

PH 501.1

Reg. No:

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St Aloysius College (Autonomous)
Mangaluru
Semester I – P.G. Examination - M. Sc. Biotechnology
February - 2022

BIOCHEMISTRY AND METABOLISM

Time: 3 Hours

Max. Marks: 70

Note: Draw neat labeled diagrams/schematic sketches/structures wherever Necessary.

I Write short notes on any FIVE of the following: (5x3=15)

1. Define mutarotation. Explain with an example.
2. Comment on lipoproteins
3. Brief about peptide bonds
4. Give an account on Chargaff's rule
5. Write a note on regulation of blood sugar
6. Briefly comment on inhibitors of ETC
7. Give an account on transamination
8. Write a note on activation of fatty acids

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II Write explanatory notes on any FIVE of the following: (5x5=25)

9. Explain structure and functions of starch and glycogen
10. Discuss on phospholipids
11. Give an account on t-RNA
12. Describe the structure of hemoglobin
13. Explain gluconeogenesis
14. Explain mitochondrial components and complexes for ATP synthesis
15. Give a detailed account of Carnitine Shuttle
16. Discuss on Ketogenesis

III Answer any THREE of the following: (3x10=30)

17. Explain the structure and function of any two disaccharides.
18. Discuss on secondary and tertiary structures of protein with examples.
19. Explain classification of amino acids.
20. Describe pentose phosphate pathway with its regulation and significance.
21. Explain urea cycle and add a note on its regulation.

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Semester I – P.G. Examination - M. Sc. Biotechnology
February – 2022
MICROBIOLOGY

Time: 3 Hours

Max. Marks: 70

Note: Draw neat labeled diagrams/schematic sketches/structures wherever Necessary.

I Write short notes on any FIVE of the following: (5x3=15)

1. How is the initial infection thread formed in the roots of leguminous plants?
2. Write the nutritional types of bacteria giving examples for each.
3. What is integrated pest management?
4. What is a phylogenetic tree? Write the steps involved in its construction?
5. Describe a provirus?
6. Write a brief note on the method of testing the nodulation ability of *Rhizobium*.
7. Briefly explain the Baltimore system of viral classification.
8. With an example explain commensalism in bacteria.

II Write explanatory notes on any FIVE of the following: (5x5=25)

9. Write a short note on the bacterial preservation techniques.
10. Describe the ultrastructure of viral envelope.
11. Describe PSM as biofertilizers.
12. Explain differential media. Give examples.
13. Discuss antibacterial agents from marine sources.
14. Describe how psychrophiles are adapted to the extreme environment.
15. Write a short note on viroids.
16. Briefly explain human microbiome and its importance.

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III Answer any THREE of the following: (3x10=30)

17. Explain viral cultivation in detail.
18. Discuss the environmental factors affecting the growth of microorganisms.
19. Discuss the structure of HIV in detail.
20. Explain mycorrhizal association in detail.
21. Describe quorum sensing as a novel method of antimicrobial therapy.

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Semester I – P.G. Examination - M. Sc. Biotechnology
February - 2022

CELL AND MOLECULAR BIOLOGY

Max. Marks: 70

Time: 3 Hours

Note: Draw neat labeled diagrams/schematic sketches/structures wherever Necessary.

I Write short notes on any FIVE of the following: (5x3=15)

1. Cell-cell interactions
2. mRNA
3. Pair rule genes
4. List biological agents causing cancer
5. Metastasis
6. Alternative splicing
7. Eukaryotic DNA polymerases
8. Phospholipids

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II Write explanatory notes on any FIVE of the following: (5x5=25)

9. Molecular mechanism of nuclear transport
10. Regulation of cell cycle
11. Post-translational modification of proteins
12. mRNA splicing
13. Role of maternal effect genes in development
14. Tumor suppressor genes
15. Significance of immunotherapy in cancer treatment
16. Translational control of gene expression

III Answer any THREE of the following: (3x10=30)

17. Active transport across plasma membrane
18. Eukaryotic transcription and its regulation
19. Eukaryotic DNA replication and its regulation
20. Role of environmental factors in regulating eukaryotic gene expression
21. Proto-oncogenes and its significance

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Semester I – P.G. Examination - M. Sc. Biotechnology
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MOLECULAR AND HUMAN GENETICS

Time: 3 Hours

Max. Marks: 70

Note: Draw neat labeled diagrams/schematic sketches/structures wherever Necessary.

I Write short notes on any FIVE of the following: (5x3=15)

1. Genic Balance Theory
2. R Plasmid
3. SOS
4. Liquid biopsy
5. Human karyotype construction
6. Martin-Bell syndrome
7. Postulates of Lamarck
8. Mutation theory

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II Write explanatory notes on any FIVE of the following: (5x5=25)

9. Multiple alleles with an example of inheritance in human
10. Amniocentesis and its applications
11. Base excision repair mechanism
12. Conjugation of F plasmid
13. Pedigree symbols and Y- linked pedigree
14. Darwinism
15. Sympatric and allopatric speciations

III Answer any THREE of the following: (3x10=30)

16. Explain sex determination in *Drosophila*. Add a note on its dosage compensation.
17. Discuss Griffith's experiment to prove the transformation in bacteria and also the mechanism involved.
18. Give a detailed account of HGP.
19. Explain Hardy-Weinberg equilibrium. Add a note on conditions for its maintenance.
20. Write an essay on various organic theories of origin of life.
21. Describe human genetic syndromes due to numerical chromosomal changes.
