Roll No. | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. Hons. (Microbiology) (Sem.–1)

INTRODUCTION TO MICROBIOLOGY

Subject Code : BSMB 101-19

M.Code : 78979

Date of Examination : 24-05-2023

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Write briefly :**

   a) Contributions of L. Pasteur to microbiology.

   b) Discovery of antibiotic.

   c) Phase microscopy.

   d) Morphology of bacteria.

   e) Microbial spores.

   f) Nutritional biodiversity.

   g) Synchronous growth.

   h) Microbial flora in human.

   i) Anaerobic fermentation.

   j) Symbiosis.

SECTION-B

2. Discuss the principle of electron microscopy.
3. Difference between aerobic and anaerobic fermentation.
4. Write a note on microbial interaction like symbiosis.
5. Elaborate on the different phases of the growth of bacteria.
6. Difference between gram-positive and gram-negative bacteria.

SECTION-C

7. Elaborate on the morphology of bacteria and viruses, emphasizing structure.
8. Discuss sterilization and pasteurization with examples.
9. Explain the types of microbial pathogens and diseases caused by them.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. (Microbiology) (Sem.–1)

ENGLISH

Subject Code : BTHU103/18

M.Code : 80141

Date of Examination : 19-05-23

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Write briefly :**

   a) Encoding

   b) Two-way model of Communication

   c) Formal communication

   d) Paralanguage

   e) Spoken or Oral Communication

   f) Semantic barriers

   g) Importance of communication

   h) Note making

   i) Advantages of written communication

   j) Advantages of informal communication

SECTION-B

2. Write a short paragraph on Online Education.

3. Write a letter to bank manager asking him to stop payment of a cheque.

4. Characteristics of a good paraphrase.

5. Write a note on formal channels of communication.

6. Write a conversation between two friends who have just come out the Examination hall.

SECTION-C

7. Define Non-verbal communication. Discuss in detail its various forms and also explain their importance.

8. Write a letter to the editor of the local newspaper expressing you anguish over the problems faced by the people due to free sale of liquor everywhere.

9. Suppose you are the Manager of stores in a big business organization and one of your stores catches fire at mid night. Write a report to boss about the steps you have taken to control the fire and the result of your preliminary investigation.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. | | | | | | | | | | |

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. Hons. (Microbiology) (Sem–2)

MOLECULAR BIOLOGY

Subject Code : BSMB-205-19

M.Code : 79876

Date of Examination : 07-06-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Answer briefly :**

   a. Define replicon.

   b. How does RNA differ from DNA?

   c. What is transfer RNA?

   d. How many initiation factors are involved in protein synthesis?

   e. What is excision repair?

   f. What is meant by RNA splicing?

   g. Write the concept of introns.

   h. Differentiate between RNA primer and DNA primer.

   i. DNA replication fork is symmetric or asymmetric type, why?

   j. Where is bacterial site specific recombinase tool used?

SECTION-B

2. Briefly explain alternative forms of DNA helix.

3. What are the basic differences between DNA and RNA?

4. Explain the DNA replication in prokaryotes.

5. Briefly explain the term RNA polymerases.

6. How does protein synthesis occur in prokaryotes?

SECTION-C

7. Elaborate the transcription process of prokaryotes.

8. Highlight the steps involved in the translation of prokaryotes.

9. Explain the structure of Watson and Crick model of DNA and Z-DNA.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. | | | | | | | | | | |

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (Honours) (Microbiology) (Sem–2)

BACTERIOLOGY

Subject Code : BSMB201-19

M.Code : 79872

Date of Examination : 05-06-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Answer briefly:**

a) In what manner bacterial cells organized?

b) Write the name of different component of bacterial cell membrane.

c) Differentiate between Bright Field and Dark field Microscope.

d) What is Serial dilution?

e) Give an example of gram positive and gram negative bacteria.

f) Enlist the different techniques for microbial control?

g) What temperature and pressure should be maintained during bacterial growth?

h) Define Scanning Electron Microscope.

i) Define the term nanoarchaeum.

j) How bacteria perform their metabolism.

SECTION-B

2. Draw a labeled diagram and write the different stages of sporulation in bacteria with an example.

3. How to cultivate the anaerobic bacteria and in what manner they are differ from aerobic bacteria.

4. Suppose you had the choice of destroying one class of organic compounds in bacterial cells to prevent their spread which class would you choose. Why?

5. By what standards are bacteria classified? Name the classifications.

6. What are the various chemical methods of microbial control?

SECTION-C

7. Discuss in detail the composition and structure of gram positive and gram negative cell wall.

8. Write a detailed note on various physical method of microbial control.

9. Explain in brief the different bacteriological techniques for their cultivation.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

(S2)-2060

Roll No. | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. Honours (Microbiology) (Sem–2)

FUNDAMENTALS OF BIOCHEMISTRY

Subject Code : BSMB-203-19

M.Code : 79874

Date of Examination: 30-05-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write Briefly :

a) Define ionization with suitable examples.

b) Draw Haworth projection formula for fructose.

c) What are sphingolipids?

d) What are galactolipids?

e) Define proteoglycans with suitable examples.

f) What are coenzymes?

g) Enlist any four properties of peptide bond.

h) Give any two examples of homopolysaccharides.

i) Differentiate between reducing and non-reducing sugars

j) What are nucleotides?

SECTION-B

2. Explain in detail stereoisomerism of monosaccharides.

3. Write a detailed note on effect of acid and alkali on DNA.

4. Give detailed classification of lipids.

5. Write a brief note on UV absorption by nucleic acids.

6. Give sources, properties and functions of fat-soluble vitamins.

SECTION-C

7. Classify vitamins. Write a detailed note on coenzymes.

8. Classify carbohydrates and give suitable examples from each class including their chemical structures.

9. Explain the structure of mRNA, tRNA and rRNA.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Sc - Honours (Microbiology) (Sem.–3)

BIOSTATISTICS

Subject Code : BSMB-308-19

M.Code : 90374

Date of Examination : 16-05-2023

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Write briefly :**

   a) Define Range.

   b) Define Degrees of Freedom.

   c) If a dice is thrown one time what is the probability to get 4 on the dice.

   d) Plot the graph which shows positive correlation.

   e) Give any two examples for parametric tests.

   f) What do you mean by r in regression analysis? Write its significance.

   g) Define standard deviation.

   h) Write the importance of rank correlation

   i) What do you mean by goodness of fit?

   j) Define confidence limits.

SECTION-B

2. Write a note on Poisson Distribution :

3. In a test given to two groups of students, the marks obtained are as follows :

First group	18	20	36	50	49	36	34	49	41
Second Group	29	28	26	35	30	44	46		

   Examine the significance of difference between the arithmetic mean of the marks secured by the students of the above two groups.

   (The value of t at 5% level of significance for v = 14 is 2.14).

4. Calculate Karl Pearson coefficient of correlation from the given data

S. No	1	2	3	4	5
Marks in Chemistry	48	35	17	23	47
Marks in Maths	45	20	40	25	45

5. Write a note on Hypothesis testing.

6. A bag contains 30 balls numbered from 1 to 30. One ball is drawn at random. Find the probability that the number of ball drawn will be multiple of (a) 5 or 7 (b) 3 or 7.

SECTION-C

7. Write a note on :

   a) Binomial distribution

   b) Normal Distribution

8. Calculate the Mann Whitney U test of the two samples :

Sample I	2	4	5	7	7	3
Sample II	1	2	5	8	3	1

   (Table value is 7, at 0.05).

9. Perform ONE WAY ANOVA for the following data :

   For (2, 6) DF $F_{0.05}$ is 5.14 ; For (3, 6) DF $F_{0.05}$ is 4.76

SCHOOLS

A	B	C
2	5	4
3	4	3
4	6	5

   Take one appropriate value given above for degrees of freedom and interpret the result what you have obtain

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. | | | | | | | | | | |

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (Microbiology) (Sem.–4)

PHYCOLOGY AND MYCOLOGY

Subject Code : BSMB-401-20

M.Code : 92099

Date of Examination : 26-05-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Write briefly :**

   a) Significance of Phialopore in Volvox

   b) Mycotoxins

   c) Nostoc

   d) Symptoms of Candidiasis infection

   e) Lichens

   f) Cryptococcus

   g) Phaeophyceae

   h) Economic Importance of fungi

   i) Role of algae in food

   j) Mycology.

SECTION-B

2. Depict the life cycle of Pencillium with the help of labelled diagrams only. Write its systematic position.

3. Why are Myxomycetes classified as fungi?

4. Discuss economic importance of algae. What are the relationship between cyanophyta and chlorophyta?

5. Write a brief note on classification of algae.

6. Write a brief note on systemic infection.

SECTION-C

7. Describe the variation in thallus organization in various Chlorophyceae algae.

8. Give an account of fungi classification based on various important criteria.

9. Elaborate symptoms, pathogenesis, transmission and control of Subcutaneous infection.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. ☐☐☐☐☐☐☐☐☐☐ Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. Hons. (Microbiology) (Sem.–4)

ANALYTICAL TECHNIQUES IN MICROBIOLOGY

Subject Code : BSMB407-20

M.Code : 92105

Date of Examination : 24-05-23

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Write briefly :**

   a. HPLC

   b. Principle of centrifugation

   c. What is PAGE?

   d. Principle of NMR Spectroscopy

   e. Write the properties of chromophore.

   f. Write the equation of sedimentation velocity.

   g. Enlist the detector used in UV spectroscopy.

   h. What is hyperfine splitting?

   i. What is gel chromatography?

   j. Write the principle of x-ray diffraction.

SECTION-B

2. Write down the principle and methods of affinity chromatography.
3. Write a note on centrifugation.
4. Write principle and procedure of UV spectroscopy.
5. Write briefly on instrumentation of mass spectroscopy.
6. Write a note on raman spectroscopy.

SECTION-C

7. Diagrammatically discuss the instrumentation of NMR spectroscopy.
8. **Write about followings :**

   a) Molecular polarizability

   b) GLC

9. Write in detail agarose electrophoresis of nuclic acid.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. - Honours (Microbiology) (Sem.–4)

FOOD AND DAIRY MICROBIOLOGY

Subject Code : BSMB405-20

M.Code : 92103

Date of Examination : 17-05-23

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Write briefly :**

   a. What is the role of salt in preservation of pickles?

   b. What is the role of invert sugar in food products?

   c. State the advantage of quick freezing over slow freezing.

   d. List the microorganisms responsible for spoilage of milk.

   e. Which enzyme is used in fruit juice clarification?

   f. State two drawbacks of using radiations in food preservation.

   g. What do you understand by Freeze Burn?

   h. Enlist the microorganisms responsible for spoilage of fruit juices.

   i. Which microorganisms can be used in ripening of cheese?

   j. What do you understand by grading of milk?

SECTION-B

2. Explain the process of preservation of food by high temperature.

3. a. Discuss the role of pectinase in fruit juice production.

   b. Write short note on soyabean as an important traditional fermented food.

4. Discuss about the nutritional value of milk in our diet.

5. Mention the applications of the following in food industry:

   a. High fructose syrup

   b. Catalase.

6. Describe the role of microbes in production of Cheddar cheese.

SECTION-C

7. a. Discuss briefly about the historical development in food microbiology

   b. Write the importance of microorganisms in fermentation of meat and fish.

8. What do you understand by food additives? Give examples. Discuss the role of food additives used in food industry.

9. a. Describe the role of water activity in microbial growth in food products.

   b. Write a note on the milk and milk products legislation in India.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. - Honours (Microbiology) (Sem.-5)

BIOSAFETY AND INTELLECTUAL PROPERTY RIGHT

Subject Code : BSMB505-20

M.Code : 92511

Date of Examination : 08-06-23

Time : 3 Hrs.

Max. Marks : 30

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying TWO AND A HALF marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying FIVE marks each and students have to attempt any TWO questions.

SECTION-A

1. **Write briefly :**

   a. Trademark

   b. D Value

   c. Institutional ethics committee

   d. What is WIPO and its main role?

   e. Role of Quality control in pharmaceuticals

   f. Mechanism of cold sterilization

   g. Biohazards

   h. Geographical indication in IPR

   i. Gases used in gaseous sterilization

   j. Protection of plant varieties in IPR

SECTION-B

2. What is ISO 9000:2015 and its benefits.
3. Explain the survival curve in sterilization process.
4. Discuss the various biosafety levels.
5. Explain IPR and its types.
6. Discuss sterility testing.

SECTION-C

7. Discuss the history of patent development in India starting from its inception.
8. Explain the term Bio-Safety Levels (BSL). Briefly point out the various BSL and their significance in laboratory setup.
9. Explain the role of GLP in pharmaceutical industry.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Sc - Honours (Microbiology) (Sem.–5)

ENZYME TECHNOLOGY

Subject Code : BSMB509-20

M.Code : 92515

Date of Examination : 09-06-2023

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. **Write briefly :**

   a) Discuss the applications of enzyme technology.

   b) Define holoenzyme.

   c) Define IU.

   d) What do you mean by coenzyme?

   e) What is Km?

   f) Define feedback inhibition.

   g) Discuss the actual meaning of competitive inhibition.

   h) What are allosteric enzymes?

   i) Enlist enzyme-based products available in the market.

   j) Highlight the relation of enzyme technology with microbiology.

SECTION-B

2. Mention enzyme turnover number and specific activity.

3. Elaborate on the mechanism of enzyme action with a justified diagram.

4. Describe about enzyme repression induction operon model.

5. Differentiate between reversible and irreversible inhibition.

6. Discuss applications of microbial enzymes in the environment.

SECTION-C

7. Discuss in detail the factors affecting enzyme activity enzyme concentration.

8. Mention in detail the application of enzyme-based tests in microbiology for the biochemical analysis of microorganisms.

9. What do you know about immobilized enzymes and their industrial applications?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. Hons. (Microbiology) (Sem–5)

MEDICAL MICROBIOLOGY

Subject Code : BSMB-503-20

M.Code : 92509

Date of Examination : 26-05-2023

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Write brielfly :**

   a) Discuss the pathogenicity.

   b) Define septicemia.

   c) Define septic shock.

   d) What do you mean by toxigenicity?

   e) What are the symptoms of respiratory diseases caused by streptococcus pyrogens?

   f) Define HIV.

   g) Discuss the actual meaning of COVID-19.

   h) What are antibacterial agents?

   i) Enlist the diseases caused by clostridium tetani.

   j) Mention the symptoms of monkeypox disease.

SECTION-B

2. Mention the carriers and their types.
3. Elaborate the symptoms and transmission of E-coli.
4. Describe the transmission of AIDS.
5. Define resistance comment antibiotic resistance.
6. Discuss the inhibitors of cell membrane functions.

SECTION-C

7. Discuss in detail, the collection, transport and culturing of clinical samples.
8. Mention a detailed note on Salmonella Typhi.
9. What do you know about the Antiviral Agent? Explain with relevant examples and mechanisms.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.

Roll No. | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. Honours (Microbiology) (Sem.–6)

MICROBIAL BIOTECHNOLOGY

Subject Code : BSMB 603-20

M.Code : 92519

Date of Examination : 20-05-2023

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. **Attempt all questions :**

   a) Biocatalyst

   b) Maximum biomass yield

   c) Enlist the fermentation process

   d) Bioreactor

   e) Bubble column

   f) Airlift fermenter

   g) Agitation

   h) SCP

   i) Silage

   j) Gasohol.

SECTION-B

2. Discuss the biotechnological innovation in the chemical industry.
3. Write a note on the efficiency of growth and product formation.
4. Explain the components of the microbial fermentation process.
5. Explain fermentation design with special reference to stirred tank and immobilized cell reactors.
6. Write the procedure for the production of Wine and Vinegar.

SECTION-C

7. Explain the method of cultivation of mushrooms and silage.
8. Illustrate the design and types of bioreactors.
9. What is the difference between a hollow fiber bioreactor and an immobilized cell reactor?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student

Roll No. | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc - Honours (Microbiology) (Sem.–6)

RECOMBINANT DNA TECHNOLOGY

Subject Code : BSMB601-20

M.Code : 92517

Date of Examination : 25-05-23

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. **Write briefly :**

   a. What do you mean by Recombinant DNA technology?

   b. What are different types of cloning vectors?

   c. What are restriction Endonuclease III? Give example.

   d. Define attenuated bacterial vaccines.

   e. Define biotechnology.

   f. What are cloning vectors?

   g. Classify recombinant vaccines.

   h. Define antibiotics with examples.

   i. Write few properties of bioplastics

   j. What do you mean by Bioleaching?

SECTION-B

2. Explain the process of protecting and coating of DNA.

3. Write a note on plant and mammalian vectors.

4. Explain the production of fermented beverages using strain improvement.

5. Explain the recombinant production of bacterial vaccine.

6. Write a note on bioplastics.

SECTION-C

7. Define agrobacterium and explain its role in agriculture.

8. Explain the role of genetically engineered E.coli in Bioremediation, Phytoremediation and Bioleaching.

9. Write the process of production of organic acid.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.