PH 501.3 Reg. No: | | | | | | |

St Aloysius College (Autonomous)
Mangaluru
Semester III – P.G. Examination – M.Sc. Biotechnology
December - 2022
ANIMAL BIOTECHNOLOGY

Time: 3 Hours Max. Marks: 70

Note: Draw neat labeled diagrams/schematic sketches/structures wherever necessary

I Write short notes on any FIVE of the following. (5x3=15)

1. Xenotransplantation
2. Applications of Baculoviruses
3. Applications of somatic cell fusion
4. Embryonic stem cells
5. Detection of fungal contamination in cell cultures
6. Cryopreservation of cells
7. Blood coagulation factors
8. Germline gene therapy

II Write explanatory notes on any FIVE of the following. (5x5=25)

9. Elaborate on animal cloning and its applications.
10. How is the culturing of pearl oyster mantle cells performed? Explain.
11. What are the different characteristics of stem cells?
12. Elaborate on the various cell separation techniques.
13. Detail on 3D bioprinting and its commercial uses.
14. Explain the establishment of primary cultures in the lab.
15. Elaborate on the present status and future perspectives of cell culture based viral vaccines.
16. Explain *In-vitro* fertilization techniques

III Answer any THREE of the following. (3×10=30)

17. Write a detailed note on the process of tissue engineering. Add a note on different types of scaffolds used for tissue engineering.
18. Elaborate on the different types of media used for mammalian cell culture. What are the basic components of culture medium?
19. Explain the steps involved in the production of transgenic animals. Add a note on biopharming and its applications.
20. Write an explanatory note on (i) Subculturing of adherent cells and (ii) Dissociating agents used in cell culture
21. Discuss on the cell lines used in Biotechnological applications.

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PH 502.3

Reg. No: | | | | | | |

St Aloysius College (Autonomous)
Mangaluru
Semester III – P.G. Examination – M.Sc. Biotechnology
December -2022
PLANT BIOTECHNOLOGY

Time: 3 Hours

Max. Marks: 70

Note: Draw neat labeled diagrams/schematic sketches/structures wherever necessary

I Write short notes on any FIVE of the following. **(5x3=15)**

1. Cytokinin
2. SCAR
3. Cry gene
4. Mercuric chloride
5. Gelrite
6. TALEN
7. Biotransformation
8. RAPD

II Write explanatory notes on any FIVE of the following. **(5x5=25)**

9. Write a note on synteny mapping.
10. Describe CRISPER-Cas technology
11. Comment on Chloroplast genome engineering.
12. Write a note on production of virus free plants.
13. Write a note on continuous culture techniques.
14. Explain schemes to obtain somaclonal variations.
15. Give an account on the principle and applications of artificial seeds.
16. Write short note on RFLP technique

III Answer any THREE of the following. **(3×10=30)**

17. Explain the methodology involved in the isolation and culturing of protoplast. Give a note on its applications.
18. Explain the production of transgenic plant for virus resistance.
19. Give a detailed account on different components of plant tissue culture media and their significance.
20. Describe terminator seed technology with the help of a suitable example.
21. How is QTL mapping beneficial in plant biotechnology? Give a brief description on the methodology involved in QTL mapping.

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St Aloysius College (Autonomous)
Mangaluru
Semester III – P.G. Examination – M.Sc. Biotechnology
December -2022
INDUSTRIAL BIOTECHNOLOGY

Time: 3 Hours **Max. Marks: 70**

Note: Draw neat labeled diagrams/schematic sketches/structures wherever necessary

I Write short notes on any FIVE of the following. **(5x3=15)**

1. What are auxotrophic mutants? Mention any two applications with example.
2. What is aseptic sampling?
3. What are spargers?
4. List any six criteria for ideal fermentor
5. Briefly write the importance of antifoam agents and give any two examples.
6. Define downstream processing. Name any two methods of downstream processing.
7. Briefly write the role of precipitation in downstream processing.
8. Write a note on freeze drying.

II Write explanatory notes on any FIVE of the following. **(5x5=25)**

9. Illustrate the isolation of industrially important microorganisms with suitable examples.
10. Describe fed-batch fermentation
11. Narrate the construction and applications of air lift fermentor.
12. Explain PID control system and its significance.
13. Describe cell disruption techniques.
14. Explain the principle and applications of reverse osmosis.
15. Write in detail about SCADA system.
16. Discuss the production of Riboflavin.

III Answer any THREE of the following. **(3×10=30)**

17. Describe the principle and types of sterilization of medium.
18. Discuss traditional and recombinant methods of strain improvement of industrially important microorganisms.
19. Give a detailed account on principle, types and applications of centrifugation from industrial biotechnology perspective.
20. Discuss on the production of Penicillin.
21. Discuss the types of fermentors.

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PS 506.3

Reg. No: | | | | | | |

St Aloysius College (Autonomous)
Mangaluru

Semester III – P.G. Examination – M.Sc. Biotechnology

December -2022

ENVIRONMENTAL BIOTECHNOLOGY

Time: 3 Hours **Max. Marks: 70**

Note: Draw neat labeled diagrams/schematic sketches/structures wherever necessary

I Write short notes on any FIVE of the following. **(5x3=15)**

1. Tropical Rain Forest
2. Lentic water system
3. Energy flow
4. Climate change
5. Values of biodiversity
6. Low-shear airlift reactors
7. Macrofouling
8. Biological filters

II Write explanatory notes on any FIVE of the following. **(5x5=25)**

9. Zones of Atmosphere
10. Mangroves
11. Soil pollution and control measures
12. Microbial degradation of petroleum hydrocarbons
13. Activated sludge process
14. Air-sparged reactors
15. Carbon cycle
16. Inverse fluidized bed biofilm reactor

III Answer any THREE of the following. **(3×10=30)**

17. Discuss the sources and effects of water pollution.
18. Explain the different steps of Nitrogen Cycle.
19. Elaborate on the different types of Interspecific interactions.
20. Write an essay on microbial influenced corrosion and remedies.
21. Write an account on microbial bioremediation.

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PO 513.3 Reg. No: | | | | | | |

St Aloysius College (Autonomous)
Mangaluru

Semester III – P.G. Examination – M.Sc. Biotechnology

December - 2022

CLINICAL DRUG DEVELOPMENT AND IPR

Time: 3 Hours **Max. Marks: 70**

Note: Draw neat labeled diagrams/schematic sketches/structures wherever necessary

I Write short notes on any FIVE of the following. (5x3=15)

1. What do you understand by TRIPS.
2. Write a note on Case report form.
3. Explain briefly about PCT.
4. Explain the pharmacokinetics of drug action.
5. What are the good clinical practices?
6. Write a note on ADME profiling.
7. Mention the laws that govern trade secrets
8. Write the role of institutional review board in clinical trails.

II Write explanatory notes on any FIVE of the following. (5x5=25)

9. Discuss the observations made in phase II and III trails. Write a note on need of phase I clinical trails
10. Discuss on drug development process.
11. Assess the significance of geographical indication and name the legislation for its protection in India.
12. Describe the responsibilities of sponsor, investigator and the monitor in the clinical research.
13. Explain LC50, ED50 and pharmaco dynamics in drug action.
14. Elucidate the benefits of protecting copy rights and related rights.
15. Explain pre-clinical trails
16. Describe biopiracy with an example.

III Answer any THREE of the following. (3×10=30)

17. Explain the remedies available against patent infringement in India.
18. Discuss various *in vitro* and animal models in drug development.
19. Elaborate on the types of clinical research and various phases of clinical trails
20. Describe the historical perspective of regulations in clinical research.
21. Illustrate on the legal issues faced through the process of patent and copy rights practices.

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