C 83531 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER P.G. DEGREE EXAMINATION, APRIL 2020

(CCSS)

M.Sc. Microbiology

MBG 2C 09—IMMUNOLOGY

(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. ADCC.
2. Allelic exclusion.
3. Polyclonal antibodies.
4. Mechanism of hybrid selection using HAT medium.
5. ITAMs.
6. 'Professional' antigen presenting cells.
7. T suppressor cells.
8. Antiglobulin test.
9. Chimeric monoclonal antibodies.
10. CD antigens.
11. Immunological tolerance.
12. Apoptosis.
13. Granzyme B.
14. Inflammatory cytokines.
15. Atopy.
16. Tumour associated transplantation antigens.

C 83531 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER P.G. DEGREE EXAMINATION, APRIL 2020

(CCSS)

M.Sc. Microbiology

MBG 2C 09—IMMUNOLOGY

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A

Write about each of the following in 2 **or** 3 *sentences.*

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1. ADCC.
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4. Mechanism of hybrid selection using HAT medium.
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6. 'Professional' antigen presenting cells.
7. T suppressor cells.
8. Antiglobulin test.
9. Chimeric monoclonal antibodies.
10. CD antigens.
11. Immunological tolerance.
12. Apoptosis.
13. Granzyme B.
14. Inflammatory cytokines.
15. Atopy.
16. Tumour associated transplantation antigens.

17. Alloreactive lymphocytes.
18. LAK cells.
19. Myeloperoxidase.
20. Clonal deletion.

(20 × 2 = 40 marks)

Section B

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

Each question carries 8 *marks.*

21. Describe the organization of human immunoglobulin genes and the mechanism of antibody diversity development.
22. Describe the structure and functions of class I and class II MHC molecules.
23. Write a note on interferons.
24. Discuss the difference in antigen recognition by B cells and T cells. Add a note on characteristics of T cell and B cell epitopes.
25. Write a note on autoimmune diseases affecting thyroid gland.
26. Discuss the mechanism of activation of B cells by thymus dependent antigens.
27. Define immunofluorescence. Add a note on the applications of immunofluorescence in immunodiagnosis of diseases.

(5 × 8 = 40 marks)

C 83530 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER P.G. DEGREE EXAMINATION, APRIL 2020

(CCSS)

M.Sc. Microbiology

MBG 2C 08—BIOSTATISTICS AND BIOINFORMATICS

(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. Pie diagram.
2. Frequency curve.
3. Standard error.
4. Chi-square test.
5. One way ANOVA.
6. Model organisms.
7. Data mining.
8. Relational DBMS.
9. Composite database.
10. OMIM.
11. UniProt-KB.
12. Homologous sequences.
13. DELTA BLAST.
14. Iterative method of MSA.
15. EMBOSS Needle.
16. Boot strapping.

17. Molecular clock hypothesis.
18. Gene parsing.
19. SOPMA.
20. *Ab initio* modeling.

(20 × 2 = 40 marks)

Section B

Write note on or discuss any **five** *of the following.*

Each question carries 8 *marks.*

21. Discuss the application of analysis of variance in biological sciences with relevant case studies.
22. Summaries the classifications of biological database with relevant examples.
23. Elaborate in detail about various resources available in EXPASY proteomic server.
24. Illustrate the application of PyMOL and RASMOL for the visualization of macromolecules.
25. Investigate the, role of multiple sequence alignment for the identification of conserved domains among molecules sequences.
26. Elaborate in detail the steps involved in computational gene prediction with appropriate tools or softwares.
27. Critically analysis the utility of comparative homology modeling for the prediction of tertiary structure of proteins.

(5 × 8 = 40 marks)

C 83529 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER P.G. DEGREE EXAMINATION, APRIL 2020

(CCSS)

M.Sc. Microbiology

MBG 2C 07—FOOD AND AGRICULTURE MICROBIOLOGY

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A

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

1. Direct epifluorescent filter technique.
2. Thermal death point.
3. Anthracnose.
4. Appertization.
5. Parabens.
6. Bridgmenization.
7. Nam.
8. Sauerkraut.
9. Hops.
10. Enterotoxin.
11. ETEC.
12. Hepatitis A.
13. Methylene blue reduction test.
14. Rhizosphere effect.
15. Heterocyst.
16. Free living nitrogen fixing bacteria.
17. Etiology of whip smut of sugar cane.
18. Bioassay.

19. Properties of ideal biopesticides.

20. Bt toxin.

(20 × 2 = 40 marks)

Section B

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

21. Discuss about the sources of micro-organisms in food. Write a note on major bacterial contaminants of food materials.

22. Write a note on classification and applications of food preservatives.

23. Describe the method of yoghurt production.

24. Write a note on botulism.

25. Describe conventional methods used for microbiological analysis of food materials.

26. Discuss about different types of mycorrhizae. Add a note on significance of mycorrhizae in agriculture.

27. Discuss the etiology, characteristics and control of following plant diseases :

    a) Paddy blast.

    b) Citrus canker.

(5 × 8 = 40 marks)

C 83528 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER P.G. DEGREE EXAMINATION, APRIL 2020

(CCSS)

M.Sc. Microbiology

MBG 2C 06—INDUSTRIAL MICROBIOLOGY

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A

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

1. Primary screening for industrially important micro-organisms.
2. Ergot Alkaloids.
3. Beta lactam antibiotics.
4. Ultrasonication.
5. Trophophase.
6. Continues culture.
7. α-Amylase.
8. Photobioreactor.
9. pH control of fermentation process.
10. Salting out.
11. Dry wine.
12. Seed tank.
13. Biphasic separation.
14. Aging and maturation of wine.
15. Grape must.
16. *Corynebacterium glutamicum.*

17. Thermistors.

18. *Streptomyces griseus.*

19. Antifoaming agent.

20. Osmotic shock.

(20 × 2 = 40 marks)

Section B

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

21. Discuss the concepts and design of a constantly stirred tank fermenter.

22. Write on different types of biofermentors.

23. Briefly discuss the concept and production of industrial alcohol. Give a note on its commercial importance.

24. What is meant by strain improvement ? Discuss the important methods.

25. Briefly discuss the fermentative production of Citric acid.

26. Briefly discuss the various steps in brewing of beer.

27. How do industrial media differ from laboratory media ? Briefly discuss the considerations in formulating an industrial media.

(5 × 8 = 40 marks)

C 83524 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER P.G. DEGREE EXAMINATION, APRIL 2020

(CCSS)

M.Sc. Microbiology

MBG 2C 06—INDUSTRIAL MICROBIOLOGY

(2017 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. Cross streak method for screening antibiotic production.
2. Brewery yeast.
3. Enrichment culture technique.
4. Proteinases as biological detergents.
5. Multiple stage fermentation.
6. Fed-batch fermentation.
7. Corn steep liquor.
8. Devices for temperature control in bioreactors.
9. Distiller's solubles.
10. Continuous stirred tank fermentor train.
11. Packed generator.
12. Claviceps purpurea.
13. Microbial rennets.
14. Sulfite waste liquor.
15. Uses of pectinases.
16. Uses of lactic acid.
17. Acetic acid bacteria.
18. Weizmann's Organism.

19. Bottom fermenting yeasts.

20. Synthetic media.

(20 × 2 = 40 marks)

Section B

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

21. Algae bioreactors.

22. Continuous fermentation.

23. Methods of sterilization applied in fermentation industry.

24. Industrial centrifuges.

25. Molecular genetic improvement of strains for secondary metabolite production.

26. Acetone -butanol-ethanol(ABE) fermentation.

27. Microbial production of citric acid.

(5 × 8 = 40 marks)

C 82887 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER M.A./M.Sc./M.Com. DEGREE EXAMINATION JUNE 2020

(CUCSS)

Microbiology

MB 2C 08—MYCOLOGY AND PARASITOLOGY

(2010 Admissions)

Time : Three Hours Maximum : 36 Weightage

I. Answer *all* questions. Comment on the following. Each question carries 1 weightage :

1 Zygomycota.

2 Slide culture of fungi.

3 Pityriasis versicolor.

4 KOH preparation of hair or nail.

5 Transmission of histoplasmosis.

6 Oral thrush.

7 Cryptococcus neoformans.

8 Ochratoxin.

9 Alpha amanitin.

10 Sand fly.

11 Microfilariae.

12 Germ tube test.

13 Mechanism of action of azoles.

14 Tinea capitis.

(14 × 1 = 14 weightage)

II. Write note in one paragraph on any *seven* of the following. Each question carries 2 weightage :

15 Toxoplasma gondii.

16 Mycetoma.

17 Candidiasis.

18 Leishmania donovanii.

19 Plasmodium falciparum.

Turn over

20 Wucheraria bancrofti.

21 Stool examination for ova and cysts.

22 Trichomonas Vaginalis.

23 Classification of fungi based on morphology.

24 Dermatophytes.

(7 × 2 = 14 weightage)

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

25 Pathogenesis of amoebiasis.

26 Pathogenesis and laboratory diagnosis of malaria.

27 Control of mycoses.

(2 × 4 = 8 weightage)

C 82885 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER M.A./M.Sc./M.Com. DEGREE EXAMINATION, JUNE 2020

(CUCSS)

Microbiology

MB 2C 06—IMMUNOLOGY

(2010 Admissions)

Time : Three Hours Maximum : 36 Weightage

I. Answer *all* questions. Comment on the following. Each question carries 1 weightage :

1 Serum IgA.

2 Radial immunodiffusion.

3 Membrane attack complex.

4 Hinge region in immunoglobulins.

5 Plasma cells.

6 Dendritic cells.

7 Immune complex diseases.

8 Contact dermatitis.

9 Sequestered antigens.

10 Long acting thyroid stimulator.

11 Phacoanaphylaxis.

12 White graft response.

13 Tumour specific transplantation antigens.

14 T-independent antigens.

(14 × 1 = 14 weightage)

II. Write note in one paragraph on any *seven* of the following. Each question carries 2 weightage :

15 Immunoglobulin classes.

16 Genetic basis of antibody diversity.

Turn over

17 Cytokines.

18 MHC.

19 Biological effects of complements.

20 Type 3 hypersensitivity.

21 Immunosuppressive agents.

22 Immunodeficiency diseases.

23 Rh incompatibility.

(7 × 2 = 14 weightage)

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

24 Lymphoid organs.

25 Various types of antigen-antibody reactions.

26 Autoimmune diseases.

(2 × 4 = 8 weightage)

C 82884 **(Pages : 2)** **Name.....**

Reg. No.....

SECOND SEMESTER M.A./M.Sc./M.Com. DEGREE EXAMINATION, JUNE 2020

(CUCSS)

Microbiology

MB 2C 05—MICROBIAL GENETICS

(2010 Admissions)

Time : Three Hours Maximum : 36 Weightage

I. Answer *all* questions. Write briefly on the following. Each question carries 1 weightage :

1 Origin of replication.

2 VNTR.

3 Hfr strains.

4 Tetrad analysis.

5 *Lambda* P_L *promoter*.

6 Transposase.

7 Alpha complementation.

8 Attenuation.

9 Phagemids.

10 Lambda replacement vectors.

11 RFLP v/s RAPD.

12 Reverse transcriptase.

13 T/A cloning.

14 *Klenow fragment of DNA pol I.*

(14 × 1 = 14 weightage)

II. Write notes in one paragraph on any *seven* of the following. Each question carries 2 weightage :

15 Prokaryotic genome organization.

16 Regulation of *ara* operon.

17 Applications of PCR.

18 Types of gene mutations.

19 Applications of DNA fingerprinting.

20 Site specific integration of Lambda.

21 Recombination mapping.

22 Chemical Mutagens.

23 *E. Coli* DNA polymerases.

24 Conjugation in Bacteria.

(7 × 2 = 14 weightage)

Turn over

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

25 *Enzymology of DNA replication in E. coli.*

26 What are the different types of transposons ?

27 What are the different classes of restriction enzymes ?

(2 × 4 = 8 weightage)

C 4756 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2021

(CBCSS)

Microbiology

MBG 2C 08—IMMUNOLOGY

(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 Questions)

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

1. Pernicious anaemia.
2. MALT.
3. GVHD.
4. Ig A.
5. ADCC.
6. Radioimmunoassay.

(4 × 2 = 8 weightage)

Section B (Short Essay Type Questions)

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

7. Explain the process of T- cell maturation.
8. Explain the mechanism of humoral immune respose.

Turn over

9. Discuss the type II hypersensitivity reactions examples.
10. Give an account on systemic auto immune diseases. Give examples.
11. Explain the mechanism of cell mediated graft rejection.
12. Write a note on tumour antigens.

(4 × 3 = 12 weightage)

Section C (Essay Type Questions)

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

13. Explain the mechanisms of complement activation. List the functions of complement system.
14. Describe the structure of immunoglobulin. List the features of each class of immunoglobulins.
15. Give an account on immunodeficiency diseases giving examples.
16. List the features of antigen -antibody reactions. Explain the various precipitation and agglutination reactions used in diagnosis.

(2 × 5 = 10 weightage)

C 4755 **(Pages : 2)** **Name**.....

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2021

(CBCSS)

Microbiology

MBG 2C 07—INDUSTRIAL 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. Fermentation.
2. Bioreactor.
3. Baffles.
4. SCP.
5. Filtration and filter cake.
6. Headspace.

(4 × 2 = 8 weightage)

Section B (Short Essay Type Questions)

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

7. What is the relevance of strain improvement in up-stream process.
8. Give a brief account on solid state fermentation.

Turn over

9. Classify fermentation methods based on different criteria.
10. List out important influencing factors of fermentation.
11. Production of Penicillin.
12. Shelf life.

(4 × 3 = 12 weightage)

Section C (Essay Type Questions)

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

13. Fermentation and ayurvedic medicines.
14. Kinetics of fermentation.
15. Media formulation.
16. Mass transfer co-efficient.

(2 × 5 = 10 weightage)

C 4754 **(Pages : 2)** **Name.....**

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2021

(CBCSS)

Microbiology

MBG 2C 06—FOOD AND DIARY 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.*

Part A

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

Comment on the following :

1. Yoghurt.
2. Pascalization.
3. Aflatoxin.
4. Sauerkraut.
5. Koji.
6. Nisin.

(4 × 2 = 8 weightage)

Part B

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

Write briefly on the following :

7. Seven principles of HACCP.
8. Infectious hepatitis.
9. Spoilage of fish.

Turn over

10. Production of cheese.

11. SCP.

12. Food preservation by radiation.

(4 × 3 = 12 weightage)

Part C

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

13. Explain the factors affecting microbial growth in food.

14. Discuss the different chemical methods of food preservation

15. Describe food borne infections.

16. Discuss the microbiological analysis of milk.

(2 × 5 = 10 weightage)

C 4753 **(Pages : 2)** **Name.....**

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2021

(CBCSS)

Microbiology

MBG 2C 05—PRINCIPLES OF GENETICS

(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. Complementary genes.
2. Lyon's hypothesis.
3. Breakage first theory.
4. Euploidy.
5. Symbols in pedigree analysis.
6. Hfr strains.

(4 × 2 = 8 weightage)

Section B (Short Essay Type Questions)

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

7. What are epitasis ? Discuss with examples.
8. Discuss the theory of non-disjunctions.

Turn over

9. Narrate the mechanism of germinal and somatic crossing over.
10. What are the types of polyploidy ? Discuss with examples.
11. Illustrate the need and scope of genetic counseling.
12. Illustrate the mechanism of bacterial transformation.

(4 × 3 = 12 weightage)

Section C (Essay Type Questions)

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

13. Examine the applications of Mendelian concepts of genetics.
14. Narrate the steps involved in the constructions of genetic map.
15. Elaborate various chromosomal aberrations with examples.
16. Investigate the mechanisms involved in the process of transduction.

(2 × 5 = 10 weightage)

C 3986 **(Pages : 2)** **Name.....**

Reg. No.....

SECOND SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021

(CCSS)

Microbiology

MBG 2C 09—IMMUNOLOGY

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A

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

1. Heterophile antigens.
2. Affinity maturation.
3. Humanized monoclonal antibodies.
4. Follicular dendritic cells.
5. MHC restriction.
6. Germinal centre.
7. Somatic hypermutation.
8. Differentiate autocrine and paracrine effects.
9. B-cell receptors.
10. Allotypes.
11. Activation induced cytidine deaminase.
12. Intraepithelial lymphocytes.
13. Thymus independent antigens.
14. Myasthenia gravis.
15. TNF-α.
16. Allergens.

17. Hyperacute rejection.

18. Secondary immune deficiency.

19. Immune surveillance theory.

20. Immunofluorescence.

(20 × 2 = 40 marks)

Section B

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

21. Describe the organization of HLA complex in human genome. Discuss the role of HLA gene products in immunity.

22. Discuss the generation and maturation of T cells.

23. Describe the mechanism of activation of T cells.

24. Write a note on type IV hypersensitivity.

25. Discuss the processing and presentation of endogenous antigens.

26. Write a note on properties and role of myeloid lineage cells in immunity.

27. Differentiate precipitation and agglutination reactions. Add a note on application of agglutination reactions in immunodiagnosis of diseases.

(5 × 8 = 40 marks)

C 3985 **(Pages : 2)** **Name.....**

Reg. No.....

SECOND SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021

(CCSS)

Microbiology

MBG 2C 08—BIOSTATISTICS AND BIOINFORMATICS

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A

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

1. Histogram.
2. Frequency polygon.
3. Mean deviation.
4. t-test.
5. ANOVA.
6. Functional Bioinformatics.
7. DBMS.
8. Knowledge database.
9. KEGG.
10. Dot matrix.
11. Dynamic programming algorithm.
12. Progressive alignment.
13. PSI- BLAST.
14. Clustal Omega.
15. Kimura-2 Parameter model.
16. UPGMA.

17. Maximum Parsimony.

18. GLIMMER.

19. Prediction of regulatory regions.

20. Threading.

(20 × 2 = 40 marks)

Section B

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

21. Discuss the application of correlation and regression analysis in biological sciences with relevant examples.

22. Discuss the early developments of bioinformatics with a special emphasis on genome projects.

23. Elaborate in detail various approaches and algorithms used for pair wise alignment of sequences.

24. Examine various methods and tools involved in the phylogenetic tree construction by distance based methods.

25. Investigate the utilities of various bioinformatics tools for the prediction of secondary structure of proteins with appropriate examples.

26. Discuss the prediction of the three dimensional structure of protein from its basic amino acid sequences with the aids of bioinformatics tools and softwares.

27. Critically discuss the prediction genes and regulatory elements using computational biology resources.

(5 × 8 = 40 marks)

C 3984 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021

(CCSS)

Microbiology

MBG 2C 07—FOOD AND AGRICULTURAL MICROBIOLOGY

(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. Breed's count.
2. Indicator organism.
3. Explosive puffing.
4. $_{12}D$ concept.
5. Differentiate radicidation and radurization.
6. Sanitizers.
7. Beneficial effects of lactic acid bacteria in food.
8. Starter cultures for sausage fermentation.
9. Probiotics.
10. Define foodborne disease outbreak.
11. Salmonellosis.
12. Mycotoxins.
13. MPN.
14. Define Phyllosphere.
15. Leghaemoglobin.
16. Carriers for microbial inoculants.

17. Endophytic micro-organisms.

18. *Pasteuria penetrans*.

19. Advantages of biopesticides over chemical pesticides.

20. *Xanthomonas citri*.

(20 × 2 = 40 marks)

Section B

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

Each question carries 8 *marks.*

21. Describe the various factors affecting microbial growth in food materials.

22. What are the principles of food preservation ? Write a note on modern techniques used for food preservation.

23. Describe the methods used for vinegar production.

24. Write' a note on Staphylococcal food poisoning.

25. Write a note on methods used for microbiological analysis of food materials.

26. What are the properties of an ideal biofertilizer ? Write a note on Cyanobacterial inoculants production.

27. Write a note on bacterial bio-pesticides.

(5 × 8 = 40 marks)

C 3983 **(Pages : 2)** **Name.....**

Reg. No.....

SECOND SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021

(CCSS)

Microbiology

MBG 2C 06—INDUSTRIAL MICROBIOLOGY

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A

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

1. Secondary metabolite.
2. Parasexual cycle
3. Fluidized bed reactor
4. Auxotrophic mutant.
5. Surface culture process
6. Spirulina as a Single cell protein.
7. Fed batch culture.
8. Beet molasses.
9. Inhibitors.
10. Sparger.
11. Foam control.
12. *Acremonium chrysogenum.*
13. Scale up of inoculum.
14. Rotary Vacuum drum filters.
15. List general methods of Cell disruption.
16. Primary screening of production strains.
17. Semisynthetic Penicillin.
18. *Lactobacillus bulgaricus.*

19. Use of hop flower in beer fermentation.

20. Stock cultures.

(20 × 2 = 40 marks)

Section B

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

21. Downstream processing of Penicillin fermented broth for its purification.

22. Briefly discuss the general strategies of strain improvement.

23. Briefly discuss the considerations for sterilisation of production media.

24. Briefly discuss the characteristics of an ideal production medium.

25. Discuss briefly the aseptic operations of a CSTR to avoid contamination.

26. Briefly discuss the industrial production of wine.

27. Briefly discuss the production of industrial alcohol.

(5 × 8 = 40 marks)