D 93602   (Pages : 2)   Name..

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FIRST SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2020

(CCSS)

Microbiology

MBG 1C 03—MOLECULAR BIOLOGY AND RDNA TECHNOLOGY

(2019 Admissions)

Time : Three Hours   Maximum : 80 Marks

Section A

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

1. Sexduction.
2. Cistron, Recon & Muton.
3. Retroelements.
4. Antisense RNA.
5. Telomerase.
6. DNA Vaccines.
7. Pseudogene.
8. Ochre, Amber and Opal codons.
9. Ti & Ri plasmids.
10. Molecular Probes.
11. Differential screening.
12. Molecular farming.
13. Gene knockout.
14. Complex transposon.
15. Reporter gene.
16. *V-onc* gene.
17. Adapters & linkers.
18. Enhancers & activators.
19. Gene super family.
20. RFLP and AFLP.

(20 × 2 = 40 marks)

Section B

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

21. Prokaryotic transposons.

22. Post translational modifications in eukaryotes.

23. Prokaryotic protein synthesis.

Turn over

24. Oncogenes & Protoongogenes.

25. Transgenic Plants.

26. Explain the basic steps in gene cloning.

27. Properties of Genetic code.

$(5 \times 8 = 40$ marks$)$

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FIRST SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2020

(CCSS)

Microbiology

MBG 1C 02—MICROBIAL ENZYMES AND SECONDARY METABOLISM

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

Section A

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

1. Invertase.
2. Aminoglycoside antibiotics.
3. Lantibiotics Vs Antibiotics.
4. Notatin.
5. Molasses.
6. Brewing.
7. Bt Toxin.
8. Abacavir.
9. Canthaxanthin.
10. Ochratoxins.
11. Sauerkraut.
12. Idiophase.
13. Siderophore.
14. Xenobiotics.
15. Crestor.
16. PCB.
17. Luciferin.
18. HFCS.
19. Brewers yeast.
20. Soya sauce.

(20 × 2 = 40 marks)

Turn over

Section B

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

21. Define Antibiotics. Classify them with examples.

22. Short notes on anti-Alzheimers drugs.

23. Discuss the applications of microbial enzymes in food processing.

24. Briefly explain on enzymatic bioconversions of starch and sugar.

25. Explain on production of bioethanol.

26. Explain on enzymes involved in the production of anticancer drugs.

27. Describe on steroid transformations.

(5 × 8 = 40 marks)

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FIRST SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2020

(CCSS)

Microbiology

MBG 1C 01—MICROBIAL PHYSIOLOGY AND MICROBIAL GENETICS

(2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

Section A

*Answer the following in 2 **or** 3 sentences.*
Each question carries 2 marks.

1. Factors affecting microbial growth.

2. Transposons.

3. Calvin cycle.

4. Diauxic growth.

5. Extremophiles.

6. Active transport.

7. Sporulation.

8. Chemolithotrophs.

9. Chemostat.

10. Episome.

11. SOS repair.

12. Heat Shock Proteins.

13. Cold sterilisation.

14. Phenol co-efficient test.

15. Bacterial growth curve.

16. Mutagenesis.

17. Anoxygenic photosynthesis.

18. ED pathway.

19. Transduction.

20. Culture collection centres.

<div align="right">(20 × 2 = 40 marks)</div>

Section B

Write notes on any **five** *of the following.*

Each question carries 8 marks.

21. Synchronous culture and methods to obtain it

22. Mechanism of nutrient uptake and transport in bacteria.

23. Enumeration methods of bacteria.

24. Physical methods of sterilisation.

25. Nutritional types of bacteria.

26. Salient features of archaebacteria.

27. Detail DNA repair mechanisms.

28. Types of mutation.

<div align="right">(5 × 8 = 40 marks)</div>

FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

(CBCSS)

Microbiology

MBG 1C 04—AGRICULTURAL MICROBIOLOGY AND PLANT PATHOLOGY

(2019 Admissions)

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)

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

1. Bradyrhizobium.

2. NOD factor.

3. Bio inoculants.

4. Citrus canker.

5. Frankia.

6. Harposporium anguillulae.

(4 × 2 = 8 weightage)

Section B (Short Essay Type Questions)

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

Comment on the following :

7. Discuss Rhizosphere flora.

Turn over

8. Termite microbial interaction.

9. Symbiotic Nitrogen fixation.

10. Briefly explain the mechanism of disease resistance.

11. Bordeaux mixture preparation and application.

12. Explain mode of entry of pathogens.

(4 × 3 = 12 weightage)

Section C (Essay Type Questions)

Answer any **two** *questions.*

Each question carries 5 *weightage.*

13. Explain the production and application of phosphobacteria as biofertilizer.

14. Explain the different types of Mycorrhizae and their significance in agriculture.

15. Describe the causal organisms, symptoms, etiology and control of following plant diseases :

    (a) Sheath blight of rice.

    (b) Red rot of sugarcane.

16. Give a detailed account of production and application of any *two* nitrogen fixing bio-fertilizers.

(2 × 5 = 10 weightage)

FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

(CBCSS)

Microbiology

MBG 1C 03—ENVIRONMENTAL AND SANITATION MICROBIOLOGY

(2019 Admissions)

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.*

   Wherever needed answers must be supported by structural illustrations and diagrams.

Section A (Short Answer Type Questions)

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

1. Antagonism.

2. Droplet nuclei.

3. Piezoelectric transducer.

4. COD.

5. Air sample calculation.

6. Secondary succession.

(4 × 2 = 8 weightage)

Section B (Short Essay Type Questions)

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

7. Draw and state importance of P cycle.

8. Sources of waste water.

9. Draw Biosensor.

10. Nutrient Media used in waste water sampling.

Turn over

11. Detail Air microflora.

12. Difference between flocculation and sedimentation.

(4 × 3 = 12 weightage)

Section C (Essay Type Questions)

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

13. Brief about Solid waste management.

14. Methods and types of air sampling.

15. Biogas production.

16. Explain principle and procedure of microbial analysis of water.

(2 × 5 = 10 weightage)

FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

(CBCSS)

Microbiology

MBG 1C 02—BIOPHYSICS AND INSTRUMENTATION

(2019 Admissions)

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.*

   Where ever needed answers must be supported by structural illustrations and diagrams.

Section A (Short Answer Type)

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

1. Motifs.

2. Redox potential.

3. Gibbs free energy.

4. Biosenser.

5. Omega loop.

6. Freeze drying.

(4 × 2 = 8 weightage)

Section B (Short Essay Type Questions)

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

Comment on the following :

7. Explain Beer-lamberts law.

8. Brief account on importance of various bonds seen in proteins.

Turn over

9. Give details on Ramachandran plot.

10. Give an account on safety aspects in laboratory.

11. Explain Laws of thermodynamics and its application in biology.

12. Give details on Isoelectric focusing and 2D PAGE.

(4 × 3 = 12 weightage)

Section C (Essay Type Questions)

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

13. Explain different types of DNA-Protein interactions.

14. Give a detailed account on various types of chromatographic techniques and applications.

15. Explain different hierarchical models of proteins with the help of diagram.

16. Explain the working principle and applications of SEM & TEM and its specimen preparations.

(2 × 5 = 10 weightage)

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FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

(CBCSS)

Microbiology

MBG 1C 01—GENERAL BIOCHEMISTRY AND MICROBIAL METABOLISM

(2019 Admissions)

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.*

Wherever needed answers must be supported by structural illustration and diagrams

Section A (Short Answer Type Questions)

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

1. Prostaglandins.

2. Regulation of glycolysis.

3. Decarboxylation.

4. Beta oxidation.

5. Biosynthesis of guanine.

6. Enzyme inhibition.

(4 × 2 = 8 weightage)

Section B (Short Essay Type Questions)

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

7. Examine the properties and classification of lipids.

8. Explain the chemi-osmotic coupling hypothesis.

9. Discuss the transamination and deamination of amino acids.

Turn over

10. Elaborate in detail the synthesis of unsaturated fatty acids with appropriate examples.

11. Examine the major disorders in nucleotide metabolism with examples.

12. Elaborate the structural features and functions of multi-subunit enzymes.

$$(4 \times 3 = 12 \text{ weightage})$$

Section C (Essay Type Questions)

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

13. Elaborate the biochemical and structural properties of amino acids.

14. Investigate the major biochemical mechanisms involved in oxidative phosphorylation.

15. Examine the steps involved in the microbial metabolism of glycine and lysine.

16. What do you mean by enzyme immobilization ? Elaborate in detail various approaches used for the immobilization of enzymes.

$$(2 \times 5 = 10 \text{ weightage})$$

FIRST SEMESTER M.Sc. DEGREE (SUPPLEMENTARY) EXAMINATION NOVEMBER 2020

(CUCSS)

Microbiology

MB IC 04—INDUSTRIAL MICROBIOLOGY

(2010 Admissions)

Time : Three Hours   Maximum : 36 Weightage

Section A

Answer all the questions.
Each question carries 1 weightage.

1. Must.

2. KLa coefficient.

3. Soyabean meal.

4. Hops.

5. Sparger.

6. Monosodium glutamate.

7. Primary screening.

8. Upstream process.

9. Homolactic acid fermentation.

10. SCP.

11. Molasses.

12. Distillation.

13. Auxotrophic mutants.

14. Bakers and Brewers yeast.

(14 × 1 = 14 weightage)

Section B

Answer any seven questions.
Each question carries 2 weightage.

15. Give details on production of Vitamin B_{12}.

16. Give an account on Huidized bed reactor.

17. Explain briefly on transformation process in fermentation.

18. Explain on industrial alcohol fermentation

19. Give details on Strain improvement methods.

20. Explain briefly on Inoculums preparation.

21. Give details on biphasic fermentation with an examples.

22. Give account on Alpha amylase production.

23. Give brief account on production of Streptomycin.

24. Briefly explain on Surface culture fermentation.

(7 × 2 = 14 weightage)

Section C

Answer any **two** *out of four essay questions.*
Each question carries 4 weightage.

25. Explain downstream process and various techniques used in downstream process.

26. Explain detail on the industrial productions of penicillin G.

27. Describe the Kinetics of fermentation processes and transport phenomena in fermentation process.

28. Describe the design and control of Bioreactor with suitable diagram.

(2 × 4 = 8 weightage)

FIRST SEMESTER M.Sc. DEGREE (SUPPLEMENTARY) EXAMINATION NOVEMBER 2020

(CUCSS)

Microbiology

MB IC 03—ENVIRONMENTAL AND SANITATION MICROBIOLOGY

(2010 Admissions)

Time : Three Hours   Maximum : 36 Weightage

I. Write short answer to *all* the following. Each question carries 1 weightage :

 1 Ammensalism.

 2 Recalcitrant.

 3 Rhizophere effect.

 4 Symbiotic Nitrogen Fixation.

 5 Infectious dust.

 6 Gram negative bacteria in air.

 7 Indicator microorganisms.

 8 Most Probable number.

 9 Activated sludge systems.

 10 COD.

 11 Bioindicators.

 12 *Pseudomonas putida.*

 13 Beach pollution.

 14 Winkler method.

(14 × 1 = 14 weightage)

II. Write a short paragraph on any *seven* of the following. Each question carries 2 weightage :

 15 What do you mean by microbial infallibility ?

 16 *Ex situ* degradation strategies.

 17 Discuss on phylloplane microflora.

 18 Describe the applications of rhizosphere effect.

Turn over

19 Comment of Bio weapon.

20 Draw a flow diagram of the process involved in water purification in industry.

21 What are the applications of EMB agar medium ?

22 What are the applications of biosensors in pollution management ?

23 What are the major treatment process adopted in the treatment of wastes emerged from tannery and slaughter houses ?

24 Discuss the concepts of BOD in wastewater management.

                                                                (7 × 2 = 14 weightage)

III. Explain any *two* of the following. Each question carries 4 weightage :

25 What do you mean by biogeochemical cycles ? Critically discuss on Carbon cycle.

26 Elaborate major principles and methodology for the room sanitation in hospitals and pharmaceutical industries.

27 Elaborate the steps and processes involved in the purification of wastewater.

28 Discuss the application of microorganisms for reducing the marine pollution.

                                                                (2 × 4 = 8 weightage)

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FIRST SEMESTER M.Sc. DEGREE (SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

(CUCSS)

Microbiology

MB IC 02—MICROBIAL METABOLISM

(2010 Admissions)

Time : Three Hours   Maximum : 36 Weightage

Section A

Answer **all** *questions in 2* **or** *3 sentences.*

Each question carries 1 weightage.

1. Alcoholic fermentation.

2. Coenzymes.

3. Siderophores.

4. Isozymes.

5. Ochratoxin.

6. Essential aminoacids.

7. Methanogenesis.

8. Xenobiotics.

9. Hydrolases.

10. Volutine granules.

11. Glycogenesis.

12. Streptomycin.

13. Glucogenic aminoacids.

14. Bioluminescent bacteria.

(14 × 1 = 14 weightage)

Turn over

Section B

Write notes on any **seven** *of the following.*

Each question carries 2 weightage.

15. Mechanism of enzyme action.

16. Chemiosmotic coupling theory.

17. Glyoxylate cycle and its importance.

18. β- oxidation of fatty acids.

19. Transamination reactions.

20. Rancidity development.

21. Beta lactum antibiotics.

22. General structure of fatty acids.

23. Gluconeogenesis.

24. Factors affecting enzyme activity.

(7 × 2 = 14 weightage)

Section C

Write an essay on any **two** *of the following.*

Each question carries 4 *weightage.*

25. Mechanisms of enzyme inhibition.

26. Purine and pyrimidine biosynthesis.

27. ETC, oxidative phosphorylation and ATP synthesis.

28. Immobilisation of enzymes and their applications.

(2 × 4 = 8 weightage)

FIRST SEMESTER M.Sc. DEGREE (SUPPLEMENTARY) EXAMINATION NOVEMBER 2020

(CUCSS)

Microbiology

MB IC 01—GENERAL BIOCHEMISTRY

(2010 Admissions)

Time : Three Hours   Maximum : 36 Weightage

Section A

*Answer **all** questions in two **or** three sentences.*
Each question carries 1 weightage.

1. Glycosidic linkage.

2. Non-protein aminoacids.

3. Epimers.

4. Phospholipids.

5. Colloids.

6. Sucrose.

7. Leukotrienes.

8. Colorimetry.

9. rRNA.

10. Chargaff's rule.

11. Osmosis.

12. Aromatic aminoacids.

13. Hyperchromic effect.

14. Gycogen.

(14 × 1 = 14 weightage)

Turn over

Section B

Write notes on any **seven** *of the following.*
Each question carries 2 weightage.

15. Tertiary and quaternary structure of proteins.

16. Ion-exchange chrotography and its application.

17. pH meter.

18. Thyroid hormones.

19. Ramachandran plot.

20. Purines and pyrimidines.

21. Flourimetry and flame photometry.

22. Disaccharides.

23. Autoradiography and its applications.

24. Derived lipids.

(7 × 2 = 14 weightage)

Section C

Write an essays on any **two** *of the following.*
Each question carries 4 weightage.

25. Principle and applications of lyophilisation techniques.

26. Different forms of RNA and their functions.

27. Classify Vitamins. Write their functions and deficiency diseases.

28. Different types of polysaccharides.

(2 × 4 = 8 weightage)