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

GD—23—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

Paper–????

(Agriculture Biotechnology)

(Thursday, 27-4-2023) **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 symbiotic nitrogen fixation. 15

Or

(*a*) Diazotrophy. 8

(*b*) Nitrogenase complex. 7

2. Describe in detail Rhizobium as a Biofertilizer inoculants. 15

Or

(*a*) Blue green algae as a Biofertilizer. 8

(*b*) Sulphur and phosphate solubilizing Biofertilizer. 7

3. Explain in detail citrus canker of Lemon. 15

Or

(*a*) Powdery mildew of wheat. 8

(*b*) Bacterial Blight of cotton. 7

4. Describe in detail Biomass composition, types and its conversion. 15

Or

(*a*) Write a note on Biopesticides. 8

(*b*) Single cell protein. 7

5. Write short notes on (any *three*) : 3×5=15

(*a*) Function of cytokinin

(*b*) Cyanobacteria

(*c*) Azotobacter

(*d*) Mushroom production

(*e*) Whip smut of sugarcane.

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

GD—24—2023

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

(Animal Biotechnology)

(Thursday, 27-4-2023) **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 answers with suitably labelled diagram wherever necessary.

1. Describe in detail materials used for animal cell culture. 15

Or

(*a*) Describe the role of CO_2 incubator in animal cell culture. 8

(*b*) Explain the established cell lines. 7

2. What is BSS ? Describe its types. 15

Or

(*a*) Explain the serum dependent and serum independent media. 8

(*b*) Write a short note on nutritional requirements of cell. 7

3. What is apoptosis ? Describe extrinsic apoptotic pathway. 15

Or

(*a*) What is cytotoxicity assay ? Explain with *one* example. 8

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

4. What is monoclonal antibody ? How monoclonal antibody is produced by hybridoma technology. 15

Or

(*a*) Write a short note on gene therapy. 8

(*b*) How animal cells can be used as vaccine production ? Give *one* example. 7

5. Write short notes on any *three* out of four : 3×5=15

(*a*) Microscopes

(*b*) Monolayer cell culture

(*c*) Cell-cell interaction

(*d*) Cell fusion.

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

GD—17—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(Old Course)

BIOTECHNOLOGY

(Environmental Biotechnology)

(Tuesday, 25-4-2023) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

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

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

1. Write a detailed note on waste water treatment. 8

Or

(*a*) Write a note on important microorganisms in waste water treatment. 4

(*b*) Write a short note on Packed Bed reactor. 4

2. Describe Aerobic degradation pathways in microbes. 8

Or

(*a*) Anaerobic degradation. 4

(*b*) Vermicomposting. 4

3. Describe Bioremediation of soil in detail. 8

Or

(*a*) Phytoremediation. 4

(*b*) Ex-situ bioremediation. 4

4. Describe metabolism of xenobiotics in detail. 8

Or

(*a*) Herbicide degradation. 4

(*b*) Xenobiotics. 4

5. Write notes on (any *two*) : 8

(*a*) Recalcitrancy

(*b*) Rotating Biological contactor

(*c*) Applications of Bioremediation

(*d*) Pesticide degradation.

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

GD—16—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

CCBT – 3F

(Environmental Biotechnology)

(Tuesday, 25-4-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

1. Describe waste water treatment with advantages of different treatment. 15

Or

(*a*) Activated sludge process. 8

(*b*) RBC. 7

2. Explain biodegradation of Hydrocarbon with example. 15

Or

(*a*) Aerobic degradation pathway. 8

(*b*) Anaerobic degradation pathway. 7

3. Write methods of bioremediation with advantages and disadvantages. 15

Or

(*a*) Bioremediation of alkaline soil. 8

(*b*) Phytoremediation. 7

4. Write Herbicide degradation with a suitable example. 15

Or

(*a*) Pesticide degradation. 8

(*b*) Xenobiotics and Recalcitrancy. 7

5. Write notes on (any *three*) : 3×5=15

(*a*) Cytochrome P450 system

(*b*) Bioremediation of saline soil

(*c*) Plasmid borne metabolic activities

(*d*) Anaerobic degradation

(*e*) Composting.

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

GD—26—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(Old Course)

BIOTECHNOLOGY

(Food Biotechnology)

(Thursday, 27-4-2023) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

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

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

1. Describe different methods of food preservation. 8

Or

(*a*) Write a short note on causes of food spoilage. 4

(*b*) Write impact of Biotechnology on the nutritional quality of foods. 4

2. What is food additives ? Describe its types and functional characteristics. 8

Or

(*a*) Write a note on Sweetners. 4

(*b*) HACCP system to food protection. 4

3. Write a note on Biotechnological approaches to improve nutritional quality and shelf life of fruits vegetables. 8

Or

(*a*) Cheese. 4

(*b*) Wine. 4

4. Write a note on Biosensors for food quality assessment. 8

Or

(*a*) Probiotics. 4

(*b*) Spirulina. 4

5. Write short notes on any *two* : 2×4=8

(*i*) Microbial polysaccharides

(*ii*) Natural colour

(*iii*) Food enzymes

(*iv*) Antioxidants.

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

GD—28—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(Old Course)

BIOTECHNOLOGY

Paper–DSEBT–4FD

(Fundamentals of Nanobiotechnology)

(Thursday, 27-4-2023) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

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

(*ii*) Draw neat and well labelled diagrams if necessary.

1. Write types of nanomaterials and explain their applications. 8

Or

(*a*) Explain properties and applications of quantum wire. 4

(*b*) Explain the concept of nanoscale and nanomaterials. 4

2. Explain in detail physical and chemical fundamentals of nanomaterials. 8

Or

(*a*) Describe nanostructures and their applications. 4

(*b*) Write properties and applications of graphenes. 4

3. Describe in detail structure, properties and applications of carbon nanotubes. 8

Or

(*a*) Explain any *one* preparation method of nanomaterials. 4

(*b*) Write about self-assembled biological nanomaterial in nature. 4

4. Describe in detail applications of nanobiotechnology in various areas. 8

Or

(*a*) Explain the concept of Patent. 4

(*b*) Explain the concept of Copyright. 4

5. Write short notes on any *two* : 2×4=8

(*i*) IPR

(*ii*) Science of nano and nanoscale

(*iii*) Trademarks

(*iv*) Quantum well.

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

GD—25—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(Old Course)

BIOTECHNOLOGY

Paper–DSEBT-4FA

(Herbal Drugs Development)

(Thursday, 27-4-2023) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

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

(*ii*) Draw neat and well labelled diagrams, if necessary.

1. Explain in detail different sources of drugs. 8

Or

(*a*) Write an importance of herbal therapies. 4

(*b*) Write on safety in herbal drugs. 4

2. Describe in detail properties and functions of various bioactive molecules in medicinal plants. 8

Or

(*a*) Write about the process of drug discovery. 4

(*b*) Write about estimation of phenolics. 4

3. How to make and use herbal medicine for common ailments like cold, skin infection and diarrhea ? 8

Or

(*a*) Write aboutanti inflammatory herbal drugs. 4

(*b*) Write about antimicrobial herbs. 4

4. Explain in detail natural and artificial method of drying. Comment on its merits and demerits. 8

Or

(*a*) How to determine tannins from herbal sample ? 4

(*b*) How to determine ash value of a herbal sample ? 4

5. Write short notes on any *two* : 2×4=8

(*i*) WHO guidelines for herbal ingredients

(*ii*) Screening procedure for herbal drugs

(*iii*) Exploration of medicinal plants

(*iv*) Ancient system of medicine.

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

GD—10—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(Old Course)

BIOTECHNOLOGY

(Industrial Biotechnology)

(Friday, 21-4-2023) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

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

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

1. Discuss selection of mutants producing improved level of primary metabolites with an example. 8

Or

(*a*) Discuss importance of strain improvement. 4

(*b*) Explain liquid-liquid extraction. 4

2. Describe physical and chemical methods of cell disruption. 8

Or

(*a*) Explain Drying and Crystallization. 4

(*b*) Explain ion-exchange chromatography. 4

3. Describe in detail fermentation process. 8

Or

(*a*) Discuss extraction and purification of citric acid. 4

(*b*) Discuss production of pectinase enzyme. 4

4. Describe in detail fermentation economics. 8

Or

(*a*) Discuss toxicity and carcinogenicity testing. 4

(*b*) Explain GLP and GMP. 4

5. Write short notes on (any *two*) : 2×4=8

(*a*) Modification of permeability

(*b*) Reverse osmosis

(*c*) QC

(*d*) Penicillin.

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

GD—09—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

(Industrial Biotechnology)

(Friday, 21-4-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

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

1. Describe isolation of mutants which do not produce feedback inhibitors with suitable example. 15

Or

(*i*) Describe modification of permeability. 8

(*ii*) Describe isolation of mutants which do not reecognize feedback inhibitors. 7

2. Describe in detail filtration. 15

Or

(*i*) Describe liquid-liquid extraction. 8

(*ii*) Describe chemical methods of call disruption. 7

3. Describe in detail protease production. 15

Or

(*i*) Describe pectinase production. 8

(*ii*) Describe vitamin B_2 production. 7

4. Describe sterility testing. 15

Or

(*i*) Describe fermentation economics. 8

(*ii*) Describe toxicity testing. 7

5. Write short notes on (any *three*) : 3×5=15

(*i*) Pyrogen testing

(*ii*) GLP

(*iii*) Ultrafiltration

(*iv*) HPLC

(*v*) Precipitation.

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

GD—29—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(Old Pattern)

BIOTECHNOLOGY

Paper DSEBT-4FE

(Medical Biotechnology)

(Thursday, 27-4-2023) **Time : 10.00 a.m. to 12.00 noon**

Time—Two Hours *Maximum Marks*—40

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

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

(*iii*) Represent your answers with well labelled diagrams.

1. Describe in detail Recombinant DNA and Peptide variances. 8

Or

(*a*) Write a note on killed vaccines. 4

(*b*) Write a note on passive immunization. 4

2. Describe in detail ELISA with its types. 8

Or

(*a*) Explain applications of monoclonal antibodies. 4

(*b*) Western blot. 4

P.T.O.

3. Define stem cells. Describe in detail types of stem cells with its applications. 8

Or

(*a*) Write a note on tissue engineering. 4

(*b*) Role of growth factors. 4

4. Describe in detail pathogenesis and treatment of AIDS. 8

Or

(*a*) Write a note on properties of cancer cells. 4

(*b*) Explain SCID. 4

5. Write short notes on (any *two*) : 2×4=8

(*a*) Live vaccines

(*b*) HAT medium

(*c*) Ethical issues

(*d*) Apoptosis.

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

GD—02—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

(Pharmaceutical Biotechnology)

(Tuesday, 18-4-2023) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

1. Describe in detail production technology of Secondary metabolites. 15

Or

(*a*) Explain various types of plant secondary metabolites with suitable example. 8

(*b*) What are secondary metabolites ? Explain medicinal applications of plant secondary metabolites. 7

2. Explain in detail mechanism of microbial resistance of antibiotics. 15

Or

(*a*) Explain principle of microbial assay and add a note on M.I.C. 8

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

3. What are anti-cancer drugs ? Explain mechanism of action of anticancer drugs. 15

Or

(*a*) Explain in detail structure and mechanism of action of Amantadine and Azidothymidine. 8

(*b*) Explain in detail structure and mechanism of action of Nystatin and Griseofulvin. 7

4. What is drug development ? Explain in brief stages of drug discovery and development process. 15

Or

(*a*) Explain the concept of pharmacodynamics. 8

(*b*) Explain Liposomes as drug delivery system. 7

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

(*i*) Chemoinformatics

(*ii*) Secondary metabolite production by hairy root culture

(*iii*) Indian Pharmacopoeia

(*iv*) Pharmacokinetics

(*v*) Antidiabetic drugs.

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

GD—03—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(Old Course)

BIOTECHNOLOGY

(Pharmaceutical Biotechnology)

(Tuesday, 18-4-2023) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

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

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

1. Explain in detail production technology of plant secondary metabolites by cell suspension culture. 8

Or

(*a*) Explain various types of plant secondary metabolites. 4

(*b*) Describe various applications of plant secondary metabolites. 4

2. Explain in detail mechanism of microbial resistance of antibiotics. 8

Or

(*a*) Explain principle of microbial assay and add a note on M.I.C. 4

(*b*) Give general characteristics of antibiotics. 4

3. What are antidiabetic drugs ? Explain mechanism of action of antidiabetic drugs. 8

Or

(*a*) Explain structure and mode of action of Azidothymidine and Amantadine. 4

(*b*) Explain structure and mechanism of action of quinolones. 4

4. Explain in detail various methods of drug development. 8

Or

(*a*) Explain concept of pharmacodynamics. 4

(*b*) Explain in detail various methods of drug delivery. 4

5. Write short notes on any *two* of the following : 8

(*a*) Chemoinformatics

(*b*) Pharmacokinetics

(*c*) Anticancer drugs

(*d*) Indian pharmacopoeia

(*e*) Antihypertensive drugs.