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VB—22—2024

FACULTY OF SCIENCE AND TECHNOLOGY

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

NOVEMBER/DECEMBER, 2024

(New Pattern)

BIOTECHNOLOGY

Paper–DSEBT-4CII

(Plant Physiology)

(Tuesday, 3-12-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

(*ii*) Figures to the right indicate full marks.

(*iii*) Illustrate your answers with suitable diagram, scheme etc.

1. Describe the mechanism of translocation of organic solutes. 15

Or

(*i*) Describe diffusion and guttation. 8

(*ii*) Describe pressure flow theory. 7

2. Describe cyclic and non-cyclic Photophosphorylation. 15

Or

(*i*) Describe photosynthetic pigments. 8

(*ii*) Describe Photorespiration. 7

P.T.O.

3. Describe TCA cycle. 15

Or

(*i*) Describe ETC. 8

(*ii*) Describe types of respiration. 7

4. Give an account of salinity stress and drought stresses in plants. 15

Or

(*i*) Describe Phytohormone. 8

(*ii*) Describe biotic stress. 7

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

(*a*) Abscisic acid

(*b*) Glycolysis

(*c*) CAM pathway

(*d*) Transpiration

(*e*) Importance of respiration.

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VB—08—2024

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2024

(New Pattern)

BIOTECHNOLOGY

Paper–CCBT–2C

(Advanced Cell Biology)

(Thursday, 28-11-2024) **Time : 2.00 p.m. to 5.00 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. Describe in detail structural organization of Prokaryotes. 15

Or

(*a*) Write in brief about cell theory. 8

(*b*) Explain in detail Diversity of cell size and shape. 7

2. Explain in detail structure and function of Mitochondria. 15

Or

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

(*b*) Describe in detail lysosomes. 7

P.T.O.

3. Explain in detail passive transport. 15

Or

(*a*) Write a note on Na/K ion channel. 8

(*b*) Describe in brief active transport. 7

4. What is mitosis ? Explain in detail various phases of mitosis. 15

Or

(*a*) Explain in detail Gap junction. 8

(*b*) Describe in brief cell cycle. 7

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

(*a*) Plant cells

(*b*) Endoplasmic reticulum

(*c*) Phagocytosis

(*d*) Plasmodesmata

(*e*) Peroxisomes.

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VB—21—2024

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2024

(New Pattern)

BIOTECHNOLOGY

Paper–DSEBT-4(I)

(Bioinstrumentation Techniques)

(Tuesday, 3-12-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

(*ii*) Each question carries equal marks.

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

1. What is Microscope ? Describe SEM in detail with principle, theory, ray diagram, image formation and applications. 15

Or

(*a*) UV-Visible spectroscopy. 8

(*b*) Basic law of absorption. 7

2. Describe paper chromatography with its types and applications. 15

P.T.O.

Or

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

(*b*) Describe gas chromatography with its application. 7

3. What is centrifugation ? Describe types of rotor with its advantages and disadvantages. 15

Or

(*a*) Types of centrifuges. 8

(*b*) Centrifugal force. 7

4. Describe agarose gel electrophoresis with advantages. 15

Or

(*a*) PAGE. 8

(*b*) IEF. 7

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

(*a*) Compound microscope

(*b*) Ion exchange chromatography

(*c*) Centrifugal force

(*d*) Factors affecting on electrophoretic mobility.

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VB—03—2024

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2024

(New Pattern)

BIOTECHNOLOGY

Paper–CCBT-1C

(Metabolism)

(Tuesday, 26-11-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

(*iii*) Draw well labelled diagram if necessary.

1. Define photosynthesis. Describe in detail light reaction. 15

Or

Write notes on :

(*a*) Calvin Cycle 8

(*b*) Photorespiration. 7

2. Describe Kreb cycle. Add a note on its energetics. 15

P.T.O.

Or

(*a*) Explain irreversible reactions of Glycolysis. 8

(*b*) Write a note on components of Electron Transport Chain. 7

3. Describe β-oxidation of Fatty acid. Add a note on its energetics. 15

Or

(*a*) Explain mechanism of Transamination. 8

(*b*) Describe Urea Cycle. 7

4. Describe Fatty Acid synthesis. 15

Or

Write notes on :

(*a*) Structure of FAS complex. 8

(*b*) Regulation of Fatty Acid synthesis. 7

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

(*a*) CAM plants

(*b*) Oxidative deamination

(*c*) Ethanol Fermentation

(*d*) Oxidation of odd chain Fatty Acid

(*e*) Carnitine Shuttle.

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VB—14—2024

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2024

(New Pattern)

BIOTECHNOLOGY

(Molecular Biology)

(Saturday, 30-11-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

(*iii*) Draw labelled diagrams wherever necessary.

1. Describe in detail prokaryotic DNA replication. 15

Or

(*a*) Explain in detail Watson and Crick's model of DNA. 8

(*b*) Describe in detail mismatch repair mechanism of DNA. 7

2. Explain in detail various steps involved in Eukaryotic RNA synthesis. 15

Or

(*a*) Describe structure of RNA polymerase II. 8

(*b*) Explain in detail co-transcriptional modification of *m*-RNA. 7

P.T.O.

3. Explain in detail prokaryotic translation. 15

Or

(*a*) Explain in detail Eukaryotic Initiation step of translation. 8

(*b*) Explain structure and role of *t*-RNA. 7

4. Explain in detail tryptophan operon. 15

Or

(*a*) Explain negative regulation of lactose in bacteria. 8

(*b*) Describe positive regulation of lactose sugar in bacteria. 7

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

(*a*) SOS Repair

(*b*) Removal Introns from *m*-RNA

(*c*) Heat shock proteins

(*d*) Regulatory genes.