Dr. V. S. Krishna Govt. Degree College (Autonomous)
Visakhapatnam – 13
[Affiliated To Andhra University, Visakhapatnam]
QUESTION PAPER BLUE PRINT FOR SEMESTER END EXAMINATIONS
B.SC. SEMESTER – II
COURSE – 12A : IMMUNOLOGY AND MEDICAL MICROBIOLOGY(24MICM51A)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1.
2.
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PART- B

Answer all the followingquestions. [5 X 8 M = 40 M]

11 (A).

(OR)

11 (B).

12 (A).

(OR)

12 (B).

13 (A).

(OR)

13 (B).

14 (A).

(OR)

14 (B).

15 (A).

(OR)

15 (B).

DR. V.S. KRISHNA GOVT. DEGREE COLLEGE (A)
NAAC REACCREDITED A GRADE INSTITUTION
MADDILAPALEM, VISAKHAPATNAM

SCHEME FOR MICROBIOLOGY PRACTICAL EXAMINATIONS – MONTH, YEAR

COURSE – 12A: IMMUNOLOGY AND MEDICAL MICROBIOLOGY (24MICM51A)

GROUP, SEMESTER & BATCH NO. **MAX MARKS: 50**

TIME: 3 hours

1. MAJOR EXPERIMENT	[25 MARKS]
2. MINOR EXPERIMENT	[15 MARKS]
3. RECORD	[5 MARKS]
4. VIVA VOCE	[5 MARKS]

Dr. V. S. Krishna Govt. Degree College (Autonomous)
Visakhapatnam – 13
[Affiliated To Andhra University, Visakhapatnam]
MODEL QUESTION PAPER FOR SEMESTER END EXAMINATIONS
III B.Sc. Hons. in Microbiology; SEMESTER – V
COURSE – 12A: IMMUNOLOGY AND MEDICAL MICROBIOLOGY (24MICM51A)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1. Thymus
2. Phagocytosis
3. Antigens
4. Humoral immune response
5. Aspergillosis
6. Nosocomial infections
7. Complement fixation
8. Transport of clinical sample
9. Interferon
10. Disc diffusion method

PART- B

Answer all the following questions. [5 X 8 M = 40 M]

11 (A). Write a note in detail about types of immunity?

(OR)

11 (B). Discuss in brief on complement system?

12 (A). Explain different types of Antibodies with neat diagrams?

(OR)

12 (B). Give a detailed note on major histocompatibility complex?

13 (A). Give a detailed note on normal flora of human body?

(OR)

13 (B). Write a detailed note on bacterial disease, Tuberculosis?

14 (A). Explain general principles of diagnostic microbiology?

(OR)

14 (B). Write about polymerase chain reaction?

15 (A). Discuss in detail about Penicillin?

(OR)

15 (B). Describe antimicrobial susceptibility by Double dilution method?

DR. V. S. KRISHNA GOVT. DEGREE COLLEGE (AUTONOMOUS)
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DEPARTMENT OF MICROBIOLOGY
SEMESTER V
COURSE – 12A: IMMUNOLOGY AND MEDICAL MICROBIOLOGY (24MICM51A)

QUESTION BANK

SHORT ANSWER TYPE QUESTION

UNIT I
1. Adaptive immunity
2. Thymus
3. Phagocytosis
4. Macrophages

UNIT II
1. Antigens
2. Humoral immune response
3. Haptens
8. Cell mediated immune response

UNIT III
9. Pathogenicity
10. Aspergillosis
11. Nosocomial infections
12. Typhoid

UNIT IV
13. DNA probes
14. Complement fixation
15. Transport of clinical sample
16. Immunofluorescence

UNIT V
17. Recombinant vaccines
18. Interferons
19. Disc diffusion method
20. Acyclovir

ESSAY TYPE QUESTION

UNIT I

1. Write a note in detail about types of immunity?
2. Discuss in brief on complement system?
3. Describe secondary organs of immune system?
4. Give a note on identification and functions of B lymphocytes?

UNIT II

5. What is an Antigen? Explain factors affecting antigenicity?
6. Explain different types of Antibodies with neat diagrams?
7. Give a detailed note on major histocompatibility complex?
8. Write about definition and types of hypersensitivity?

UNIT III

9. Give a detailed note on normal flora of human body?
10. Write a detailed note on bacterial disease, Tuberculosis?
11. Give a note on protozoan disease, Malaria?
12. Discuss in detail about viral disease, AIDS?

UNIT IV

13. Explain general principles of diagnostic microbiology?
14. Write about polymerase chain reaction?
15. Give a detailed note on ELISA?
16. Describe identification of biochemical properties of clinical samples?

UNIT V

17. Explain in detail about Vaccines?
18. Discuss in detail about Penicillin?
19. Describe antimicrobial susceptibility by Double dilution method?
20. Give a detailed note on antifungal agent Amphotericin

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QUESTION PAPER BLUE PRINT FOR SEMESTER END EXAMINATIONS
B.Sc. SEMESTER – V
COURSE – 12B: PHARMACEUTICAL MICROBIOLOGY (24MICM51B)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1.
2.
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PART- B

Answer all the following questions. [5 X 8 M = 40 M]

11 (A).

(OR)

11 (B).
12 (A).

(OR)

12 (B).
13 (A).

(OR)

13 (B).
14 (A).

(OR)

14 (B).
15 (A).

(OR)

15 (B).

DR. V.S. KRISHNA GOVT. DEGREE COLLEGE (A)
NAAC REACCREDITED A GRADE INSTITUTION
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SCHEME FOR MICROBIOLOGY PRACTICAL EXAMINATIONS – MONTH, YEAR

PRACTICAL COURSE – 12B: PHARMACEUTICAL MICROBIOLOGY (24MICM51B)

GROUP, SEMESTER & BATCH NO. **MAX MARKS: 50**

TIME: 3 hours

1. MAJOR EXPERIMENT	[25 MARKS]
2. MINOR EXPERIMENT	[15 MARKS]
3. RECORD	[5 MARKS]
4. VIVA VOCE	[5 MARKS]

Dr. V. S. Krishna Govt. Degree College (Autonomous)
Visakhapatnam – 13
[Affiliated To Andhra University, Visakhapatnam]
MODEL QUESTION PAPER FOR SEMESTER END EXAMINATIONS
III B.Sc. Hons. in Microbiology; SEMESTER – V
COURSE – 12B: PHARMACEUTICAL MICROBIOLOGY (24MICM51B)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1. β-lactam antibiotics
2. Autoclave
3. Microorganisms present in pharmaceutical industry
4. Membrane filter technique
5. Bioburden testing
6. Microbial spoilage
7. Antimicrobial agent
8. Vaccine
9. Formulation of Medicine
10. Assay for antibiotics

PART- B

Answer all the following questions. [5 X 8 M = 40 M]

11 (A). Give a note on Significance of microbiology in the pharmaceutical industry

(OR)

11 (B). Explain about Microbial contamination and spoilage of pharmaceutical products

12 (A). Give a detailed account on Microbial preservation of pharmaceutical products?

(OR)

12 (B). Define asepsis and write the Principles of aseptic techniques and cleanrooms in pharmaceutical industry?

13 (A). Explain about validation and qualification of manufacturing process?

(OR)

13 (B). Give a brief account on environmental monitoring trends in pharmaceutical facilities

14 (A). Explain about quality assurance and the control of microbial risk in medicine?

(OR)

14 (B). Explain about validation and qualification of manufacturing process?

15 (A). Give a brief account on microbial stability testing of pharmaceutical products.

(OR)

15 (B). Explain about testing of microbial stability in pharma industry?

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DEPARTMENT OF MICROBIOLOGY
SEMESTER V
COURSE – 12B: PHARMACEUTICAL MICROBIOLOGY (24MICM51B)

QUESTION BANK

SHORT ANSWER TYPE QUESTION

UNIT I

3. Aseptic techniques
4. β-lactam antibiotics
3. Autoclave
4. Hepa filters

UNIT II

5. Antimicrobial agents
6. BSL
7. Microorganisms present in pharmaceutical industry
8. Membrane filter technique

UNIT III

4. Bioburden testing
5. Define GMP
10. Microbial spoilage
11. Preservation of medicine using antimicrobial agents

UNIT IV

13. Contamination of non steroid pharmaceutical products
14. Environmental monitoring in pharma industry
15. Antimicrobial agent
16. Vaccine

UNIT V

17. Microbial stability testing
18. Formulation of Medicine
19. Microbial quality control
20. Assay for antibiotics

ESSAY TYPE QUESTION

UNIT I

1. Give a note on Significance of microbiology in the pharmaceutical industry
2. Explain about Microbial contamination and spoilage of pharmaceutical products
3. Types of Antibiotics with any three
4. Explain about chemical sterilization techniques.

UNIT II

5. Define disinfectant? Write the types of disinfectant and mode of action?
6. Give a detailed account on Microbial preservation of pharmaceutical products?
7. Define asepsis and write the Principles of aseptic techniques and cleanrooms in pharmaceutical industry?
8. Give a brief account on identification and characterization of microorganisms in pharma industry

UNIT III

9. Explain about Environmental monitoring system in pharma industry?
10. Write about microbial enumeration methods in pharma industry?
11. Give a detailed account on current good manufacturing practices?
12. Give an account on Ecology of microorganisms in pharma industry

UNIT IV

13. Explain about quality assurance and the control of microbial risk in medicine?
14. Explain about validation and qualification of manufacturing process?
15. Give a brief account on environmental monitoring trends in pharmaceutical facilities
16. Explain about Microbial aspects of product development?

UNIT V

17. Give a detailed account on combination of medicines in pharma industry?
18. Give a brief account on microbial stability testing of pharmaceutical products.
19. Explain about testing of microbial stability in pharma industry?
20. Give a brief account on Microbial quality control in vaccine production

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QUESTION PAPER BLUE PRINT FOR SEMESTER END EXAMINATIONS
B.Sc. SEMESTER – V
COURSE 13A: APPLIED MICROBIOLOGY(24MICM52A)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1.
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PART- B

Answer all the followingquestions. [5 X 8 M = 40 M]

11 (A).

(OR)

11 (B).

12 (A).

(OR)

12 (B).

13 (A).

(OR)

13 (B).

14 (A).

(OR)

14 (B).

15 (A).

(OR)

15 (B).

DR. V.S. KRISHNA GOVT. DEGREE COLLEGE (A)
NAAC REACCREDITED A GRADE INSTITUTION
MADDILAPALEM, VISAKHAPATNAM
SCHEME FOR MICROBIOLOGY PRACTICAL EXAMINATIONS – MONTH, YEAR

COURSE 13A: APPLIED MICROBIOLOGY(24MICM52A)

GROUP, SEMESTER & BATCH NO. **MAX MARKS: 50**

TIME: 3 hours

1. MAJOR EXPERIMENT	[25 MARKS]
2. MINOR EXPERIMENT	[15 MARKS]
3. RECORD	[5 MARKS]
4. VIVA VOCE	[5 MARKS]

Dr. V. S. Krishna Govt. Degree College (Autonomous)
Visakhapatnam – 13
[Affiliated To Andhra University, Visakhapatnam]
MODEL QUESTION PAPER FOR SEMESTER END EXAMINATIONS
III B.Sc. Hons. in Microbiology; SEMESTER – V
COURSE 13A: APPLIED MICROBIOLOGY (24MICM52A)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1. FSSAI
2. Incubation centre
3. Bacillus thuringensis
4. Peptidases
5. Compost
6. Spawning
7. Preparation of medium for wine
8. Carbonation
9. Characteristics of a patent
10. Inventory

PART- B

Answer all the followingquestions. [5 X 8 M = 40 M]

11 (A). Write about scope and importance of Microbiology

(OR)

11 (B). Define incubation centre and explain about risk assessment in industries

12 (A). Define Single cell Protein and explain about the production of algae SCP

(OR)

12 (B). Write about the production of Amylase

13 (A). Explain about the cultivation of mushroom with reference to agaricus

(OR)

13 (B). Define biofertilizer and write the production of rhizobium

14 (A). Explain about media composition and preparation of medium in brewing industry?

(OR)

14 (B). Give a detailed note on hygiene practices are essential to prevent microbial contamination in bread baking?

15 (A). Explain the layout and design of the Project?

(OR)

15 (B). Explain the rights and obligations of an inventor once a patent is granted?

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DEPARTMENT OF MICROBIOLOGY
SEMESTER V
COURSE 13A: APPLIED MICROBIOLOGY (24MICM52A)

QUESTION BANK

SHORT ANSWER TYPE QUESTION

UNIT I

1. Importantce of applied microbiology
2. FSSAI
3. Incubation centre
4. Large scale industry

UNIT II

5. Yeast
6. Bacillus thuringensis
7. Peptidases
8. Invertase

UNIT III

9. Compost
10. Spawning
11. Azotobacter
12. Define biofertilizer

UNIT IV

13. Media composition for beer
14. Preparation of medium for wine
15. Carbonation
16. Yeast activation

UNIT V

17. History of patenting
18. Characteristics of a patent
19. Inventory
20. Infringement

ESSAY TYPE QUESTIONS

UNIT I

1. Write about scope and importance of Microbiology
2. Explain about the institutes involved, Government support for entrepreneurs to start incubation centre
3. Write about the scope of SEZ for applied microbiology
4. Define incubation centre and explain about risk assessment in industries

UNIT II

5. Define Single cell Protein and explain about the production of algae SCP
6. Give a detailed account on root nodules and explain about legume inoculants
7. Write about the production of Amylase
8. Explain about the fermentation economics

UNIT III

9. Explain about the cultivation of mushroom with reference to agaricus
10. Write about differences between chemical and biofertilizers
11. Define biofertilizer and write the production of rhizobium
12. Write about Composting as biofertilizer?

UNIT IV

13. Explain about media composition and preparation of medium in brewing industry?
14. Describe the microorganisms involved in preparation of wine?
15. Give a detailed note on hygiene practices are essential to prevent microbial contamination in bread baking?
16. What are the steps involved in activating dry yeast for bread making?

UNIT V

17. Explain the layout and design of the Project?
18. What are the key characteristics that define a patent?
19. What are the essential components of a patent application?
20. Explain the rights and obligations of an inventor once a patent is granted?

Dr. V. S. Krishna Govt. Degree College (Autonomous)
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[Affiliated To Andhra University, Visakhapatnam]
QUESTION PAPER BLUE PRINT FOR SEMESTER END EXAMINATIONS
B.Sc. SEMESTER – V
COURSE 13B: DIAGNOSTIC MICROBIOLOGY(24MICM52B)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1.
2.
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10.

PART- B

Answer all the following questions. [5 X 8 M = 40 M]

11 (A).

(OR)

11 (B).
12 (A).

(OR)

12 (B).
13 (A).

(OR)

13 (B).
14 (A).

(OR)

14 (B).
15 (A).

(OR)

15 (B).

DR. V.S. KRISHNA GOVT. DEGREE COLLEGE (A)
NAAC REACCREDITED A GRADE INSTITUTION
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SCHEME FOR MICROBIOLOGY PRACTICAL EXAMINATIONS – MONTH, YEAR
PRACTICAL
COURSE 13B: DIAGNOSTIC MICROBIOLOGY (24MICM52B)

GROUP, SEMESTER & BATCH NO. **MAX MARKS: 50**

TIME: 3 hours

1. MAJOR EXPERIMENT	[25 MARKS]
2. MINOR EXPERIMENT	[15 MARKS]
3. RECORD	[5 MARKS]
4. VIVA VOCE	[5 MARKS]

Dr. V. S. Krishna Govt. Degree College (Autonomous)
Visakhapatnam – 13
[Affiliated To Andhra University, Visakhapatnam]
MODEL QUESTION PAPER FOR SEMESTER END EXAMINATIONS
III B.Sc. Hons. in Microbiology; SEMESTER –V
COURSE 13B: DIAGNOSTIC MICROBIOLOGY(24MICM52B)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1. Collection of blood sample
2. Precautions required blood collection of CSF
3. Gram staining
4. Preparation of blood agar.
5. Agglutination
6. Significance of radio immune assay
7. Importance of drug resistance
8. Disc diffusion method
9. Identification of pathogen in metagenomic studies
10. Transcriptomics applied in diagnostic microbiology

PART- B

Answer all the following questions. [5 X 8 M = 40 M]

11 (A). Identify the procedures for collecting samples from the oral cavity and throat.

(OR)

11 (B). Specify the training requirements for laboratory workers to ensure safety.

12 (A). Compare and contrast Gram staining and Ziehl-Neelsen staining for tuberculosis in terms of methodology and diagnostic significance.

(OR)

12 (B). Analyze the process and clinical implications of using Giemsa-stained thin blood films for malaria diagnosis.

13 (A). Describe the ELISA technique in detail, analyze its role in detecting specific antigens or antibodies?

(OR)

13 (B). Discuss the methodology and applications of Digital PCR in nucleic acid quantification?

14 (A). Describe the various mechanisms by which bacteria develop resistance to antibiotics and analyze how these mechanisms affect the efficacy of treatment.

(OR)

14 (B). Explain the advantages and limitations of the disc diffusion method compared to other antimicrobial susceptibility testing methods

15 (A). Describe the process of collecting and analyzing samples in metagenomic studies

(OR)

15 (B). Describe the various molecular techniques used to detect anti-TB drug resistance and analyze their effectiveness compared to conventional methods.

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DEPARTMENT OF MICROBIOLOGY
SEMESTER V
COURSE 13B: DIAGNOSTIC MICROBIOLOGY (24MICM52B)

QUESTION BANK

SHORT ANSWER TYPE QUESTION

UNIT I

1. Collection of blood sample
2. Precautions required blood collection of CSF
3. Safety measures during sample collection.
4. Handling Infectious materials

UNIT II

5. Gram staining
6. Preparation of blood agar.
7. Prepration of Sabouraud dextrose agar.
8. Coloney properties of staphylococcus aureus on mannitol salt agar.

UNIT III

9. Agglutination
10. Significance of radio immune assay
11. Advantages of PCR
12. limitations of nonamplified probe-based technique

UNIT IV

13. Importance of drug resistance
14. Disc diffusion method
15. Importance in antibiotic effectiveness.
16. Importance of MIC

UNIT V

17. Identification of pathogen in metagenomic studies
18. Metagenomic studies for pathogen detection
19. Transcriptomics applied in diagnostic microbiology
20. Molecular testing in identifying drug-resistant tuberculosis strains

ESSAY TYPE QUESTIONS

UNIT I

1. Identify the procedures for collecting samples from the oral cavity and throat.
2. Explain how to transport urine samples to the laboratory while maintaing sample integrity.
3. Identify the common sources of laboratory acquired infections that pose arisk to laboratory workers.
4. Specify the training requirements for laboratory workers to ensure safety.

UNIT II

5. Compare and contrast Gram staining and Ziehl-Neelsen staining for tuberculosis in terms of methodology and diagnostic significance.
6. Analyze the process and clinical implications of using Giemsa-stained thin blood films for malaria diagnosis.
7. Discuss the application and diagnostic value of Lactophenol cotton blue staining in identifying fungal infections.
8. Analyze the colony properties of Streptococcus pneumoniae on Blood agar and explain their importance in clinical microbiology.

UNIT III

9. Describe the ELISA technique in detail, analyze its role in detecting specific antigens or antibodies?
10. Discuss the methodology and applications of Digital PCR in nucleic acid quantification?
11. Explain how nonamplified probe-based methods are used for the identification of specific microorganisms?
12. What is the process and significance of radio immune assays in clinical diagnostics?

UNIT IV

13. Describe the various mechanisms by which bacteria develop resistance to antibiotics and analyze how these mechanisms affect the efficacy of treatment.
14. Explain the advantages and limitations of the disc diffusion method compared to other antimicrobial susceptibility testing methods
15. Compare the MIC determination with the disc diffusion method in terms of accuracy, sensitivity, and clinical applicability?
16. Evaluate the strategies employed to combat antibiotic resistance and propose potential future approaches to mitigate the spread of resistant bacteria.

UNIT V

17. Describe the process of collecting and analyzing samples in metagenomic studies
18. Evaluate the benefits and limitations of transcriptomic techniques compared to traditional diagnostic methods, and propose potential improvements.
19. Describe the various molecular techniques used to detect anti-TB drug resistance and analyze their effectiveness compared to conventional methods.
20. Explain the recent advancements in molecular tests for detecting Mycobacterium tuberculosis and discuss their impact on the diagnosis and treatment of tuberculosis.

Dr. V. S. Krishna Govt. Degree College (Autonomous)
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QUESTION PAPER BLUE PRINT FOR SEMESTER END EXAMINATIONS
B.Sc. SEMESTER – V
COURSE – 14A: INDUSTRIAL MICROBIOLOGY (24MICM53A)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1.
2.
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PART- B

Answer all the followingquestions. [5 X 8 M = 40 M]

11 (A).

(OR)

11 (B).

12 (A).

(OR)

12 (B).

13 (A).

(OR)

13 (B).

14 (A).

(OR)

14 (B).

15 (A).

(OR)

15 (B).

DR. V.S. KRISHNA GOVT. DEGREE COLLEGE (A)
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SCHEME FOR MICROBIOLOGY PRACTICAL EXAMINATIONS – MONTH, YEAR

PRACTICALS COURSE – 14A: INDUSTRIAL MICROBIOLOGY(24MICM53A)

GROUP, SEMESTER & BATCH NO. **MAX MARKS: 50**

TIME: 3 hours

1. MAJOR EXPERIMENT	[25 MARKS]
2. MINOR EXPERIMENT	[15 MARKS]
3. RECORD	[5 MARKS]
4. VIVA VOCE	[5 MARKS]

Dr. V. S. Krishna Govt. Degree College (Autonomous)
Visakhapatnam – 13
[Affiliated To Andhra University, Visakhapatnam]
MODEL QUESTION PAPER FOR SEMESTER END EXAMINATIONS
III B.Sc. Hons. in Microbiology; SEMESTER – V
COURSE – 14A: INDUSTRIAL MICROBIOLOGY (24MICM53A)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1. Key developments in industrial microbiology
2. Industrial applications of *Aspergillus niger*
3. Purpose of primary screening in microbial strain selection
4. Fermentation media
5. Design of a bioreactor
6. Functions of the stirred tank bioreactor
7. Cell disruption
8. Purification of fermentation products
9. Penicillin
10. Vitamin B12

PART- B

Answer all the following questions. [5 X 8 M = 40 M]

11 (A). Explain the Techniques Involved in selection of industrially important metabolites from microbes

(OR)

11 (B). Assess the significance of *Saccharomyces cerevisiae* in industrial microbiology and their impact on specific industries.

12 (A). Describe the processes and objectives of primary and secondary screening in industrial microbiology and analyze their impact on strain development.

(OR)

12 (B). Compare and contrast the growth kinetics of microorganisms in batch culture versus continuous culture systems, highlighting their advantages and limitations.

13 (A). Compare aerobic and anaerobic fermentation processes in terms of their metabolic pathways and industrial uses.

(OR)

13 (B). Examine the distinctions between submerged and surface fermentation, and evaluate their implications for microbial growth and product yield.

14 (A). Explain in detail about downstream processing

(OR)

14 (B). Give a note on Computer application in fermentation technology?

15 (A). Describe the industrial processes involved in the production of citric acid?

(OR)

15 (B). Explain the biosynthetic pathways and fermentation processes utilized in the production of glutamic acid

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DEPARTMENT OF MICROBIOLOGY
SEMESTER V
COURSE – 14A: INDUSTRIAL MICROBIOLOGY (24MICM53A)
QUESTION BANK

SHORT ANSWER TYPE QUESTION

UNIT I

1. Key developments in industrial microbiology
2. Industrial applications of *Aspergillus niger*
3. Streptomyces griseus used in the production of antibiotics
4. Primary microbial metabolites

UNIT II

5. Purpose of primary screening in microbial strain selection
6. Continuous culture
7. Fermentation media
8. Preservation of industrial strains

UNIT III

9. Design of a bioreactor
10. Functions of the stirred tank bioreactor
11. Liquid-state fermentation
12. Anaerobic fermentation

UNIT IV

13. Impact of pH and temperature
14. Cell disruption
15. Purification of fermentation products
16. Applications of immobilization

UNIT V

17. Penicillin
18. Vitamin B12
19. Enzyme probe biosensors
20. Biosurfactants

ESSAY TYPE QUESTION

UNIT I

1. Discuss the evolution of industrial microbiology, highlighting key innovations and their contributions to current industrial applications
2. Illustrate the processes involved in the production of secondary microbial metabolites
3. Explain the Techniques Involved in selection of industrially important metabolites from microbes
4. Assess the significance of Saccharomyces cerevisiae in industrial microbiology and their impact on specific industries.

UNIT II

5. Describe the processes and objectives of primary and secondary screening in industrial microbiology and analyze their impact on strain development.
6. Compare and contrast the growth kinetics of microorganisms in batch culture versus continuous culture systems, highlighting their advantages and limitations.
7. Analyze the role of specific fermentation media components, such as molasses, corn-steep liquor, and yeast extract, in microbial growth and product formation.
8. Evaluate the suitability of various fermentation media, including whey and protein hydrolysates, for different industrial applications.

UNIT III

9. Evaluate how the design and component selection of a continuously stirred tank bioreactor influence its efficiency and performance in industrial applications.
10. Assess the challenges and considerations associated with scaling up from laboratory to production fermenters, and discuss strategies to address these issues.
11. Compare aerobic and anaerobic fermentation processes in terms of their metabolic pathways and industrial uses.
12. Examine the distinctions between submerged and surface fermentation, and evaluate their implications for microbial growth and product yield.

UNIT IV

13. Explain the importance of aeration in fermentation. How can aeration be managed to enhance microbial growth and product yield?
14. Discuss the challenges associated with foaming and aeration in fermentation processes.
15. Explain in detail about downstream processing
16. Give a note on Computer application in fermentation technology?

UNIT V

17. Describe the industrial processes involved in the production of citric acid?
18. Explain the biosynthetic pathways and fermentation processes utilized in the production of glutamic acid
19. Investigate the formation, properties, and applications of biofilms and biosurfactants in various industrial sectors.
20. Analyze the benefits and ethical considerations associated with the production of microbial products from genetically modified organisms, with a particular focus on insulin.

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QUESTION PAPER BLUE PRINT FOR SEMESTER END EXAMINATIONS
B.Sc. SEMESTER – V
COURSE 14 B: AGRICULTURAL MICROBIOLOGY (24MICM53B)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1.
2.
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4.
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9.
10.

PART- B

Answer all the followingquestions. [5 X 8 M = 40 M]

11 (A).

(OR)

11 (B).
12 (A).

(OR)

12 (B).
13 (A).

(OR)

13 (B).
14 (A).

(OR)

14 (B).
15 (A).

(OR)

15 (B).

DR. V.S. KRISHNA GOVT. DEGREE COLLEGE (A)
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SCHEME FOR MICROBIOLOGY PRACTICAL EXAMINATIONS – MONTH, YEAR
COURSE 14 B: AGRICULTURAL MICROBIOLOGY (24MICM53B)

GROUP, SEMESTER & BATCH NO. **MAX MARKS: 50**

TIME: 3 hours

1. MAJOR EXPERIMENT	[25 MARKS]
2. MINOR EXPERIMENT	[15 MARKS]
3. RECORD	[5 MARKS]
4. VIVA VOCE	[5 MARKS]

Dr. V. S. Krishna Govt. Degree College (Autonomous)
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[Affiliated To Andhra University, Visakhapatnam]
MODEL QUESTION PAPER FOR SEMESTER END EXAMINATIONS
III B.Sc. Hons. in Microbiology; SEMESTER – V
COURSE 14 B: AGRICULTURAL MICROBIOLOGY (24MICM53B)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1. Soil profile
2. Mutualism
3. Microbial Pathogenicity
4. Systemic acquired resistance (SAR)
5. cultural – host eradication
6. Genetically modified crops
7. Angular leaf spot of cotton
8. Potato spindle tuber
9. Rhizobium
10. Phosphate Solubilizers

PART- B

Answer all the followingquestions. [5 X 8 M = 40 M]

11 (A). Evaluate the importance of soil microorganisms in maintaining soil health and assess the impact of human activities on soil microbial diversity.

(OR)

11 (B).Discuss the mechanisms and benefits of symbiotic and non-symbiotic interactions between microbes and plants?

12 (A). Describe the various virulence factors of microbial pathogens, including enzymes and toxins

(OR)

12 (B). Explain how pathogens affect key physiological processes in hosts, such as photosynthesis and respiration

13 (A). Give a note on the effectiveness of cultural methods in controlling plant diseases

(OR)

13 (B). Discuss the process and benefits of genetically engineering disease-resistant plants using plant-derived genes and pathogen-derived genes.

14 (A). Explain the epidemiology and impact of bacterial leaf blight of rice, and analyze the various control measures employed to manage this disease.

(OR)

14 (B). Investigate the causes and symptoms of crown galls and bacterial cankers of citrus, and evaluate the effectiveness of biological and chemical control methods.

15 (A). Explain the differences between symbiotic and non-symbiotic biofertilizers?

(OR)

15 (B). Describe the production process and field applications of *Bacillus thuringiensis* as a bioinsecticide.

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DEPARTMENT OF MICROBIOLOGY
SEMESTER V
COURSE 14 B: AGRICULTURAL MICROBIOLOGY (24MICM53B)

QUESTION BANK

SHORT ANSWER TYPE QUESTION

UNIT I

1. Soil profile
2. Hemicelluloses and lignocelluloses
3. Mutualism
4. Symbiotic interactions

UNIT II

5. Microbial Pathogenicity
6. Effects of pathogens on cell membrane permeability
7. Concept of constitutive defense mechanisms in plants
8. Systemic acquired resistance (SAR)

UNIT III

9. Cultural – host eradication
10. Mulches
11. Suppressive soils
12. Genetically modified crops

UNIT IV

13. Wilt of tomato caused by Fusarium oxysporumf.sp. lycopersici
14. Angular leaf spot of cotton
15. Potato spindle tuber
16. Tomato yellow leaf curl

UNIT V

17. Rhizobium
18. Phosphate Solubilizers
19. VAM
20. Synthetic pesticides

ESSAY TYPE QUESTION

UNIT I

1. Evaluate the importance of soil microorganisms in maintaining soil health and assess the impact of human activities on soil microbial diversity.
2. Explain the biochemical processes involved in the mineralization of cellulose, hemicelluloses, lignocelluloses, lignin, and humus in soil ecosystems.
3. Discuss the mechanisms and benefits of symbiotic and non-symbiotic interactions between microbes and plants?
4. Describe the various types of microbe interactions and provide examples of each.

UNIT II

5. Describe the various virulence factors of microbial pathogens, including enzymes and toxins
6. Explain how pathogens affect key physiological processes in hosts, such as photosynthesis and respiration
7. Examine the various inducible structural defenses in plants and assess their effectiveness in preventing pathogen spread.
8. Analyze the role of inducible biochemical defenses in plants and evaluate their contributions to plant immunity.

UNIT III

9. Give a note on the effectiveness of cultural methods in controlling plant diseases.
10. Explain the modes of action and applications of protectant and systemic fungicides related to the resistance of pathogens to chemical treatments
11. Investigate the role of antibiotics in plant disease management and assess their effectiveness and potential risks.
12. Discuss the process and benefits of genetically engineering disease-resistant plants using plant-derived genes and pathogen-derived genes.

UNIT IV

13. Describe the etiological agent, symptoms, epidemiology, and control measures of black stem rust of wheat caused by *Puccinia graministritici*.
14. Explain the epidemiology and impact of bacterial leaf blight of rice, and analyze the various control measures employed to manage this disease.
15. Investigate the causes and symptoms of crown galls and bacterial cankers of citrus, and evaluate the effectiveness of biological and chemical control methods.
16. Analyze the impact of viroid infections on plant health by examining the symptoms, epidemiology, and control strategies for potato spindle tuber and coconut cadangcadang diseases.

UNIT V

17. Explain the differences between symbiotic and non-symbiotic biofertilizers?
18. Discuss the significance of mycorrhizal inoculum in promoting plant growth and soil health.
19. Provide a general account of microbes used as bioinsecticides and discuss their advantages over synthetic pesticides.
20. Describe the production process and field applications of Bacillus thuringiensis as a bioinsecticide.

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QUESTION PAPER BLUE PRINT FOR SEMESTER END EXAMINATIONS

B.SC. SEMESTER – V

COURSE- 15A: FOOD AND DAIRY MICROBIOLOGY (24MICM54A)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1.
2.
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PART- B

Answer all the followingquestions. [5 X 8 M = 40 M]

11 (A).

(OR)

11 (B).

12 (A).

(OR)

12 (B).

13 (A).

(OR)

13 (B).

14 (A).

(OR)

14 (B).

15 (A).

(OR)

15 (B).

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SCHEME FOR MICROBIOLOGY PRACTICAL EXAMINATIONS – MONTH, YEAR

PRACTICAL COURSE- 15A: FOOD AND DAIRY MICROBIOLOGY (24MICM54A)

GROUP, SEMESTER & BATCH NO. **MAX MARKS: 50**

TIME: 3 hours

1. MAJOR EXPERIMENT	[25 MARKS]
2. MINOR EXPERIMENT	[15 MARKS]
3. RECORD	[5 MARKS]
4. VIVA VOCE	[5 MARKS]

Dr. V. S. Krishna Govt. Degree College (Autonomous)
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MODEL QUESTION PAPER FOR SEMESTER END EXAMINATIONS
III B.Sc. Hons. in Microbiology; SEMESTER – V
COURSE- 15A: FOOD AND DAIRY MICROBIOLOGY (24MICM54A)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1. Intrinsic factors
2. Sources of microbial contamination of raw milk
3. Bacteriocins of lactic acid bacteria
4. Food grade Biopreservatives
5. Cheese
6. Probiotic Foods Available In Market
7. Mycotoxins
8. Salmonellosis
9. HACCP
10. Predictive microbiology

PART- B

Answer all the following questions. [5 X 8 M = 40 M]

11 (A). Explain in detail about Intrinsic and extrinsic factors that affect growth and survival of microbes in foods

(OR)

11 (B). Sources of microbial contamination and spoilage of vegetables and canned Foods

12 (A). Give a detailed note on physical methods of food preservation?

(OR)

12 (B). Describe in detail about Microbial changes in raw milk during chilling and refrigeration.

13 (A). Explain about fermented dairy products acidophilus milk and dahi

(OR)

13 (B). Write about Health benefits, types of microorganisms used in Probiotics

14 (A). Examine the mechanisms through which Clostridium botulinum causes food intoxications, focusing on the types of foods it commonly contaminates, the symptoms of botulism, and the strategies for its prevention.

(OR)

14 (B). Evaluate the significance of Campylobacter jejuni in foodborne infections, identifying its sources, symptoms, and the public health measures required to prevent and control its spread.

15 (A). Analyze the principles of food sanitation and control, discussing how these principles are applied in the food industry to ensure food safety.

(OR)

15 (B). Assess the benefits and risks associated with genetically modified foods, considering both their potential to enhance food security and the concerns related to their safety and ethical implications.

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DEPARTMENT OF MICROBIOLOGY
SEMESTER V
COURSE- 15A: FOOD AND DAIRY MICROBIOLOGY (24MICM54A)

QUESTION BANK

SHORT ANSWER TYPE QUESTION

UNIT I

1. Intrinsic factors
2. Microbial flora of fresh foods
3. Sources of microbial contamination of raw milk
4. Spoilage of meat

UNIT II

5. Bacteriocins of lactic acid bacteria
6. Chemical changes in raw milk during chilling
7. Food grade Biopreservatives
8. Lactoferrin

UNIT III

9. Yogurt
10. Cheese
11. Probiotic Foods Available In Market
12. Soy Sauce

UNIT IV

13. Mycotoxins
14. Salmonellosis,
15. Listeria monocytogenes
16. Preventive Measures for Staphylococcus *aureus*

UNIT V

17. HACCP
18. predictive microbiology
19. Nutraceuticals
20. Lipases

ESSAY TYPE QUESTION

UNIT I

1. Explain in detail about Intrinsic and extrinsic factors that affect growth and survival of microbes in foods.
2. Describe in detail on Microflora associated with milk and milk products and their importance
3. Sources of microbial contamination and spoilage of vegetables and canned Foods.
4. Give a note on Microbial flora of fresh eggs and fish and their infestation by bacteria and fungi virus.

UNIT II

5. Give a detailed note on physical methods of food preservation?
6. Describe in detail about Microbial changes in raw milk during chilling and refrigeration.
7. Discuss on naturally occurring preservative systems in milk like LP system and Immunoglobulins
8. Give a note on Nisin and other antimicrobials produced by Lactic Acid Bacteria (LAB)

UNIT III

9. Explain about fermented dairy products acidophilus milk and dahi
10. Give a note on Utilization and disposal of dairy by-product, whey.
11. Write about Health benefits, types of microorganisms used in Probiotics
12. Describe other fermented foods like sauerkraut and tempeh

UNIT IV

13. Examine the mechanisms through which Clostridium botulinum causes food intoxications, focusing on the types of foods it commonly contaminates, the symptoms of botulism, and the strategies for its prevention.
14. Assess the significance of *Bacillus cereus* as a foodborne pathogen, describing the types of food it infects, the symptoms it induces, and the preventive measures that can mitigate its occurrence.
15. Investigate the impact of *Listeria monocytogenes* on food safety, detailing the foods at risk, the symptoms of listeriosis, and the preventive measures essential to control this pathogen.
16. Evaluate the significance of *Campylobacter jejuni* in foodborne infections, identifying its sources, symptoms, and the public health measures required to prevent and control its spread.

UNIT V

17. Analyze the principles of food sanitation and control, discussing how these principles are applied in the food industry to ensure food safety.
18. Compare the national and international microbiological standards for dairy products, specifically focusing on BIS, ICMSF, and Codex Alimentarius Standards, and their roles in ensuring food safety.
19. Discuss the rapid detection methods available for identifying foodborne pathogens, comparing their effectiveness and efficiency with traditional cultural methods.
20. Assess the benefits and risks associated with genetically modified foods, considering both their potential to enhance food security and the concerns related to their safety and ethical implications.

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QUESTION PAPER BLUE PRINT FOR SEMESTER END EXAMINATIONS
B.SC. SEMESTER – V
COURSE 15B: ENVIRONMENTAL MICROBIOLOGY (24MICM54B)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1.
2.
3.
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10.

PART- B

Answer all the followingquestions. [5 X 8 M = 40 M]

11 (A).

(OR)

11 (B).

12 (A).

(OR)

12 (B).

13 (A).

(OR)

13 (B).

14 (A).

(OR)

14 (B).

15 (A).

(OR)

15 (B).

DR. V.S. KRISHNA GOVT. DEGREE COLLEGE (A)
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SCHEME FOR MICROBIOLOGY PRACTICAL EXAMINATIONS – MONTH, YEAR

PRACTICAL COURSE 15B : ENVIRONMENTAL MICROBIOLOGY(24MICM54B)

GROUP, SEMESTER & BATCH NO. **MAX MARKS: 50**

TIME: 3 hours

1. MAJOR EXPERIMENT	[25 MARKS]
2. MINOR EXPERIMENT	[15 MARKS]
3. RECORD	[5 MARKS]
4. VIVA VOCE	[5 MARKS]

Dr. V. S. Krishna Govt. Degree College (Autonomous)
Visakhapatnam – 13
[Affiliated To Andhra University, Visakhapatnam]
MODEL QUESTION PAPER FOR SEMESTER END EXAMINATIONS
III B.Sc. Hons. in Microbiology; SEMESTER – V
COURSE 15B: ENVIRONMENTAL MICROBIOLOGY (24MICM54B)

Time: **3 hours** Maximum Marks: **60**

PART- A

Answer any **Five** of the following questions [5 X 4 M = 20 M]

1. Concepts of Ecology
2. Soil microflora
3. Mutualism
4. Microbes thriving at high Temperatures
5. Ammonification
6. Nitrate reduction
7. Types Of Solid Waste
8. Tertiary Sewage Treatment
9. Biodegradable plastics.
10. Biogas production

PART- B

Answer all the following questions. [5 X 8 M = 40 M]

11 (A). Compare the microflora found in freshwater and marine habitats, detailing the differences in microbial communities and their ecological roles in these environments.

(OR)

11 (B). Examine the diversity of soil microflora, discussing their roles in the decomposition of plant organic matter and their importance in soil health and fertility.

12 (A). Differentiate between microbial interactions, providing specific examples of each type?

(OR)

12 (B). Examine the role of microbes in the digestive systems of ruminants, explaining how they assist in digestion and nutrient absorption.

13 (A). Describe the process of nitrogen fixation and the importance of this process.

(OR)

13 (B). Explain the role of biochemical processes of microbes in the carbon cycle

14 (A). Discuss the methods of solid waste disposal?

(OR)

14 (B). Describe the methods used for the treatment and safety of drinking water?

15 (A). Explain the principles of bioremediation and evaluate its effectiveness in degrading common pesticides.

(OR)

15 (B). Explain the microbial processes involved in biogas production and analyze the factors influencing methane and hydrogen yield.

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DEPARTMENT OF MICROBIOLOGY
SEMESTER V
COURSE 15B: ENVIRONMENTAL MICROBIOLOGY (24MICM54B)
QUESTION BANK

SHORT ANSWER TYPE QUESTION

UNIT I

1. Concepts Of Ecology
2. Food Chains
3. Soil microflora
4. Microbes in/on human body

UNIT II

5. Mutualism
6. Symbiotic interactions
7. symbiotic luminescent bacteria
8. Microbes thriving at high Temperatures

UNIT III

9. Microbial degradation of cellulose
10. Ammonification
11. Nitrate reduction
12. Sulphur solubilisation

UNIT IV

13. Types Of Solid Waste
14. Trickling Filter
15. Tertiary Sewage Treatment
16. Membrane Filter

UNIT V

17. Organic matter
18. Bioleaching
19. Biodegradable plastics.
20. Biogas production

ESSAY TYPE QUESTION

UNIT I

1. Explain the concept of an ecosystem and identifying its components

2. Compare the microflora found in freshwater and marine habitats, detailing the differences in microbial communities and their ecological roles in these environments.

3. Discuss the presence and dispersal of aero microflora in the atmosphere, explaining how these microbes are transported and their potential impacts on environmental and human health.

4. Examine the diversity of soil microflora, discussing their roles in the decomposition of plant organic matter and their importance in soil health and fertility.

UNIT II

5. Differentiate between microbial interactions, providing specific examples of each type.

6. Examine the role of microbes in the digestive systems of ruminants, explaining how they assist in digestion and nutrient absorption.

7. Discuss the adaptations that enable microbes to thrive in high pH and salinity environments, focusing on the physiological and molecular mechanisms involved.

8. Discuss the mechanisms and ecological significance of symbiotic and non-symbiotic interactions between microbes and plants

UNIT III

9. Explain the role of biochemical processes of microbes in the carbon cycle.
10. Describe the process of nitrogen fixation and the importance of this process.

11. Analyze the role of microbes in the sulfur cycle, detailing the microbial processes involved in sulfur oxidation and reduction.

12. Evaluate the mechanisms of phosphate immobilization and solubilization by microbesand the impact on plant nutrient availability.

UNIT IV

13. Discuss the methods of solid waste disposal?

14. Give a detailed note on the primary, secondary, and tertiary sewage treatment processes?

15. Describe the methods used for the treatment and safety of drinking water?

16. Write about different methods to detect portability of water samples

UNIT V

17. Explain the principles of bioremediation and evaluate its effectiveness in degrading common pesticides.

18. Describe the techniques used for the removal of heavy metals from aqueous effluents

19. Investigate the microbial processes involved in the degradation of biodegradable plastics and assess their commercial viability.

20. Explain the microbial processes involved in biogas production and analyze the factors influencing methane and hydrogen yield.

Dr. V. S. KRISHNA GOVT. DEGREE COLLEGE (AUTONOMOUS)
MADDILAPALEM, VISAKHAPATNAM

DEPARTMENT OF MICROBIOLOGY
MODEL QUESTION PAPER FOR VALUE-ADDED-COURSE

FOOD, NUTRITION AND HEALTH EDUCATION

SECTION – A

Answer the following **3 X 20 M = 60 M**

1. A) Discuss in detail about different methods of food storage and preservation

(OR)

1. B) Discuss about nutrition related disorders and their management

2. A) Write about food borne diseases – Food intoxication and Food poisoning.

(OR)

2. B) Write about importance of environmental sanitation to public health

3. A) What is primary health care? Discuss various components of health care.

(OR)

3. B) Describe different health programmes observed in India and abroad.

SECTION – B

Answer any FOUR questions from the following **4 x 5 M = 20 M**

4. Meal planning
5. Concept of nutrition
6. Indicators of health
7. Common infectious diseases
8. Health education
9. Nutrition programmes

SECTION – C

Answer the following **1 x 20 M = 20 M**

10. Prepare a healthy and balanced food recipe.