FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021

(CCSS)

M.Sc. Microbiology

MBG 4E 07—MODERN TRENDS IN DIAGNOSTICS MICROBIOLOGY AND NANOBIOTECHNOLOGY

(2019 Admissions)

Time : Three Hours　　　　　　　　　　　　　　　　　　　Maximum : 80 Marks

Part A

Write about each of the following in 2 or 3 sentences.
Each question carries 2 marks.

1. VDRL test.
2. Monoclonal antibodies.
3. Gene therapy.
4. CLIA.
5. Immunofluorescence.
6. Urease test.
7. Acid fast staining.
8. Pulsed field Gel Electrophoresis.
9. Nanoparticles.
10. EIA.
11. Advantages in using nanoparticles in therapeutics.
12. Antisense therapy.
13. KOH mount.
14. RT PCR.
15. Taq polymerase.
16. VNTR finger printing.
17. Oxidase test.
18. Southern blotting.
19. RFLP.
20. Indole test.

(20 × 2 = 40 marks)

Turn over

Part B

Write notes on **or** *discuss any* **five** *of the following.*
Each question carries 8 marks.

21. Explain the role of nanobiotechnology in drug delivery.

22. Give an account on precipitation reactions.

23. Give an account on application of nanobiotechnology in healthcare.

24. Discuss the various biochemical tests used in the identification of bacteria.

25. Give a detailed account on the principle, procedure and uses of ELISA.

26. Describe the various blotting techniques used in diagnosis.

27. Give an account on flow cytometric assays.

(5 × 8 = 40 marks)

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021

(CCSS)

M.Sc. Microbiology

MBG 4E 05—ANTIBIOTIC ACTION AND RESISTANCE

(2019 Admissions)

Time : Three Hours   Maximum : 80 Marks

Part A

Write about each of the following in 2 or 3 sentences.
Each question carries 2 marks.

1. Protein receptors.

2. Aminoglycosides.

3. Peptide antibiotics.

4. R plasmids.

5. XDR TB.

6. Drug leads.

7. Carbapenem Resistance.

8. Auto toxicity.

9. Synthetic antibiotics.

10. MIC.

11. Betalactam Inhibitors.

12. Copy number.

13. Name any two antimalarial drugs and their mode action.

14. Beta lactamase.

15. Antibiotic clearance.

16. Macrolides.

17. Drug discovery pipe line.

18. Protein synthesis inhibitors.

19. Mechanism of action of penicillin.

20. Peptidoglycan.

(20 × 2 = 40 marks)

Turn over

Part B

Write notes on **or** *discuss any* **five** *of the following.*
Each question carries 8 marks.

21. Discovery of novel antibiotics.

22. Molecular mechanism of antibiotic resistance in bacteria.

23. Target sites and mechanism of action of major classes of antibiotics.

24. Explain emergence of drug resistance with special emphasis on MRSA.

25. Explain on classification of antibiotics.

26. Antiviral drugs and their mode of action.

27. Explain MDRTB, its problems and treatment.

(5 × 8 = 40 marks)

FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION MARCH 2021

(CBCSS)

Microbiology

MBG 4E 05—GENETIC ENGINEERING

(2019 Syllabus Year)

Time : Three Hours   Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each section.*

2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*

3. *There will be an overall ceiling for each Section/Part that is equivalent to the maximum weightage of the Section/Part.*

Part A

Answer any **four** *questions.*
Each question carries a weightage of 2.

Comment on the following :

1. Homopolymer tailing.

2. BAC.

3. RAPD.

4. Taq polymerase.

5. RNA interference.

6. Microinjection.

(4 × 2 = 8 weightage)

Part B

Answer any **four** *questions.*
Each question carries a weightage of 3.

Write briefly on the following :

7. Restriction enzymes.

8. Western blotting.

Turn over

9. PCR technique.

10. Colony and plaque hybridisation.

11. Role of Ti plasmid in generating transgenic plants.

12. Calcium chloride facilitated uptake of DNA.

(4 × 3 = 12 weightage)

Part C

Answer any **two** *questions.*
Each question carries a weightage of 5.

13. What is DNA sequencing ? Explain the various methods of DNA sequencing.

14. Describe southern blotting technique.

15. What is cDNA library ? Write about the construction of cDNA library.

16. What are probes ? Explain the preparation and labeling of probes.

(2 × 5 = 10 weightage)

FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION MARCH 2021

(CBCSS)

Microbiology

MBG 4E 04—MICROBIAL BIOTECHNOLOGY

(2019 Syllabus Year)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each section.*

2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*

3. *There will be an overall ceiling for each Section/Part that is equivalent to the maximum weightage of the Section/Part.*

   Answers must be supported by structural illustrations and diagrams wherever needed.

Section A

Short answer questions.
Answer any **four** *of the following.*
Each question carries 2 weightage.

1. Extremophiles.

2. Baker's yeast.

3. Microbial surfactants.

4. Immobilization of cell.

5. Bifidobacteria.

6. What is monoclonal antibody.

(4 × 2 = 8 weightage)

Section B

Short essay type questions.
Answer any **four** *of the following.*
Each question carries 3 weightage.

7. Explain DNA cloning with a diagram.

8. Describe production of recombinant vaccines.

Turn over

9. Explain enzyme-based electrodes and its uses.

10. Briefly describe classification of biopolymers.

11. Write a note on xenobiotic degradation and its importance.

12. What are microbial insecticides and their advantages ?

(4 × 3 = 12 weightage)

Section C

Essay type questions.
*Answer any **two** of the following.*
Each question carries 5 weightage.

13. Explain the methods involved in animal transgenesis.

14. Describe the features of bioreactor design for animal cell culture.

15. Explain environmental impact on genetic engineered crops.

16. Give an account on Microbial production of fuel hydrogen.

(2 × 5 = 10 weightage)

FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION MARCH 2021

(CBCSS)

Microbiology

MBG 4C 11—BIOSTATISTICS AND BIOINFORMATICS

(2019 Syllabus Year)

Time : Three Hours　　　　　　　　　　　　　　　　　　Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend **all** questions in each section.*

2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*

3. *There will be an overall ceiling for each Section/Part that is equivalent to the maximum weightage of the Section/Part.*

Section A (Short Answer Type Questions)

*Answer any **four** of the following.*
Each question carries 2 weightage.

1. What is hashing strategy ?

2. Multiple sequence alignment is more informative than pairwise alignment. Why ?

3. Name any *four* programs for molecular phylogenetic studies.

4. What is information retrieval system ? Name any *two* examples.

5. What is Correlation Co-efficient ? What is its significance ?

6. What is standard deviation ? Why is it used ?

$(4 \times 2 = 8 \text{ weightage})$

Section B (Short Essay Type Questions)

*Answer any **four** of the following.*
Each question carries 3 weightage.

7. Make a comparison between linear and non-linear correlation.

8. Analysis of variance is the most frequently used tool in biological research. Why ?

Turn over

9. Write a short note on protein secondary structure prediction programs.

10. What are HITS ? Make a comparison between true positives and false positives.

11. Name any *two* protein sequence databases and any *two* protein structural databases.

12. Write a short note on different file formats used in database management system.

(4 × 3 = 12 weightage)

Section C (Essay Type Questions)

Answer any **two** *of the following.*
Each question carries 5 weightage.

13. Explain various measures used in dispersion analysis.

14. FASTA is a powerful tool used sequence alignment. Explain.

15. Write a detailed account on tree building methods used in molecular phylogeny.

16. Bioinformatics programs play a vital role in revealing many hidden information in the biomolecules. Comment on this statement.

(2 × 5 = 10 weightage)