

- DEC 2024

SECTION-B

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. Hons. (Microbiology) (Sem.-1)

CELL BIOLOGY

Subject Code : BSMB-105-19

M.Code. : 78983

Date of Examination : 04-01-2025

Max. Marks : 60

Time : 3 Hrs.

INSTRUCTIONS TO CANDIDATES :

- 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) Write the role of chromatin in a cell.
- b) Draw the structure of muscle cells.
- c) What is cell theory?
- d) Define actin.
- e) Write the functions of ribosomes and lysosomes.
- f) What is the role of flagella in cell locomotion?
- g) Write briefly about meiosis I.
- h) What are the functions of peroxisomes?
- i) What is fixation?
- j) What is the difference between gram-positive and gram-negative bacteria?



2. What is staining? Explain details about the chemical basis of staining.
3. Discuss the structure and function of mitochondria in detail.
4. Discuss the broad classification of cell types within an organism.
5. Discuss about various stages of the cell cycle.
6. What is cell senescence and cell death?

SECTION-C

7. What are microtome and embedding? Explain about the microtome with its application in detail.
8. What is freeze-drying? Write down the steps involved in freeze drying.
9. What is cytophotometric? Write details on cytophotometric methods.

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SECTION-B

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: 18-12-2024

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. Explain briefly:

- a) Decoding
- b) One-way model of Communication
- c) Informal communication
- d) Paralanguage
- e) Spoken or Oral Communication
- f) Psychological barriers
- g) Importance of communication
- h) Note making
- i) Advantages of written communication
- j) Types of formal communication.



2. Write a short paragraph on Gratitude.
3. Write a letter to the bank manager asking him to stop payment of a cheque.
4. Write Characteristics of a good paraphrase.
5. Significance of symbols in note making.
6. Discuss some of the important points that must be kept in mind while writing a report.

SECTION-C

7. a) In FOUR sentences, summarise and paraphrase the following passage in an answer to the following question :
Why is "learning how to argue" important?
Knowing how to argue is a useful skill. We use it on ourselves in order to arrive at decisions; we use it with others as we discuss business strategies or policy changes on committees. As members of an environmental action group, we use it in drafting a letter to the editor of our hometown paper. Moreover, we use it when we discuss tax cuts, and university investment policies. Our ability to express opinions persuasively will allow us to make differences in public life. If we lack the necessary skills, we are condemned to sit on the sidelines. Instead of doing the moving, we will be among the moved.
- b) What are Reports? Discuss in detail various types of reports?
8. Your neighbouring state has suffered a serious earthquake. There is death and destruction all around. Write a letter to a volunteer organization offering your services for visit and help. In your letter describe the service that you can render along with the dates when you will be free to join the group.
9. How to improve your reading comprehension skills? What are the three main types of reading strategies?

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SECTION-B

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. (Microbiology) (Sem.-1)

CHEMISTRY-I

Subject Code : BSMB-103-19

M.Code : 78981

Date of Examination : 23-12-2024

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) Heisenberg uncertainty principle.
- b) Significance of wave function.
- c) Mesomeric Effect.
- d) Diastereomers with examples.
- e) Stability of free radicals.
- f) Sawhorse projection formula.
- g) Meso compounds using suitable examples.
- h) Configuration and Conformation
- i) Define racemic modification.
- j) Plane of symmetry.



2. What is hybridization? Explain the hybridization of carbon using suitable examples.
3. Comment on R/S nomenclature system for chiral molecules. Give suitable examples.
4. Write a note on :
 - a) Aufbau principle and its limitation.
 - b) Electronic configuration of atoms.
5. Discuss on different projection formulas used to represent a chiral molecule.
6. Write a note on :
 - a) E/Z nomenclature.
 - b) D/L system of nomenclature.

SECTION-C

7. Discuss in detail about elements of symmetry with examples.
8. Comment on concept of toxicity of ligands and faces with suitable examples.
9. Write in detail about Quantum numbers and their significance.

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Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. (Microbiology) (Sem.-1)
INTRODUCTION TO MICROBIOLOGY

Subject Code : BSMB-101-19

M.Code : 78979

Date of Examination : 20-12-2024

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 J. Tyndall to microbiology.
- b) Examples for gram-negative bacteria.
- c) Fluorescent microscopy
- d) Germination Process
- e) Nitrogen fixing bacteria in agriculture.
- f) Growth rate
- g) Monoauxic growth
- h) Chemical agents used to kill the microbes.
- i) Types of microbial pathogens.
- j) Aerobic fermentation



SECTION-B

2. Elaborate about dark field microscopy.
3. Difference between sporulation and germination process.
4. What is diauxic and synchronous growth?
5. What is microbial interaction like symbiosis?
6. Write down production of heterologous in microbes.

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SECTION-C

7. Write about discovery of antibiotics and also discuss the contribution of J. Lister.
8. Elaborate on the morphology of algae and fungi, emphasizing structure.
9. What is normal microbial flora and how the pathogens causing disease?

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Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. Honours (Microbiology) (Sem.-2)
MICROBIAL PHYSIOLOGY AND METABOLISM

Subject Code : BSMB-207-19

M.Code : 79878

Date of Examination : 12-12-2024

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) Explain the role of anaerobic respiration.
- b) What is diauxic growth curve?
- c) What is the role of the periplasm?
- d) Define nitrification.
- e) Define extremophiles.
- f) What is biological nitrogen fixation?
- g) Explain the role of pH in microbial growth.
- h) Define mixed acid fermentation.
- i) What is peptidoglycan?
- j) What is hydrogen oxidation?



SECTION-B

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2. Describe the structures of microbial cell surfaces.
3. Compare the EMP and ED pathways of sugar transportation.
4. Describe continuous culture and its significance.
5. Discuss the role of sulfur bacteria in inorganic metabolism.
6. Discuss the components of respiratory chain in aerobic respiration.

SECTION-C

7. Discuss microbial mobility and the functions of organs like flagella and pili.
8. Explain nitrogen cycle focusing on nitrification and denitrification processes.
9. Discuss the impact of environmental factors on microbial growth.

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Roll No.

Total of Pages : 02

Total No. of Questions : 09

Bachelor of Science - Honours (Microbiology) (Sem.-3)

VIROLOGY

Subject Code : BSMB301-19

M.Code : 90367

Date of Examination : 28-11-2024

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 are the General Properties of Viruses?
- b. Draw the structure of Lambda Temperate Phase.
- c. Define DNA Replication.
- d. Name the Stages of Infection.
- e. Salient features of Tobacco Mosaic Virus.
- f. What is Viral Vaccination?
- g. Application of Phages in Microbial genetics.
- h. What is Phage Immunity?
- i. What are Host Specific Viruses?
- j. What are Anti-Viral Compounds?



SECTION-B

2. What are Interferons? Write down their mode of action.
3. Explain the Life-Cycle of Dengue Virus.
4. Give detail about Genetic Mapping and DNA Replication of T4 phage.
5. Write down general properties of Virus. Explain with structures.
6. Explain Replication Pattern of Tobacco Mosaic Virus.

SECTION-C

7. Briefly discuss the following :

- a. What are Anti-Viral Compounds? Explain their mode of action.
- b. Discuss the general principles of Viral Vaccination.

8. Write down the classification of Viruses. Give detail about Isolation, Purification and Cultivation of Viruses.

9. Life Cycle and Replication of :

- a. Hepatitis Virus
- b. Retroviruses.

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Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

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

MICROBES IN ENVIRONMENT

Subject Code : BSMB305-19

M.Code : 90371

Date of Examination : 10-12-2024

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) Function of the ecosystem.
- b) Enlist soil microflora.
- c) Define Microbiomics.
- d) What is the role of temperature in extremophiles?
- e) What is synergism in microbial interaction?
- f) Difference between symbiotic and non-symbiotic.
- g) Define mutualism.
- h) Enlist the types of solid waste.
- i) Role of BOD in waste management.
- j) Enlist the sources of solid waste.

SECTION-B

2. Discuss in detail soil profile and soil microflora.
3. Explain the habits of microbes at different pH, osmotic pressure and low level of nutrients.
4. Give in detail microbe plant interaction.
5. Describe the sources and types of solid waste management.
6. Write down the methods used for tertiary sewage treatment.

SECTION-C

7. Write a detailed note on liquid waste management.
8. Describe the role of the ecosystem as well as microflora of fresh water and marine habitats.
9. Illustrate microbes in ruminates, nematophagus fungi and symbiotic luminescent bacteria.



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Total No. of Pages : 02

B.Sc. (Hons.) Microbiology (Sem.-3)

Subject Code : BSMB303-19

M.Code : 90369

Date of Examination : 25-11-2024

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 are the major differences between Eukaryotic and Prokaryotic genomes?
 - b. What do you mean by genetics?
 - c. What are the different methods of physical mapping of the genome?
 - d. Explain the mutator gene.
 - e. Define silent mutation.
 - f. Define Hfr strain.
 - g. What is the post-translational modification of proteins?
 - h. Define the plasmid.
 - i. What is Mu transposon?
 - j. Explain two uses of transposon.



SECTION-B

2. What is a transposon pool and, what is its mechanism?
3. Name different types of transductions and their use and how they differ?
4. Explain conjugation and its mechanism.
5. Explain the significance of the Ames test and the various components used in performing this test.
6. Define the mechanism of plasmid amplification.

SECTION-C

7. Definition and types of mutation in brief.
8. Explain the mechanism of transduction and transformation.
9. **Briefly discuss the following :**
 - a) Define plasmid and its types.
 - b) Difference between replicative and non-replicative transposition.

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Roll No.

Total No. of Pages : 03

Total No. of Questions : 09

Bachelor of Science/Honours (Microbiology) (Sem.-3)

BIostatISTICS

Subject Code : BSMB308/19

M.Code : 90374

Date of Examination : 02-12-2024

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 Variance.
- b. Define Kurtosis.
- c. If a dice is thrown one time what is the probability to get 3 on the dice?
- d. Plot the graph which shows Negative correlation.
- e. Give any two examples for non-parametric tests.
- f. Calculate the mean for the data 5, 7, 15, 8, 9, 6, 13.
- g. Define Mode.
- h. Write the importance of t-test.
- i. Define poisson distribution.
- j. Write any two uses of chi-square test.



SECTION-B

2. Two types of drugs were used on 5 and 7 patients for reducing their weight. Drug A was imported and Drug B is indigenous. The Decrease in weight after using 6 months as follows :

Drug A	10	12	13	11	14		
Drug B	8	9	12	14	15	10	9

Is there a significant difference in the efficacy of the two drugs (For $v = 10$ $t_{0.05}$ is 2.223; For $v = 9$ $t_{0.05}$ is 2.262; For $v = 11$ $t_{0.05}$ is 2.201 For $v = 12$ $t_{0.05}$ is 2.179).

Take the appropriate t value from the above and interpret your result.

3. From the data given below about the treatment of 250 patients suffering from a disease. State whether the new treatment is superior to the conventional treatment.

Treatment	No. of Patients		Total
	Favourable	Not Favourable	
New	140	30	170
Conventional	60	20	80
Total	200	50	250

(Given for Degrees of Freedom = 1 Chi square 5% = 3.84)

4. A coin is tossed for six times. What is the probability of obtaining four or more tails.
5. Write a short note on Shannon weaver index.
6. Write a note on Correlation.

SECTION-C

7. a. The following mistakes per page were observed in a book.

No. of mistakes per page	0	1	2	3	4
No. of times the mistake occurred	211	90	19	5	0

Fit a poisson distribution to fit data. (Given $e^{-0.439} = 0.6447$)

- b. Write a note on regression.

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8. A tea company appoints four salesmen A, B, C and D and observes their sales in three seasons - summer, winter and monsoon. The data is given below :

Seasons	Salesmen				Season's total
	A	B	C	D	
Summer	36	36	21	35	128
Winter	28	29	31	32	120
Monsoon	26	28	29	29	112
Salesmen's total	90	93	81	96	360

Perform the Two Way ANOVA for the above data.

For (3, 6) d.f $F_{0.05} = 4.76$; For (2, 6) d.f $F_{0.05} = 5.14$.

9. Obtain the rank correlation coefficient between the variables X and Y from the following pairs of observed values

X :	50	55	65	50	55	60	50	65	70	75
Y :	110	110	115	125	140	115	130	120	115	160

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BIOSATISTICS

Bachelor of Science (Honours) (Microbiology) (Sem - 2)

Time : 3 Hrs.

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Total no. of pages : 02

SECTION-B

DEC 2024

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Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc- Honours (Microbiology) (Sem.-3)
MICROBIOLOGICAL ANALYSIS IN AIR AND WATER

Subject Code : BSMB307-19

M.Code : 90373

Date of Examination : 15-12-2024

Time : 3 Hrs.

Max. Marks : 30

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE marks 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) Define allergens.
- b) What is CFU?
- c) Significance of air sampling in OT.
- d) Examples of water-borne diseases.
- e) How treatment of water is done?
- f) Define bacteria.
- g) Define environment.
- h) Define aeromicrobiology.
- i) How will you determine positive result in MPN Test?
- j) Define HEPA filters.



SECTION-B

2. Write the significance of bioaerosols in food industry.
3. Explain the role of CFU in air sampling?
4. Write down the complete test for water microbes.
5. Write brief note on Bioaerosols.
6. Write brief note on confirmed test for faecal coliforms.

SECTION-C

7. Write a detailed note on the microbial analysis of water.
8. Illustrate various culture media used for bacteria and fungi.
9. Diagrammatically represent membrane filter technique.

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DEC 2024

SECTION-B

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 : 25-11-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- 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 :

- What is holoenzyme?
- Define allosteric enzymes.
- What will be the effect of K_m and V_{max} in competitive & non-competitive inhibition?
- Give any four examples of irreversible inhibition.
- Write the equation for substrate reaction.
- What is the substrate?
- Define isoenzymes.
- Give an example of non-competitive inhibition.
- What is the unit of enzyme?
- How temperature affects enzyme activity?



2. Write the application of enzyme-based tests in microbiology for biochemical analysis.
3. Discuss about the reversible inhibition.
4. Explain the line Weaver-Burk plot.
5. Classify the enzyme in detail.
6. Write a note on immobilized enzymes and their applications.

SECTION-C

7. Describes in detail about the mechanism of enzyme action.
8. What is enzyme repression induction? Describe the operon model in detail.
9. Explain competitive inhibitions in detail.

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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 : 10-12-2024

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) Describe toxicology and allergenicity.
- b) What do you understand by D value and Z value?
- c) What is the role of NABL?
- d) Define ISO.
- e) What are the examples of biohazards?
- f) Enlist biosafety levels with examples.
- g) Define trademark.
- h) What is the importance of survival curve?
- i) What is the role of GLP?
- j) Enlist the objectives of institutional ethics committee.



SECTION-B

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2. Write a note on quality management in pharmaceuticals.
3. Discuss in detail about sterilization control and sterility testing.
4. What do you understand by Biosafety committee and its role?
5. Write a short note on patents and trademarks.
6. Write a short note protection of GMOa IP as a factor in R & D.

SECTION-C

7. Write a comprehensive note on Intellectual Property Right.
8. Give a descriptive account on design and layout of sterile product manufacturing unit.
9. Write a descriptive note on good laboratory practices in pharmaceutical industries.

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Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

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

IMMUNOLOGY

Subject Code : BSMB501-20

M.Code : 92507

Date of Examination : 28-11-2024

Max. Marks : 60

Time : 3 Hrs.

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) Adaptive immunity
- b) CALT
- c) Types of antibodies
- d) Epitope
- e) Difference between MHC I and MHC II complex.
- f) Endocytic pathway
- g) T-cell activation
- h) Autoimmunity
- i) Immunodeficiency
- j) Function of lymph node

2. Write a note on antigen antibody reactions.
3. What are antigens? Discuss about antigenicity and immunogenicity.
4. What do you mean by B-cell generation and activation?
5. What is the difference between precipitation and agglutination reactions?
6. What do you mean by overview of transplantation?

SECTION-C

7. Discuss the concept of innate immunity and also explain hematopoiesis and mononuclear phagocytes.
8. Explain the structure and function of MHC I & II molecules.
9. What are hypersensitivity reactions and explain its types?



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Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

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

MEDICAL MICROBIOLOGY

Subject Code : BSMB-503-20

M.Code : 92509

Date of Examination : 05-12-2024

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) Toxigenicity
- b) Culturing of clinical sample
- c) Parasitic infection
- d) *Clostridium tetani*
- e) Transmission of infection
- f) Monkey pox
- g) Protozoan infection
- h) Mode of action of anti-microbial agents
- i) Acyclovir
- j) MDR



SECTION-B

DEC 2024

2. Explain the septic shock and opportunistic infection.
3. Exemplify one bacterial disease with reference to its transmission, prophylaxis and control.
4. What are respiratory disease and explain about *Mycobacterium tuberculosis*?
5. Write a note on retro viruses including HIV/AIDS.
6. Write a note on inhibitor of the cell membrane function.

SECTION-C

7. What are antifungal agents with its mode of action?
8. Explain about the protozoan infection with its symptoms, pathogenesis, prophylaxis and control.
9. Discuss the nosocomial infection with its transmission and spread.

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 : 04

Total No. of Questions : 11

B.Voc. (Child Caregiver)/B.A. (JAMC)/BBA/BBA (SIM)/B.Com (Honours)/
BCA/BHMCT (UGC)/B.Sc. - Honours (Nutrition and Dietetics)/B.Sc.
(AI&ML)/B.Sc. (Bio Technology)/B.Sc. (Fashion Design)/B.Sc. (Graphics
& Web Designing)/B.Sc. (IT)/B.Sc. (Medical Lab Sciences)/B.Sc.
(Operation Theatre Technology)/B.Sc. (Radiotherapy Technology)/
BTMM (Sem-1)

HUMAN VALUES, DE-ADDICTION AND TRAFFIC RULES

Subject Code : HVPE-101-18

M.Code : 93322

Date of Examination : 24-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. Section-A is compulsory.
3. Section-B contains five questions of four marks each. Attempt all.
4. Section-C contains five questions of six marks each. Attempt all.

SECTION-A

(10 × 1 = 10)

1. Write briefly :

i) What is Utility-Value?

उपयोगिता-मूल्य क्या हैं?

उपयोगिता-मूल्य की है?

ii) Explain Natural Acceptance.

सहज स्वीकृति समझाओ।

कुदरती मंजुरी समझाओ।

iii) How the value "care" is related with body?

मूल्य "ध्यान" शरीर के साथ कैसे संबंधित है?

मूल्य ध्यान शरीर के साथ कैसे संबंधित है?

iv) What do you mean by Respect?

आपका सम्मान से क्या मतलब है?

इशारे आदर से क्या मतलब है?

[M-93322]

(S-17) 2499



v) What is Perseverance?

अटलता क्या है?

धीरज की है?

vi) What is the difference between prosperity and wealth?

समृद्धि और धन के बीच क्या अंतर है?

समृद्धि और धन के बीच क्या अंतर है?

vii) What is Holistic System?

समग्र प्रणाली क्या है?

समग्र प्रणाली क्या है?

viii) What is Cyclic Production?

चक्रीय उत्पादन क्या है?

चक्रीय उत्पादन क्या है?

ix) What is Existence?

अस्तित्व क्या है?

अस्तित्व क्या है?

x) What is value of any Unit in the larger order?

बड़े आदेश में किसी भी इकाई का क्या मूल्य है?

बड़े आदेश में किसी भी इकाई का क्या मूल्य है?

SECTION-B

(5 × 4 = 20)

2. What is the need for value education in technical and other professional Institutions?

तकनीकी एवं अन्य व्यावसायिक संस्थानों में मूल्यपरक शिक्षा की क्या आवश्यकता है?

तकनीकी एवं अन्य व्यावसायिक संस्थानों में मूल्यपरक शिक्षा की क्या आवश्यकता है?

3. Self-exploration is a process of dialogue between 'What you are' and 'What you really want to be'. Explain and illustrate.

आत्म-अन्वेषण 'आप क्या हैं' आप वास्तव में क्या बनना चाहते हैं' में आपस संवाद की एक प्रक्रिया है। समझाओ और व्याख्या करो।

सह-अन्वेषण 'आप क्या हैं' आप वास्तव में क्या बनना चाहते हैं' में आपस संवाद की एक प्रक्रिया है। समझाओ और व्याख्या करो।

[M-93322]

(S-17) 2499

4. What are the problems we are facing today because of operating on the basis of pre-conditioned desires?

ਪ੍ਰਵ-ਮਾਨਤਾ ਇੱਛਾओं के आधार पर परिचालन करने से हम आज क्या-क्या समस्याओं का सामना कर रहे हैं?

ਪੂਰਵ-ਮਾਨਤਾ ਇੱਛਾਵਾਂ ਦੇ ਆਧਾਰ ਉੱਤੇ ਚੱਲਣ ਕਰਕੇ ਅੱਜ ਅਸੀਂ ਕਿਹੜੀਆਂ ਸਮੱਸਿਆਵਾਂ ਦਾ ਸਾਮਣਾ ਕਰ ਰਹੇ ਹਾਂ?

5. Explain competence in Professional-Ethics.

ਪੇਸ਼ੇਵਰ ਨੈਤਿਕਤਾ में क्षमता समझाओ।

ਪੇਸ਼ੇਵਰ ਨੈਤਿਕਤਾ ਵਿੱਚ ਸਮਰੱਥਾ ਸਮਝਾਓ।

6. What do you understand by the terms Sweta, Swatantrate and Swarajya?

स्वैता, स्वतंत्रता और स्वराज्य शब्दों से आप क्या समझते हैं? क्या आपको लगता है कि आपके पास कुछ पूर्ण मानता है? आप उनका मूल्यांकन कैसे करते हैं?

ਤੁਸੀਂ ਸਵੈਤਾ, ਸਵਤੰਤਰਤਾ ਅਤੇ ਸਵਰਾਜ ਸ਼ਬਦਾਂ ਤੋਂ ਕੀ ਸਮਝਦੇ ਹੋ? ਕੀ ਤੁਹਾਨੂੰ ਲੱਗਦਾ ਹੈ ਕਿ ਤੁਹਾਡੇ ਕੋਲ ਕੁੱਝ ਪੂਰਵ ਮਾਨਤਾ ਹੈ? ਤੁਸੀਂ ਉਸਦਾ ਮੁਲਾਂਕਨ ਕਿਵੇਂ ਕਰਦੇ ਹੋ?

SECTION-C

(5 × 6 = 30)

7. "I will learn and improve only if I am unhappy. If I become happy, my learning will stop". Explore the validity of this viewpoint.

"ਮੈਂ ਸਿੱਖਾਂਗਾ ਅਤੇ ਸੁਧਾਰ ਕਰਾਂਗਾ ਜਦੋਂ ਮੈਂ ਨਾਖੁਸ਼ ਹੁੰ। ਜੇਕਰ ਮੈਂ ਖੁਸ਼ ਹੋ ਜਾਵਾਂਗਾ ਤਾਂ ਮੇਰੀ ਸਿੱਖਿਆ ਬੰਦ ਹੋ ਜਾਵੇਗੀ।" ਇਸ ਦ੍ਰਿਸ਼ਟੀਕੋਣ ਦੀ ਵੈਧਿਕਤਾ ਦਾ ਅਨੁਸ਼ਯੋਗ ਕਰੋ।

"ਮੈਂ ਤਾਂ ਹੀ ਸਿੱਖਾਂਗਾ ਅਤੇ ਸੁਧਾਰਾਂਗਾ ਜੇ ਮੈਂ ਨਾਖੁਸ਼ ਹਾਂ। ਜੇਕਰ ਮੈਂ ਖੁਸ਼ ਹੋ ਗਿਆ ਤਾਂ ਮੇਰੀ ਸਿੱਖਿਆ ਬੰਦ ਹੋ ਜਾਵੇਗੀ।" ਇਸ ਦ੍ਰਿਸ਼ਟੀਕੋਣ ਦੀ ਵੈਧਿਕਤਾ ਦੀ ਪੜਚੋਲ ਕਰੋ।

8. Why are physical facilities required? What do you mean by the right utilization of the Body?

ਭੌਤਿਕ ਸੁਵਿਧਾओं की आवश्यकता क्यों है? शरीर के सही उपयोग से आप क्या समझते हैं?

ਭੌਤਿਕ ਸਹੂਲਤਾਂ ਦੀ ਲੋੜ ਕਿਉਂ ਹੈ? ਸਰੀਰ ਦੀ ਸਹੀ ਵਰਤੋਂ ਤੋਂ ਤੁਹਾਡਾ ਕੀ ਮਤਲਬ ਹੈ?

9. What do you mean by coexistence? How are units in coexistence being in space?

सह-अस्तित्व से आप क्या समझते हैं? अंतरिक्ष में इकाइयाँ सह-अस्तित्व में कैसे हैं?

ਸਹਿ-ਹੋਂਦ ਤੋਂ ਤੁਹਾਡਾ ਕੀ ਮਤਲਬ ਹੈ? ਪੁਲਾੜ ਵਿੱਚ ਇਕਾਈਆਂ ਸਹਿ-ਹੋਂਦ ਕਿਵੇਂ ਹੁੰਦੀਆਂ ਹਨ?

10. Critically examine the issues in professional ethics in the current scenario. List any five unethical practices in profession today and the methods being tried to curb them. Comment on the long-term effectiveness of these methods.

वर्तमान परिदृश्य में व्यावसायिक नैतिकता के मुद्दों का आलोचनात्मक परीक्षण करें। आज पेशे में किन्हीं पांच अनैतिक प्रथाओं और उन पर अंकुश लगाने के लिए अपनाए जा रहे तरीकों की सूची बनाएं। इन विधियों की दीर्घकालिक प्रभावशीलता पर टिप्पणी करें।

ਮੌਜੂਦਾ ਸਥਿਤੀ ਵਿੱਚ ਪੇਸ਼ੇਵਰ ਨੈਤਿਕਤਾ ਦੇ ਮੁੱਦਿਆਂ ਦੀ ਗੰਭੀਰਤਾ ਨਾਲ ਜਾਂਚ ਕਰੋ। ਅੱਜ ਪੇਸ਼ੇ ਵਿੱਚ ਕਿਸੇ ਵੀ ਪੰਜ ਅਨੈਤਿਕ ਅਭਿਆਸਾਂ ਅਤੇ ਉਹਨਾਂ ਨੂੰ ਰੋਕਣ ਦੇ ਤਰੀਕਿਆਂ ਦੀ ਸੂਚੀ ਬਣਾਓ। ਇਹਨਾਂ ਤਰੀਕਿਆਂ ਦੀ ਲੰਬੇ ਸਮੇਂ ਦੀ ਪ੍ਰਭਾਵਸ਼ੀਲਤਾ 'ਤੇ ਟਿੱਪਣੀ ਕਰੋ।

11. What do you the abbreviations given as SVDD, SSDD and SSSS signify? Explain the reason for the state SSDD.

SVDD, SSDD और SSSS के रूप में दिए गए संक्षिप्ताक्षर क्या दर्शाते हैं? SSDD की स्थिति का कारण बताएं।

ਤੁਹਾਨੂੰ SVDD, SSDD ਅਤੇ SSSS ਦੇ ਰੂਪ ਵਿੱਚ ਦਿੱਤੇ ਗਏ ਸੰਖੇਪ ਰੂਪ ਕੀ ਦਰਸਾਉਂਦੇ ਹਨ। SSDD ਸਥਿਤੀ ਦਾ ਕਾਰਨ ਦੱਸੋ।

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Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc./Honours (Microbiology) (Sem.-1)

CHEMISTRY/I

Subject Code : BSMB-103-19

M.Code : 78981

Date of Examination : 14-06-2024

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 hemolytic and heterolytic fission?
- b) What do you mean by Pauli's exclusion principal?
- c) Explain enantiomers.
- d) Define the achirotopic centre.
- e) What do you mean by meso compounds?
- f) Define erythro compounds.
- g) Define the achiral centres
- h) Define the polarity of bond.
- i) Explain the Heisenberg's uncertainty principle.
- j) Define the hybridization.

SECTION-B

2. Explain the Flying Wedge projection.
3. Explain the Schrodinger wave equation.
4. Explain Optical activity along with examples.
5. What Stereogenic centre?
6. Explain the significance of wave function.

SECTION-C

7. Explain Concept of Topicity of Ligands.
8. Explain the E/Z system.
9. Explain the chirality of organic molecule.



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Roll No.

Total No. of Questions : 07

Total No. of Pages : 02

B. Com (Hons/BA(JAMC)/BHMCT/B.Sc.BT/FD/MLS /BBA(SIM)/BTTM
(Sem.-2)

ENVIRONMENTAL STUDIES

Subject Code : EVS/102/18

M.Code : 75831

Date of Examination : 21-05-2024

Time : 3 Hrs.

Max. Marks : 60

SECTION-B

2. Discuss the type's causes and effects of Air pollution.
3. Explain the various types of Bio-diversity.
4. Discuss the inter-disciplinary nature of Environmental studies.
5. Explain the link between Environment and Human.
6. Discuss in detail "*India as a Mega Diversity Nation*".
7. Write a short note on Forest Conservation Act.

INSTRUCTIONS TO CANDIDATES :

1. Attempt ALL questions in SECTION-A, Each question carries 2 marks
2. Attempt any FOUR questions from SECTION-B out of SIX, Each question carries TEN marks.

SECTION-A

1. Write briefly :
- Public Awareness
 - Cyclones
 - Ecological Pyramids
 - Forest Ecosystem
 - Reason of deforestation
 - Air pollution
 - Global warming
 - Causes of Natural disaster
 - Causes of floods
 - Sources of Noise pollution.



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Total No. of Questions : 09

Subject Code : BSMB-203-19

M.Code : 79874

Date of Examination: 11-05-2024

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 :

- Define epimers with suitable examples.
- Draw Haworth projection formula for glucose.
- What are sphingolipids?
- What are zwitter ions?
- Define glycoproteins with suitable examples.
- What are coenzymes?
- Enlist any four properties of peptide bond.
- Give any two examples of heteropolysaccharides.
- Differentiate between reducing and non-reducing sugars.
- What are uncommon amino acids?



SECTION-B

2. Explain in detail stereoisomerism of monosaccharides.
3. Write a detailed note on plant steroids.
4. Define proteins and give classification of amino acids.
5. Write a brief note on UV absorption by nucleic acids.
6. Give sources, properties and functions of water-soluble vitamins.

SECTION-C

7. Classify carbohydrates and give suitable examples from each class including their chemical structures.
8. Classify lipids. Write a detailed note on glycolipids.
9. Explain structure of DNA with respect to Watson-Crick Model.

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Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. (Hons.) (Microbiology) (Sem.-2)

MOLECULAR BIOLOGY

Subject Code : BSMB-205-19

M.Code : 79876

Date of Examination : 15-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- 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. Give the name of protein synthesis inhibitors.
 - b. Write properties of genetic materials.
 - c. RNA polymerase.
 - d. Distinguish between sense and antisense RNA.
 - e. What is genetic code?
 - f. Define θ (theta) mode of replication.
 - g. What is semi conservative replication?
 - h. Why translation is called so?
 - i. What are translational inhibitors?
 - j. Define transcription.



SECTION-B

2. What are the functional difference between DNA polymerase and RNA polymerase?
3. Explain the primary structure of DNA.
4. What is siRNA and miRNA? Give a detail note on their significance.
5. What are the enzymes involved in DNA replication?
6. Describe in brief the histone acetylation mechanisms.

SECTION-C

7. Write an essay on the types of RNA's with diagrams.
8. Highlight the various translation processes in eukaryotes.
9. Explain the technique of DNA replication in eukaryotes.

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Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

Bachelor of Science / Honours (Microbiology) (Sem.-3)

BIOSTATISTICS

Subject Code : BSMB308/19

M.Code : 90374

Date of Examination : 11-06-2024

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) Differentiate primary from secondary data.
- b) What is standard deviation?
- c) What do you mean by probability distribution?
- d) Define skewness and kurtosis.
- e) What is Wilcoxon signed rank test.
- f) Explain confidence limit.
- g) What is meant by degree of freedom?
- h) Define p - value.
- i) What is correlation?
- j) Explain interquartile range.



SECTION-B

2. What do you mean by chi-square test – goodness of fit? Write its significance.
3. Give an account of normal distribution.
4. Give an account of the errors in research.
5. Explain one non-parametric tests. Write its significance and assumptions.
6. Give an account of the procedure for testing of hypothesis. Differentiate hypothesis from null hypothesis.

SECTION-C

7. Define Pearson and Spearman rank correlation. Write their assumptions and significance in research.
8. To carry out one factor analysis of variance of the given observations of three different methods of teaching. Find out the mean difference between the groups and state the hypothesis. [alpha level: 0.05, F = 5.41]

Online Teaching	Teaching through Multimedia device	Traditional Method
4	5	5
3	3	4
4	6	6

9. a) Define correlation. Write its significance.
- b) Find out the coefficient of correlation from the following data :
X : 65, 66, 67, 67, 72, 70, 69, 70
Y : 67, 68, 64, 68, 68, 69, 71, 73

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Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. Honours (Microbiology) (Sem.-6)
BIOPESTICIDES & BIOFERTILIZERS

Subject Code : BSMB607/20

M.Code : 92523

Date of Examination : 04-05-2024

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 understand by ideal fertile soil?
- b) Free living N₂ fixing biofertilizer.
- c) Fermentation.
- d) Biopesticide.
- e) How do biofertilizers work?
- f) Fungal biofertilizers.
- g) Biorationales.
- h) Frankia biofertilizers.
- i) Scope of biofertilizers.
- j) Pathogen.



SECTION-B

2. Discuss the classification of biopesticides.
3. Describe the structure and characteristic features of bacterial biofertilizers with examples.
4. Explain the production technology of biofertilizers, focusing on strain selection and fermentation.
5. Discuss the factors influencing the efficacy of biofertilizers.
6. Explain the limitations in the production and use of biopesticides.

SECTION-C

7. Compare and contrast botanical pesticides with microbial biopesticides.
8. Analyze the storage, shelf life, and quality control of biofertilizers.
9. Discuss the scope and potential of fungal biofertilizers, highlighting their role in sustainable agriculture.

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Total No. of Questions : 09

B.Sc. Honours (Microbiology) (Sem.-6)
MICROBIAL BIOTECHNOLOGY
Subject Code : BSMB603/20
M.Code : 92519
Date of Examination : 29-04-2024

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.

1. Write briefly :

- What is the significance of biodiversity conservation?
- How do aeration and oxygen transfer in a bioreactor system?
- Enlist the various applications of biogas.
- Define growth stoichiometry.
- What is the principle of fermentor design?
- Define PUFA.
- What is gasohol?
- Briefly mention baker's yeast.
- Define growth efficiency.
- What are probiotics? Give examples.



- Describe the process of mushroom cultivation.
- Explain the types of fermentation process.
- Write a short note on the efficiency of microbial growth and product formation.
- Discuss the applications of microbes in industrial biotechnology.
- How do nutraceuticals contribute to overall health and wellness?

7. Explain in detail hollow fibre bioreactors and immobilized cell reactors.
8. Discuss the design, instrumentation and working of stirred tank bioreactor.
9. Write a detailed note on waste utilization to generate biofuels.

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00 JUN 2024

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Total No. of Questions : 8

RECOMBINANT DNA TECHNOLOGY

M.Code : 92517

Date of Examination: 25-04-2024

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 FOUR 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 the following:

- What does rDNA stand for?
- Which enzyme is used to cut DNA at specific sequences?
- What is the primary use of rDNA technology in producing insulin?
- Name a commonly used viral vector for vaccine production.
- How has rDNA technology been used to produce pest-resistant crops?
- Which organism is often genetically modified to produce biofuels using rDNA technology?
- What is the primary purpose of fermentation in food production?
- What is bio-plastics primarily made from?
- What is the purpose of introducing recombinant DNA into host cells?
- Which enzyme is used to join DNA fragments together during cloning?



SECTION-B

2. Explain how genetic engineering of microbes can aid in the cleanup of environmental pollutants.
3. Describe the fermentation process commonly used for producing antibiotics.
4. Differentiate between viral and bacterial vaccines in terms of their production methods and targets. Provide an example of each type of vaccine.
5. Explain the structure and function of a plasmid vector used in cloning. How does it facilitate the insertion of foreign DNA into host cells?
6. Compare and contrast a multipurpose cloning vector with a mammalian expression vector in terms of their features and applications.

SECTION-C

7. Describe the mechanisms by which genetically engineered microbes aid in bioremediation. Discuss at least two specific examples of pollutants targeted, by these engineered microbes.
8. Compare and contrast the fermentation techniques employed in the production of antibiotics and organic acids. Discuss the key differences in process parameters, microbial strains used, and end products for each fermentation process.
9. Explain the general approaches used for developing viral and bacterial vaccines with examples, also describing their production methods.

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