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GD—11—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

(Advanced Cell Biology)

(Friday, 21-4-2023) **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 neat diagram wherever necessary.

1. Write in detail cell size and shape. Add a note on cell theory. 15

Or

(*a*) Animal Cell. 8

(*b*) Bacteria. 7

2. Describe in detail structure and function of Chloroplast. 15

Or

(*a*) Cytoskeleton. 8

(*b*) Peroxisomes. 7

3. Describe in detail passive transport. 15

Or

(*a*) Phagocytosis. 8

(*b*) Na/K ion channel. 7

4. Describe in brief G-protein coupled receptor. Add a note on cell death. 15

Or

(*a*) Tight Junction. 8

(*b*) Prophase-I. 7

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

(*a*) Plant cell

(*b*) Cilia and flagella

(*c*) Plasmodesmata

(*d*) Prophase

(*e*) Gap junction.

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

GD—30—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

Paper–DSEBT–4C

(Bioinstrumentation Techniques)

(Thursday, 27-4-2023) **Time : 2.00 p.m. to 4.00 p.m.**

Time—2 *Hours* *Maximum Marks*—40

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

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

1. Describe principle, instrumentation and application of TEM. 15

Or

(*a*) UV-Visible spectroscopy. 8

(*b*) Basic law of absorption. 7

2. What is chromatography ? Explain Ion exchange chromatography with advantages and disadvantages. 15

Or

(*a*) GC. 8

(*b*) Paper chromatography. 7

3. What is centripetal force ? Explain types of centrifuge with advantages and disadvantages. 15

Or

(*a*) Types of rotor. 8

(*b*) Differential centrifugations. 7

4. What is electrophoresis ? Explain agarose gel electrophoresis with advantages and disadvantages. 15

Or

(*a*) PFGE 8

(*b*) IEF. 7

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

(*a*) Phase contrast microscope

(*b*) Column chromatography

(*c*) Basic principle of centrifugation

(*d*) Factors affecting on electrophoretic mobility

(*e*) Electromagnetic spectrum.

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

GD—04—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

(Metabolism)

(Wednesday, 19-4-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

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

1. Define Photosynthesis. Describe in detail Z-scheme. 15

Or

(*a*) Explain C_4 pathway. 8

(*b*) Explain C_2 pathway. 7

2. Define Glycolysis. Describe in detail EMP pathway. 15

Or

(*a*) Write a note on components of ETC. 8

(*b*) Write a note on anaerobic respiration. 7

3. Describe in detail β-oxidation of unsaturated fatty acid. 15

Or

(*a*) Explain transamination and oxidative deamination of amino acid. 8

(*b*) Write a note on Urea cycle. 7

4. Describe in detail fatty acid synthase complex. 15

Or

Write notes on :

(*a*) Synthesis of unsaturated fatty acid. 8

(*b*) Regulation of fatty acid synthesis. 7

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

(*a*) C_3 pathway

(*b*) TCA

(*c*) Carnitive shuttle

(*d*) Oxidation of odd chain fatty acid

(*e*) Mitchell hypothesis.

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

GD—18—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

(Molecular Biology)

(Tuesday, 25-4-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— All questions are compulsory.

1. Explain in detail various steps involved in Eukaryotic DNA replication. 15

Or

(*a*) Explain in detail recombinational repair mechanism. 8

(*b*) Describe in detail the Messelson and Stahl's experiment. 7

2. Explain in detail mechanism of Eukaryotic transcription. 15

Or

(*a*) Explain in detail post-transcriptional processing of RNA. 8

(*b*) Describe in detail structure of RNA polymerase. 7

3. Describe in detail mechanism of prokaryotic translation. 15

Or

(*a*) Explain in brief post-translational modifications in Eukaryotes. 8

(*b*) Explain in brief role of mRNA, tRNA and rRNA. 7

4. Describe in detail Lactose operon and add a note on positive regulation. 15

Or

(*a*) What is genetic code ? Explain properties of genetic code. 8

(*b*) Explain in detail tryptophan operon. 7

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

(*a*) Cot curve

(*b*) Photoreactivation

(*c*) Wobble hypothesis

(*d*) Helicase

(*e*) Intron splicing.

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

GD—31—2023

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2023

(New Course)

BIOTECHNOLOGY

Paper–DSEBT–4CII (Elective)

(Plant Physiology)

(Thursday 27-5-2023) **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 importance and significance of water in physiology of plants. 15

Or

(*a*) Describe Phloem translocation. 8

(*b*) Describe pressure flow theory. 7

2. Describe cyclic and non-cyclic Photophosphorylation. 15

Or

(*a*) Give salient features of C4 plants. 8

(*b*) Describe Photorespiration. 7

3. Describe ultra-structure of mitochondria and functions. 15

Or

(*a*) Describe glycolysis. 8

(*b*) Describe significance of respiration. 7

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

Or

(*a*) Describe effect of stress on plant growth. 8

(*b*) Describe Abscisic acid, Ethylene. 7

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

(*a*) Auxin

(*b*) Fermentation

(*c*) ETC

(*d*) Photosynthetic pigments

(*e*) Transpiration.