PH 511.3 Reg. No:

St Aloysius College (Autonomous)
Mangaluru
Semester III - P.G. Examination - M.Sc. Biochemistry
FEBRUARY - 2022
MOLECULAR BIOLOGY

Time: 3 Hours **Max.Marks:70**

I Answer any TEN of the following: **(10×2=20)**

1. What are introns and exons?
2. Distinguish between 'σ' and 'θ' model of DNA Replication.
3. State the role of DNA gyrase.
4. What are riboswitches? Mention its role.
5. What is the 5' cap? Mention its significance
6. State histone code hypothesis.
7. What is the central dogma of Molecular Biology?
8. Define Wobble hypothesis.
9. State the functions of the housekeeping genes.
10. What is the difference between apoptosis and necrosis?
11. State the outcome of the Triple Binding Assay.
12. What is post-transcriptional Gene Silencing?

II Answer any SIX of the following: **(6×5=30)**

13. Describe how rRNA and tRNA are processed.
14. Write the structure and mention the chemical compositions of prokaryotic and eukaryotic ribosomes.
15. Explain the process of Translation in prokaryotes.
16. Explain various characteristic motifs in DNA binding proteins.
17. Discuss DNA amplification in detail
18. What is genetic code? Explain the contributions of Khorana in deciphering the genetic code.
19. Describe the three stages of the interphase.
20. Explain in detail about the protein sorting and targeting.

III Answer any TWO of the following: **(2×10=20)**

21. DNA replication is bidirectional and discontinuous; Explain your understanding of those concepts.
22. Briefly describe each of the following groups of elements involved in eukaryotic transcription regulation: a. Cis regulatory elements.
    b. Transcription factors.
23. Describe in detail on posttranslational modifications of protein.
24. Write in detail the regulation of transcription of structural genes of the trp operon.

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NITROGEN METABOLISM & PLANT BIOCHEMISTRY

Time: 3 Hours **Max.Marks:70**

I Answer any TEN of the following: **(10×2=20)**

1. What is deamination and transamination?
2. Why can plants not utilize naturally occurring nitrogen gas?
3. What is gout? Mention its causes.
4. What is RuBISCO? What is its role?
5. Write the difference between photosystem I and II.
6. Mention the functions of Abscisic acid.
7. Comment on rhodopsin.
8. What is the function of spermidine?
9. Mention the response of plants to biotic stress.
10. What are secondary metabolites? Give example
11. Name the sources of atoms in Purine ring.
12. What is photoperiodism?

II Answer any SIX of the following: **(6×5=30)**

13. Explain Ubiquitin proteosome pathway.
14. What is biological clock? Explain.
15. Write a note on photophosphorylation.
16. How biosynthesis of NAD^+ take place.
17. Write the steps in Calvin cycle.
18. What is porphyria? Write about its symptoms and genetic defects.
19. Explain biosynthesis of proteoglycans.
20. Write about formation of root nodules in legumes.

III Answer any TWO of the following: **(2×10=20)**

21. Explain in detail nucleotide denovo biosynthetic pathway.
22. Discuss the chorismate pathway for synthesis of aromatic amino acids.
23. Explain the steps in C4 and CAM pathway.
24. Give an account on photochromes and cryptochromes

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PS 515.3 Reg. No: | | | | | | |

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Semester III - P.G. Examination - M.Sc. Biochemistry
FEBRUARY - 2022
MOLECULAR GENETICS

Time: 3 Hours **Max.Marks:70**

I Answer any TEN of the following: **(10×2=20)**

1. What is mendelian monohybrid ratio?.
2. Define extra chromosomal inheritance with an example.
3. Define Hardy Weinberg genetic equilibrium.
4. What is C-value paradox? What is its importance?
5. Name the different types of chromosomal banding.
6. What is convergent evolution?
7. Compare Missense mutation and suppressor mutation
8. Define Photoreactivation.
9. Define karyotype and ideogram.
10. What is the role of telomere in chromosome
11. What is co-dominance? Give an example
12. What is non replicating DNA? Give example.

II Answer any SIX of the following: **(6×5=30)**

13. Explain the Epistasis with an example.
14. What is speciation? Differentiate between allopatric and sympatric speciation.
15. Compare the organization of prokaryotic and eukaryotic genome.
16. Give an account of Polytene chromosome.
17. Describe transformation as method of genetic transfer.
18. Explain the zebra fish as model organism.
19. Write a note on deletion and translocation.
20. Give an account on site specific recombination.

III Answer any TWO of the following: **(2×10=20)**

21. Explain the Mendel's genetic experiment and elaborate on mendelian laws with an example.
22. What is genetic mapping? Write a note on Linkage mapping.
23. Discuss in detail about transposons.
24. Explain the excision and SOS repair mechanism.

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