D 90727 (Pages : 2) Name.....

Reg. No.....

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

(CUCSS)

General Biotechnology

GN 3C 4—IMMUNOLOGY

(2010 Admissions)

Time : Three Hours Maximum : 36 Weightage

Section A

Answer **all** *questions.*

Each question carries a weightage of 1.

1. Innate immunity.
2. Myeloid progenitor cells.
3. Antigenic epitopes
4. Antibody avidity.
5. MHC.
6. Interleukins.
7. Hypersensitivity.
8. Hashimoto's thyroiditis.
9. Isograft.
10. Tumour antigens.

(10 × 1 = 10 weightage)

Section B

Answer any **seven** *questions.*

Each question carries a weightage of 2.

11. What are the salient features of acquired immunity ?
12. Explain the functions of lymphatic system.
13. Distinguish between antigenicity and immunogenicity.
14. Explain the basis for cross-reactivity in antigen-antibody reactions.
15. Describe the structure of T-cell receptor complex.
16. Write a short note on role of complement system in immune regulation.
17. What is the basis for expression of systemic lupus erythematosus ?
18. How does immune system respond during bacterial infection ?

19. Explain the role of oncogenes in cancer induction.

20. Give a brief account on therapeutic applications of monoclonal antibodies.

(7 × 2 = 14 weightage)

Section C

Answer any **two** *questions.*

Each question carries a weightage of 6.

21. What are primary and secondary lymphoid organs ? Give examples and explain their relative functions.

22. Elucidate the cytosolic pathway involved in antigen presentation.

23. Explain the method of production of monoclonal antibodies by hybridoma technology.

(2 × 6 = 12 weightage)

D 91024 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER M.A./M.Sc./M.Com. DEGREE (REGULAR) EXAMINATION NOVEMBER 2020

(CBCSS)

General Biotechnology

GBT 3E 01—STEM CELL BIOLOGY Part A (Option I)

(2019 Admissions)

Time : Two Hours and a Half Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each Section / Part.*
2. *The minimum number of questions to be attended from the Section / Part shall remain same.*
3. *There will be an overall ceiling for each Section / Part that is equivalent to maximum weightage of the Section / Part.*

Section A

Answer any **four** *questions.*

Each question carries a weightage of 2.

1. What are stem cells and why are they important ?
2. What is meant by nuclear transfer ?
3. Neural stem cells.
4. Difference between ectoderm and mesoderm.
5. Blastocyst.
6. Progenitor cells.
7. Gastrulation.

(4 × 2 = 8 weightage)

Section B

Answer any **four** *questions.*

Each question carries a weightage of 3.

8. Write a note on different properties of stem cells.
9. Give an account on mesenchymal stem cells.
10. Stem cells cryopreservation.

Turn over

11. Organogenesis.
12. Give an account on neural stem cells.
13. Sources of stem cells.
14. Reprogramming of stem cells.

(4 × 3 = 12 weightage)

Section C

Answer any **two** *questions.*

Each question carries a weightage of 5.

15. Discuss types and classification of stem cells.
16. Describe somatic cell nuclear transfer technology and its applications.
17. Explain stem cell differentiation.
18. Briefly explain applications of stem cells.

(2 × 5 = 10 weightage)

D 91023 **(Pages : 2)** **Name**.....

Reg. No.....

THIRD SEMESTER M.A./M.Sc./M.Com. DEGREE (REGULAR) EXAMINATION, NOVEMBER 2020

(CBCSS)

General Biotechnology

GBT 3C 04—IMMUNOLOGY

(2019 Admissions)

Time : Two Hours and a Half Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each Section / Part.*
2. *The minimum number of questions to be attended from the Section / Part shall remain same.*
3. *There will be an overall ceiling for each Section / Part that is equivalent to maximum weightage of the Section / Part.*

Section A

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

1. Difference between passive and active immunity.
2. Haptens.
3. Hemagglutination.
4. Immunological role of B and T lymphocytes.
5. Different types of hypersensitivity.
6. Oncogenes.
7. DNA vaccines.

(4 × 2 = 8 weightage)

Section B

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

8. Write a note on Monoclonal antibodies and therapeutic applications.
9. Immunological risk associated with organ transplantation.

Turn over

10. Write a note on the role of immunosuppressive agents.
11. Give an account on diagnosis and treatment approaches in SLE.
12. Cytokines.
13. Adjuvants.
14. Name primary lymphoid organs and their role in immunity.

(4 × 3 = 12 weightage)

Section C

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

15. Explain hematopoeisis and differentiation.
16. Detail the antigen presentation pathways.
17. Describe different factors affecting Immune System.
18. Briefly explain human immunity to infectious agents.

(2 × 5 = 10 weightage)

D 91022 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER M.A./M.Sc./M.Com. DEGREE (REGULAR) EXAMINATION NOVEMBER 2020

(CBCSS)

General Biotechnology

GBT 3C 03—PLANT BIOTECHNOLOGY

(2019 Admissions)

Time : Two Hours and a Half Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each Section/Part.*
2. *The minimum number of questions to be attended from the Section/Part shall remain same.*
3. *There will be an overall ceiling for each Section/Part that is equivalent to maximum weightage of the Section/Part.*

Section A

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

1. What is meant by somaclonal variation ?
2. What is vitrification ?
3. Give an account on selectable markers.
4. Slow growth.
5. Write a note on IAA.
6. What are vir genes ?
7. Comment on biolistics.

(4 × 2 = 8 weightage)

Section B

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

8. Mutation breeding.
9. Cryopreservation.
10. Discuss the role of *A. rhizogenus.*
11. Acclimatization.

Turn over

12. Write a note on the clonal propagation pathway.
13. Scaling up of plant metabolites.
14. Somatic embryogenesis.

(4 × 3 = 12 weightage)

Section C

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

15. Describe the methods of protoplast isolation and culture.
16. Explain the method of production of haploids in plant tissue culture.
17. Compare the callus and somatic embryogenesis pathways of regeneration.
18. Briefly explain the *Agrobacterium* method of plant genetic transformation.

(2 × 5 = 10 weightage)

D 91021 **(Pages : 2)** **Name**.....

Reg. No.....

THIRD SEMESTER M.A./M.Sc./M.Com. DEGREE (REGULAR) EXAMINATION NOVEMBER 2020

(CBCSS)

General Biotechnology

GBT 3C 02—BIOPROCESS TECHNOLOGY

(2019 Admissions)

Time : Two Hours and a Half Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each Section / Part.*
2. *The minimum number of questions to be attended from the Section / Part shall remain same.*
3. *There will be an overall ceiling for each Section / Part that is equivalent to maximum weightage of the Section / Part.*

Section A

Answer any **four** *questions.*

Each question carries a weightage of 2.

1. Write about the importance of mixing in Submerged fermentation.
2. Write a brief note on foaming and antifoam agents.
3. Methods used for preserving industrial micro-organisms.
4. Name the different probes used in fermenter.
5. Give a brief note on fed batch culture.
6. What is Stirred Tank Reactor.
7. Write about the advantages of using immobilized cells in bioprocess.

(4 × 2 = 8 weightage)

Section B

Answer any **four** *questions.*

Each question carries a weightage of 3.

8. Write about some of the major Indian bioprocess industries and their products.
9. Draw a diagram and explain the various essential components of a bioreactor.

Turn over

10. Explain the methods of sterilization of industrial bioprocess media.

11. Write about on-line monitoring of process variables and automation in bioreactors.

12. Write about the production of organic acids by fermentation.

13. Explain the application of bioprocess in waste management.

14. Write about the industrial production of amino acids.

(4 × 3 = 12 weightage)

Section C

Answer any **two** *questions.*

Each question carries a weightage of 5.

15. Explain downstream processing in fermentation.

16. Write about different types of fermenters.

17. Explain various agro-industrial residues used as fermentation media.

18. Explain the steps involved isolation and screening of industrial micro-organisms.

(2 × 5 = 10 weightage)

D 91020 **(Pages : 2)** **Name**.....

Reg. No.....

THIRD SEMESTER M.A./M.Sc./M.Com. DEGREE (REGULAR) EXAMINATION NOVEMBER 2020

(CBCSS)

General Biotechnology

GBT 3C 01—GENETIC ENGINEERING

(2019 Admissions)

Time : Two Hours and a Half Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each Section / Part.*
2. *The minimum number of questions to be attended from the Section / Part shall remain same.*
3. *There will be an overall ceiling for each Section / Part that is equivalent to maximum weightage of the Section / Part.*

Section A

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

1. Difference between plasmids and cosmids.
2. Principle of PCR technique.
3. What is Sl mapping ?
4. Advantages of insects baculovirus expression system.
5. Phage display system.
6. Gene editing.
7. Difference between genetic and physical maps.

(4 × 2 = 8 weightage)

Section B

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

8. Write a note on Sanger-Coulson method of DNA sequencing.
9. Restriction and modifying enzymes.
10. Methods of purification and refolding of recombinant proteins.

Turn over

11. Pedigree analysis.
12. Give an account on transgenic technology.
13. DNA micro array technique and its importance.
14. Write a note on biosafety of GMOs.

(4 × 3 = 12 weightage)

Section C

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

15. Explain the different methods of DNA sequencing.
16. Detail the applications of genome analysis.
17. Describe different prokaryotic and eukaryotic expression systems.
18. Briefly explain the guidelines involved the use of genetic engineering techniques.

(2 × 5 = 10 weightage)