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NB—08—2023

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2023

(New Course)

BIOTECHNOLOGY

(Advanced Cell Biology)

(Friday, 1-12-2023) **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. Describe in detail structural organization of eukaryotes. 15

Or

(*a*) Cell Theory 8

(*b*) Bacteria. 7

2. Explain in detail structural organization of plasma membrane. 15

P.T.O.

Or

(*a*) Nucleus 8

(*b*) Endoplasmic Reticulum. 7

3. Describe in detail passive diffusion. 15

Or

(*a*) Na/K ion channel. 8

(*b*) Phagocytosis. 7

4. Explain in brief mitosis. 15

Or

(*a*) G-protein coupled receptor 8

(*b*) Prophase-I. 7

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

(*a*) Diversity of cell size and shape

(*b*) Lysosomes

(*c*) Pinocytosis

(*d*) Tight Junction

(*e*) Apoptosis.

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NB—21—2023

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2023

(New Course)

BIOTECHNOLOGY

(Bioinstrumentation Techniques)

(Wednesday, 6-12-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

1. Describe Scanning Electron Microscope with principle, instrumentation and application. 15

Or

(*a*) Compound microscope. 8

(*b*) UV-visible spectroscopy. 7

2. What is chromatography ? Describe types of paper chromatography. 15

Or

(*a*) TLC 8

(*b*) GC. 7

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

P.T.O.

Or

(*a*) Explain types of rotor. 8

(*b*) Write a note on centripetal force and centrifugal force. 7

4. What is Electrophoresis ? Explain principle, instrumentation and application of agarose gel electrophoresis. 15

Or

(*a*) Pulse field gel electrophoresis. 8

(*b*) Write factors affecting on electrophoretic mobility. 7

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

(*a*) TEM

(*b*) Column chromatography

(*c*) Basic law of absorption

(*d*) Preparative centrifugation

(*e*) IEF.

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NB—03—2023

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOTECHNOLOGY

Paper-CCBT–1C

(Metabolism)

(Wednesday, 29-11-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

(*ii*) All questions carry equal marks.

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

1. Describe in detail Non-cyclic Photophosphoryation. 15

Or

(*a*) Explain C_4 Pathway. 8

(*b*) Explain CAM. 7

2. Describe in detail Electron Transport Chain (ETC) ? 15

P.T.O.

Or

(*a*) Explain TCA cycle. 8

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

3. Describe in detail Urea cycle and its metabolic disorders. 15

Or

(*a*) Describe oxidation saturated fatty acid with an example. 8

(*b*) Write a note on odd chain fatty acid ? 7

4. Describe in detail synthesis of saturated fatty acid. 15

Or

(*a*) Write a note on mitochondrial system of chain elongation. 8

(*b*) Explain fatty acid synthase complex. 7

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

(*i*) C_2 Pathway

(*ii*) EMP Pathway

(*iii*) Transamination and Deamination of amino acid

(*iv*) Regulation of fatty acid synthesis

(*v*) Cyclic Photophosphorylation.

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

NB—14—2023

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2023

(New Pattern)

BIOTECHNOLOGY

Molecular Biology

(Monday, 04-12-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

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

1. Describe in detail various steps involved in prokaryotic DNA replication. 15

Or

(*a*) Explain in detail Messelson and Stahl's experiment. 8

(*b*) Explain in detail recombinational repair mechanism. 7

2. Describe in detail prokaryotic transcription. 15

P.T.O.

Or

(*a*) Explain in detail mechanism of intron splicing and polyadenylation. 8

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

3. Describe in detail mechanism of Eukaryotic translation. 15

Or

(*a*) Explain in detail mechanism of post translational modifications. 8

(*b*) Explain in brief role of *m*RNA, *t*RNA and *r*RNA. 7

4. Explain in detail tryptophan Operon. 15

Or

(*a*) Explain in detail positive regulation of lactose operon. 8

(*b*) Explain various properties of genetic code. 7

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

(*i*) Wobble bypothesis

(*ii*) Cot curve

(*iii*) SOS Repair

(*iv*) Negative regulation of lactose operon.

(*v*) Structure of promoter.