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NB—19—2023

FACULTY OF SCIENCE

B.Sc. (Third Year) (Sixth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(New Course)

BIOTECHNOLOGY

(Agriculture Biotechnology)

(Wednesday, 6-12-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Each question carries equal marks.

(*iii*) Draw neat diagram wherever necessary.

1. Explain in brief non-symbiotic N_2 fixation. 15

Or

(*a*) Write a note on mechanism of N_2 fixation. 8

(*b*) Describe in brief nodule development. 7

2. Describe in detail Azotobacter as Biofertilizer Inoculant. 15

Or

(*a*) Write a note on Rhizobium inoculant. 8

(*b*) Explain in brief Bluegreen algae as Biofertilizer. 7

P.T.O.

3. Describe in brief causative agent, symptoms, mechanism of action and control measures of bacterial blight of cotton. 15

Or

(*a*) Classification of plant diseases based on symptoms. 8

(*b*) Whip smut of sugarcane. 7

4. Describe in detail Biomass. 15

Or

(*a*) Biopesticides 8

(*b*) Spirulina. 7

5. Write short notes on (any *three*) : 15

(*a*) Function of Auxin

(*b*) Assimilation of phosphorus in plants

(*c*) Application of Biofertilizer

(*d*) Advantages of Biopesticides

(*e*) Citrus canker of lemon.

This question paper contains **2** printed pages]

NB—20—2023

FACULTY OF SCIENCE AND TECHNOLOGY

B.Sc. (Third Year) (Sixth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOTECHNOLOGY

(Animal Biotechnology)

(Wednesday, 6-12-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) Attempt *all* questions.

(*ii*) Illustrate your answer with suitably labelled diagram wherever necessary.

1. Describe in detail primary and established cell lines. 15

Or

(*a*) Write a short note on laminar flow hoods. 8

(*b*) Describe the behaviour of animal cell in culture media. 7

2. Describe in detail monolayer, suspension and embryonic cell culture. 15

Or

(*a*) What is the role of pH and CO_2 in animal cell culture ? 8

(*b*) Write a short note on maintenance of stock culture. 7

P.T.O.

3. Describe in detail biology and characterization of cultured cells. 15

Or

(*a*) Write a short note on tissue taping. 8

(*b*) What are the measuring parameters of growth of cell ? 7

4. What is animal cell culture ? Enlist the applications of animal cell culture. 15

Or

(*a*) Explain viral gene delivery systems. 8

(*b*) What is hybridoma technology ? Enlist its application. 7

5. Write short notes on any *three* out of four : 15

(*a*) Refrigeration and freezers

(*b*) Basal salt solution

(*c*) Cell-cell interaction

(*d*) Cell transformation.

This question paper contains **2** printed pages]

NB—13—2023

FACULTY OF SCIENCE

B.Sc. (Third Year) (Sixth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

BIOTECHNOLOGY

(New Course)

Paper-(CCBT–3F)

(Environmental Biotechnology)

(Monday, 04-12-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.L. *:—* (*i*) *All* questions are compulsory

(*ii*) Draw a well labelled diagram wherever necessary.

1. Describe secondary waste water treatment with application. 15

Or

(*a*) Primary treatment 8

(*b*) Packed bed reactor. 7

2. Explain Biodegradation of Hydrocarbon with suitable example. 15

Or

P.T.O.

(*a*) Municipal solid waste treatment 8

(*b*) Anaerobic degradation. 7

3. What is bioremediation ? Write methods of bioremediation with advantages and disadvantages. 15

Or

(*a*) Bioremediation of Saline Soil 8

(*b*) Phytoremediation. 7

4. What is xenobiotics ? Describe herbicide degradation principle with application. 15

Or

(*a*) Pesticide degradation 8

(*b*) Cytochrome P_{450} System. 7

5. Write notes on (any *three*) : 15

(*i*) Air lift membrane bioreactor

(*ii*) Concept of Biodegradation

(*iii*) Bioremediation of Alkaline Soil

(*iv*) Phase–I

(*v*) Tertiary treatment.

This question paper contains **2** printed pages]

NB—07—2023

FACULTY OF SCIENCE

B.Sc. (Third Year) (Sixth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOTECHNOLOGY

(Industrial Biotechnology)

(Friday, 1-12-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.L. *:—* (*i*) Attempt *all* questions.

(*ii*) Draw well labelled diagrams wherever necessary.

(*iii*) All questions carry equal marks.

1. Describe in detail strain improvement. 15

Or

Write notes on :

(*a*) Modification of Permeability. 8

(*b*) Isolation of mutants which do not produce feedback inhibitors. 7

P.T.O.

2. Describe methods of cell disruption. 15

Or

Write notes on :

(*a*) Liquid-Liquid extraction 8

(*b*) Crystallization. 7

3. Describe in detail citric acid production : 15

Or

(*a*) Describe vitamin B_{12} production. 8

(*b*) Describe protease production. 7

4. Describe GLP. 15

Or

(*a*) Describe Fermentation Economics. 8

(*b*) Describe Carcinogenicity Test. 7

5. Write short notes on (any *three*) : 15

(*a*) QC

(*b*) Toxicity Test

(*c*) Pectinase Production

(*d*) Drying

(*e*) Reverse Osmosis.

This question paper contains **2** printed pages]

NB—02—2023

FACULTY OF SCIENCE

B.Sc. (Third Year) (Sixth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(New Course)

BIOTECHNOLOGY

(Pharmaceutical Biotechnology)

(Wednesday, 29-11-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) *All* questions carry equal marks.

1. Explain types of secondary metabolites and explain the factors that affect production of secondary metabolites. 15

Or

(*a*) What are plant secondary metabolites ? Enlist various medicinal applciations of secondary metabolites. 8

(*b*) Discuss general characteristics of antibiotics. 7

2. Explain various classifications of antibiotics based on mode of actions and chemical groups attached to them. 15

Or

(*a*) Explain principle and methods of microbial assay. 8

(*b*) Explain various types of microbial resistance to antibiotics. 7

P.T.O.

3. Describe in detail mechanism of action of anticancer drugs. 15

Or

(*a*) Explain mechanism of action of antidiabetic drugs. 8

(*b*) Explain structure and mechanism of action of quinolines and sulfonamides. 7

4. Explain in detail the stages of drug discovery and development process. 15

Or

(*a*) Explain liposomes as drug delivery system. 8

(*b*) Explain the concept of pharmacodynamics. 7

5. Write short notes on any *three* of the following : 3×5=15

(*a*) Antihypertensive drugs

(*b*) International pharmacopoeia

(*c*) Chemoinformatics

(*d*) Pharmacokinetics

(*e*) Protein engineering applications.