagnosis and prevention of diseases caused by Rickettsia.

(2 × 12 = 24 marks)

FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Microbiology

MBG 5D 02—ENVIRONMENTAL MICROBIOLOGY

(2018 Admissions)

Time : Two Hours

Maximum : 40 Marks

*Draw diagrams wherever necessary***Section A***Answer all questions.**Each question carries ½ mark.*

1. Among the following nitrifying bacteria is :
(Nitrosomonas ; Pseudomonas ; Bacillus ; Staphylococcus)
2. What is Rhizoplane ?
3. The water used for consumption is called _____ water.
4. Among the following waterborne viral disease is :
(Cholera ; Enteric fever ; Polio myelitis ; Rabies)
5. The colour of the fresh sewage water is _____.
6. The common filter used to remove microorganisms from air entering in laminar air flow is _____.
7. Among the following bacterial disease spreading through air is :
(Diphtheria ; Tetanus ; Weil's disease ; Syphilis)
8. The Bangalore method is a technique used to manage solid waste by _____.
9. Name one flocculating agent used for water purification.
10. What is CFC ?

(10 × ½ = 5 marks)

Turn over

Section B

*Answer any five questions.
Each question carries 2 marks.*

11. What is Nitrogenase ?
12. What are the major components present in root exudates of plants ?
13. What is Chlorination ?
14. Define Sludge.
15. What are the factors influencing microbial content of air ?
16. What is acid rain ?
17. Define Pollution.

(5 × 2 = 10 marks)

Section C

*Answer any three questions.
Each question carries 5 marks.*

Write notes on :

18. Greenhouse effect.
19. Vermicomposting.
20. Water purification for municipal supplies.
21. Rhizosphere effect.
22. Microbiological analysis of water.

(3 × 5 = 15 marks)

Section D

*Answer any one question.
The question carries 10 marks.*

Write essay on :

23. Describe the nitrogen fixation by microorganisms.
24. Describe various stages of large-scale sewage treatment.

(1 × 10 = 10 marks)

FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Microbiology

MBG 5B 08—IMMUNOLOGY

(2018 Admissions)

Time : Three Hours

Maximum : 80 Marks

*Draw diagrams wherever necessary.***Section A***Answer all questions.**Each question carries ½ mark.*

1. The personality recognized phagocytosis has important role in immunity is :
(Robert Koch ; Elie Metchnikof ; Paul Ehrlich ; Robert Koch)
2. The cells playing major role in immunity against parasitic infections is :
(Dendritic cells ; Eosinophils ; Monocytes ; Basophils)
3. The pluripotent, self-renewing cells present in bone marrow is _____.
4. The cells exhibiting MHC restriction is :
(T cells ; B cells ; Neutrophils ; NK cells)
5. The cells indicating acute inflammatory response in a tissue is _____.
6. T independent antigens among the following is :
(Proteins ; Glycoproteins ; Antibiotics ; Polysaccharides)
7. The endogenous antigens are processed and presented to T cells by _____ pathway.
8. The predominant immunoglobulin isotype produced during primary immune response is _____.
9. The signal initiating the classical pathway of complement activation is the presence of _____.
10. The substrate used for ELISA using HRP-conjugate is :
(Hydrogen peroxide ; Tetramethyl benzidine ; p-nitrophenyl phosphate ; O-phenylene diamine dihydrochloride)

Turn over

11. The erythroblastosis foetalis is an example for _____ hypersensitivity.

(Type I ; Type II ; Type III ; Type IV)

12. The non-metastatic tumours are generally classified as _____ tumours.

(12 × ½ = 6 marks)

Section B

Answer all questions.

Each question carries 2 marks.

13. Define clonal selection theory.

14. What is CALT ?

15. What is the structure and function of dendritic cells ?

16. Define Hapten.

17. What is Freund's complete adjuvant ?

18. What is MHC ?

19. What is the use of HAT medium ?

20. Differentiate agglutination and precipitation reaction.

21. What is opsonization ?

22. What is mixed lymphocyte reaction ?

(10 × 2 = 20 marks)

Section C

Answer any six questions.

Each question carries 5 marks.

Write notes on :

23. Cells of immune system.

24. MALT.

25. Characteristics of B cell epitope and T cell epitope.

26. Human immunoglobulin isotypes.

27. Production of monoclonal antibodies.

28. Immunodiffusion tests.

29. Organ specific autoimmune diseases.
30. Oncogenes.

(6 × 5 = 30 marks)

Section D

*Answer any two questions.
Each question carries 12 marks.*

Write essays on :

31. Discuss the characteristics of innate immunity and acquired immunity. Describe the mechanisms of innate immune mechanisms.
32. Discuss the activation of complement system. Describe complement fixation test.
33. Write a note on hypersensitivity reactions.

(2 × 12 = 24 marks)

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FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Microbiology

MBG 5B 07—FOOD AND DAIRY MICROBIOLOGY

(2018 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part A*Answer all questions in a word or sentence.**Each question carries ½ mark.*

1. Ergotism is caused by _____.
2. Name the yeast that cause spoilage of honey.
3. _____ is the enzyme used in cheese production.
4. The time-temperature combination for HTST pasteurization of milk is _____.
5. To control spoilage of food, one can decrease water availability by the addition of _____.
6. The eyes in Swiss cheese are formed by the metabolic activity of which bacteria ?
7. Name the Gram-positive cocci used in the manufacture of yoghurt.
8. _____ radiation is mainly used for of food preservation by irradiation.
9. _____ causes thermophilic flat-sour defect in canned foods.
10. Green rot of egg is caused by _____.
11. Name the chemical preservative commonly used in jams.
12. Give an example for a chemical leavening agent.

(12 × ½ = 6 marks)

Part B (Short Answer Questions)*Answer all questions.**Each question carries 2 marks.*

Briefly explain :

13. SCP.
14. Aflatoxin.
15. Freeze drying.
16. Viable colony count.

Turn over

17. Pasteurization.
18. Clot on boiling test.
19. Lactic acid fermentation.
20. Brucellosis.
21. Preservation by modification of atmosphere.
22. Traveller's diarrhoea.

(10 × 2 = 20 marks)

Part C (Short Essay Questions)

*Answer any six questions.
Each question carries 5 marks.*

23. What is GMP ?
24. Comment on food borne viral hepatitis.
25. What are the signs of fish spoilage ?
26. Differentiate between probiotics and prebiotics with examples.
27. What do you mean by high Pressure processing ?
28. Explain the production of sauerkraut.
29. Write about the various sources of food contamination.
30. What is HACCP ? Explain.

(6 × 5 = 30 marks)

Part D (Essay Questions)

*Answer any two questions.
Each question carries 12 marks.*

31. Explain the microbiology and production of any three fermented foods.
32. Write an essay on chemical preservatives.
33. Explain in detail the various methods used for microbial analysis of milk.

(2 × 12 = 24 marks)

FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Microbiology

MBG 5B 06—INDUSTRIAL MICROBIOLOGY

(2018 Admissions)

Time : Three Hours

Maximum : 80 Marks

*Draw diagrams wherever necessary.***Section A***Answer all questions.**Each question carries ½ mark.*

1. The cheapest method of air sterilization for industrial processes is by :
(Fumigation ; Filtration ; Radiation ; Heating)
2. The geometric configuration of the fermenter is commonly denoted by _____ ratio.
3. The primary screening technique used for detection and isolation of strains producing antibiotics is _____.
4. Expand A.T.C.C.
5. The precursor required in the media for penicillin G production is _____.
6. The sulphite waste liquor is subjected to steam stripping before used as a raw material for fermentation media to remove _____.
7. Fring's generator is used for _____ production.
8. The bottom fermenter yeast used for ethanol production is :
(*Saccharomyces cerevisiae* ; *Saccharomyces carlsbergensis* ; *Candida albicans* ; *Torulopsis sp.*)
9. What are the three parts of a patent ?
10. Expand PCT.
11. Name one cryoprotectant used for cryopreservation of micro-organisms.
12. The bacterial strain used for the industrial production of α -amylase is :
(*A. niger* ; *A. oryzae* ; *B. amyloliquefaciens* ; *M. pusillus*)

(12 \times ½ = 6 marks)**Turn over**

Section B

*Answer all questions.
Each question carries 2 marks.*

13. What is the use of baffles in biofermenters ?
14. Differentiate turbidostat and chemostat.
15. What are the characteristics of an ideal production strain ?
16. What is “distillers soluble” ?
17. Explain liquid sheer technique.
18. What is reverse osmosis ?
19. What are Hops ?
20. What is steroid transformation ?
21. Define copy right.
22. What is a geographical indicator ?

(10 × 2 = 20 marks)

Section C

*Answer any six questions.
Each question carries 5 marks.*

Write notes on :

23. Solid state fermentation.
24. Industrial sterilization methods.
25. Secondary screening for production strains.
26. Wine production.
27. Acetone-Butanol fermentation.
28. Steps involved in patenting.
29. Culture preservation methods.
30. Methods for production strain improvement.

(6 × 5 = 30 marks)

Section D

*Answer any two questions.
Each question carries 12 marks.*

Write essays on :

31. Write a note on different types of biofermenters.
32. Discuss the characteristics of an ideal production media. Write note on the raw materials used for the preparation of industrial production media.
33. Describe the industrial production of penicillin using microbial fermentation.

(2 × 12 = 24 marks)

CHMK LIBRARY UNIVERSITY OF CALICUT

FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Microbiology

MBY 5D 02—ENVIRONMENTAL MICROBIOLOGY

Time : Two Hours

Maximum : 40 Marks

Part A

*Answer all questions.
Each question carries ½ mark.*

Fill in the blanks :

1. Give an example for free living nitrogen fixing bacteria.
2. Region of earth comprising water is known as _____.
3. A series of organisms through which food energy flows in an ecosystem is known as _____.
4. Typhoid is a _____ borne disease.
5. In biological nitrogen fixation atmospheric nitrogen is converted into _____.
6. _____ test is used to detect coliform bacteria in water.
7. Progressive increase in the concentration of a xenobiotic compound when it is passed through the food chain is called _____.
8. Step by step oxidation of ammonia to nitrate in nitrogen cycle is known as _____.
9. Give an example for green house gas.
10. Microbial film formed over trickling filter is called _____.

(10 × ½ = 5 marks)

Part B

*Answer any five questions.
Each question carries 2 marks.*

Comment on the following :

11. Heterotrophs.
12. R : S ratio.
13. Decomposers.

Turn over

14. Coliforms.
15. Green house gases.
16. Activated sludge.
17. Nitrogenase.

(5 × 2 = 10 marks)

Part C

*Answer any three questions.
Each question carries 5 marks.*

Write Briefly :

18. Water purification methods.
19. Ecosystem.
20. Composting.
21. Trophic levels.
22. Ozone depletion.

(3 × 5 = 15 marks)

Part D

*Answer any one questions.
The question carries 10 marks.*

23. Explain nitrogen cycle.
24. Discuss about sanitary examination of water and indicator organisms.

(1 × 10 = 10 marks)

FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Microbiology

MBY 5D 01—PUBLIC HEALTH AND EMERGING MICROBIAL DISEASES

Time : Two Hours

Maximum : 40 Marks

Part A*Answer all the ten questions.*

1. Name the causative virus of AIDS.
2. The infection existing before birth is called _____.
3. The artificially acquired immunity developed in host body by the administration of _____.
4. The virus responsible for causing Aphthae epizooticae diseases is _____.
5. Western blot test is used for confirmation of _____ diseases.
6. The food poisoning caused by salmonella is known as _____.
7. The branch which deals with the study of defense mechanism against diseases is called _____.
8. TAB vaccine is useful against _____ diseases.
9. An example for disease transferred from mother to child through placenta is _____.
10. Study of mode of transmission of diseases is called _____.

(10 × ½ = 5 marks)

Part B (Short Answers)*Answer any five questions.*

11. What is contamination ?
12. What is Subunit Vaccine ?
13. Define passive immunity.
14. Define Endemic infection.
15. What are mechanical vectors ?
16. What are Nosocomial Infections ?
17. What is mean by human development index ?

(5 × 2 = 10 marks)

Turn over

Part C (Short Essays)

Answer any three questions.

18. Give an account on responsibilities of individual and community on health.
19. Details on epidemiology of Weil's diseases.
20. Give brief account on Dengue fever.
21. Give short notes on Microbial food poisoning.
22. Explain immunization schedule in India.

(3 × 5 = 15 marks)

Part D

Answer any one question in detail.

23. Discuss the etiology, epidemiology and preventive measures of Chickengunya.
24. Define infection. Write notes on different types and sources of infection.

(1 × 10 = 10 marks)

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FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Microbiology

MBY 5B 12—MEDICAL MICROBIOLOGY

Time : Three Hours

Maximum : 80 Marks

Part A

*Answer all questions.
Each question carries ½ mark.*

1. The disease arising from an infectious agent already present in the body but previously asymptomatic is known as _____.
2. _____ is the major transmission route of COVID-19.
3. The physical movement or transfer of harmful bacteria from one person, object, or place to another, or from one part of the body to another is called as _____.
4. A person or animal that harbours a specific infectious agent without discernible clinical disease and serves as a potential source of infection is known as _____.
5. _____ is the infections that is naturally transmissible from animals to human.
6. A disease that occurs infrequently and irregularly is called _____.
7. The bacteria that form the colony morphology like a Medusa head appearance is _____.
8. Tetanolysin the major responsible toxin for tetanus. State True or False.
9. Loeffler's serum slope and tellurite blood agar is mainly used to cultivate _____.
10. M' Fadyean reaction is mainly used to detect the presence of _____.
11. The active immunisation against diphtheria using toxin-antitoxin mixture is demonstrated by _____.
12. Streptococcus was first isolated from human suppurative lesions by _____.

(12 × ½ = 6 marks)

Part B

*Answer all questions.
Each question carries 2 marks.*

13. Secondary infection.
14. Nosocomial infection.

Turn over

15. Differentiate MID and MLD.
16. Major sources of infections.
17. WIDAL Test.
18. Stormy fermentation.
19. M' Fadyean reaction.
20. Descending tetanus.
21. Shiga toxin.
22. Laboratory diagnosis of syphilis.

(10 × 2 = 20 marks)

Part C

Answer any **six** questions.

Each question carries 5 marks.

23. What are the types of infection ? Discuss with examples.
24. What is the major kind of carriers ?
25. Discuss the factors that affect the virulence of microorganisms ?
26. Examine laboratory diagnosis of gonococci.
27. Discuss the morphology, culture and biochemical characteristics of *Clostridium tetani*.
28. Discuss the major types of pathogenic *E.coli*.
29. Outline the laboratory diagnosis of Mycoplasma infection ?
30. Discuss the pathogenicity and virulent factors of *Pseudomonas aeruginosa*.

(6 × 5 = 30 marks)

Part D

Answer any **two** questions.

Each question carries 12 marks.

31. What are the major methods of transmission of infections ? Summarise the major sources infections.
32. Investigate the bacteriology, pathogenicity, laboratory diagnosis and treatment of *Staphylococcus aureus*.
33. Elaborate the morphology, culture, biochemical, pathogenicity, laboratory diagnosis and prevention of bacterial diseases caused by *Mycobacterium tuberculosis*.

(2 × 12 = 24 marks)

FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Microbiology

MBY 5B 11—IMMUNOLOGY

Time : Three Hours

Maximum : 80 Marks

Part A*Answer all questions.**Each question carries ½ mark.*

1. The most common antibody involved in Type II hypersensitivity is _____.
2. Coating soluble Ag onto carrier particles, a precipitation reaction can be converted into _____.
3. The antibody having monovalent affinity to an epitope is called _____.
4. The agent stimulate the immune system and enhance the response without having antigenic effect by itself is called _____.
5. The antigenic determinants are called _____.
6. Monoclonal antibodies can be produced by _____ technology
7. The allergic reactions to penicillin is an example for _____ hypersensitivity
8. The process of engulfing foreign particles by a macrophage is called _____.
9. The precipitation reactions are governed by _____ hypothesis.
10. Atopy is mediated by _____ antibody.
11. Graft, transplanted between the same species is called _____.
12. The antibody which provides passive immunity is _____.

(12 × ½ = 6 marks)

Part B*Answer all questions.**Each question carries 2 marks.*

13. List out the factors predisposing antigenicity.
14. Method of Ouchterlony procedure in precipitation reaction.
15. Dendritic cells.

Turn over

16. Contribution of Paul Ehrlich in immunology.
17. Give an account on VDRL.
18. Give details on production and application of monoclonal antibodies.
19. Discuss various factors of TATA
20. List out four characteristics attributes of adaptive immunity.
21. What are the types of T cells ?
22. List some of the roles of cytokines.

(10 × 2 = 20 marks)

Part C

Answer any six questions.

Each question carries 5 marks.

23. Discuss the principle and applications behind Coombs's test.
24. Define the structure and function of class I MHC molecules.
25. Discuss the technique of ELISA and mention its application.
26. Explain classical and alternative pathways of complement activation.
27. List out the events that lead to T cell activation in humans following an entry of a pathogen.
28. Give details on Primary lymphoid organs.
29. Describe the role of NK cells and macrophages against tumor.
30. What are autoimmune diseases? Give details on RA.

(6 × 5 = 30 marks)

Part D

Answer any two questions.

Each question carries 12 marks.

31. What are the mechanisms involved in transplant rejection? Describe some of the immunosuppressive therapy in organ transplantation.
32. Explain in detail the processing and presentation of exogenous and endogenous antigen and immune responses.
33. What is hypersensitivity reactions? Write detailed account on its types and mechanisms.

(2 × 12 = 24 marks)

FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Microbiology

MBY 5B 09—FOOD AND DAIRY MICROBIOLOGY

Time : Three Hours

Maximum : 80 Marks

Part A

*Answer all questions.
Each question carries ½ mark.*

1. The partial vapor pressure of water in a solution divided by the standard state partial vapor pressure of water is _____.
2. _____ is a method used in cell culture to determine the number of living cells in a culture.
3. _____ is a measure of the tendency of a chemical species to acquire electrons from or lose electrons to an electrode and thereby be reduced or oxidised respectively
4. The major protein present in the food is _____.
5. The heat stability of milk during processing can be tested by _____.
6. The term _____ refers to the aspects of food, water or other substances that an individual experiences via the senses.
7. The major types of aerobic plate count are _____.
8. *Methylophilus methylotrophs* is a bacterium that can be used as single cell protein. State True or False.
9. *Agaricus campestris* is the scientific name of _____.
10. The baking temperature of bread is _____.
11. The alcohol content of brandy is around _____.
12. A naturally occurring foodborne mycotoxin found in a wide variety of agricultural commodities is known as _____.

(12 × ½ = 6 marks)

Part B

*Answer all questions.
Each question carries 2 marks.*

13. How you measure the viable count from food sample ?
14. Summarise the major parameters that affect the growth of micro-organism in food.

Turn over

15. What is the method to evaluate the faecal Streptococci in food ?
16. Summarise the physical and chemical properties of milk.
17. What is turntable acidity alcohol test ?
18. What are the merits and demerits of MBRT ?
19. What are the various types of Cheese ?
20. What do you mean by acidophilus milk ?
21. What are prebiotics ? Give examples.
22. What do you mean by radurisation ?

(10 × 2 = 20 marks)

Part C

Answer any six questions.

Each question carries 5 marks.

23. Substantiate "Food as the substrate for micro-organisms"
24. Briefly outline various methods involved in the microbial examination of food.
25. Discuss various types of moulds and yeast present in food.
26. Elaborate the process involved in the fermentation of bread.
27. What do you mean by food intoxication? Discuss with examples.
28. Examine the process and mechanism of microbial spoilage of meat and meat products.
29. Inspects the various aspects of food preservation by high temperature.
30. Outline the various principles and approaches of GMP.

(6 × 5 = 30 marks)

Part D

Answer any two questions.

Each question carries 12 marks.

31. Examine the general principles underlying the spoilage of food with suitable examples.
32. Classify and outline various types of food poisoning.
33. What are food additives ? Discuss about various types food preservatives.

(2 × 12 = 24 marks)

FIFTH SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Microbiology

MBY 5B 08—INDUSTRIAL MICROBIOLOGY

Time : Three Hours

Maximum : 80 Marks

Part A*Answer all questions.**Each question carries ½ mark.*

1. The conversion of a laboratory procedure to industrial process is called
2. The major nitrogen sources used in fermentation medium is _____.
3. Chemostat is an example of _____.
4. Phenyl acetic acid is used as _____ in penicillin fermentation.
5. Tower reactors for large-scale aerobic cultures where the mixing of the culture broth is done by the inserted gas via an airlift pump is called _____.
6. Sparger is used as _____.
7. Replica plating is used as the screening of _____.
8. Name the yeast used in alcoholic beverages.
9. Placket- Burman equation is mainly used for _____.
10. Cyanocobalamin is otherwise known as _____.
11. Give an example of sparkling wine.
12. _____ is a type of intellectual property consisting of a recognizable sign, design, or expression which identifies products or services of a particular source from those of others.

(12 × ½ = 6 marks)

Part B*Answer all questions.**Each question carries 2 marks.*

13. What is a turbidostat ?
14. What is CSTR ?
15. How the pH control is maintained in the fermentor ?

Turn over

16. What are inducers ? Give examples.
17. What do you mean by secondary screening ?
18. What are auxotrophic mutants ?
19. How Affinity chromatography used for the separation and purification of extra cellular products ?
20. What do you mean by pullulanase ? Write the function and producer strain.
21. What is geographical indicator ? Give examples.
22. What is WIPO ?

(10 × 2 = 20 marks)

Part C

*Answer any two questions.
Each question carries 5 marks.*

23. Discuss the major component of an industrial fermenter ?
24. What are the various types of cultures used in industrial microbiology ?
25. Inspect the process involved in the industrial production of citric acid.
26. Discuss the utility and application of solid-state fermentation.
27. Elaborate in detail the process and methods for strain improvement.
28. Outline the mechanism of acetone -butanol fermentation.
29. Elaborate in detail the industrial production of Vitamin B₁₂.
30. What are the various types of IPs ?

(6 × 5 = 30 marks)

Part D

*Answer any two questions.
Each question carries 12 marks.*

31. Elaborate the major methods used for the preservation of cultures for industrial use.
32. Describe various control systems used in fermentation process.
33. Elaborate the industrial production microbial enzymes with suitable examples. Examine the steps involved in the industrial production microbial enzymes with suitable examples.

(2 × 12 = 24 marks)