

PE-509
(554) M.Sc. ZOOLOGY (Fourth Semester)
Examination, JUNE 2022
Compulsory/Optional
Group-
Paper- III

Name/Title of Paper- (CELL BIOLOGY)
 Time: Three Hours

Maximum Marks: 80
 Minimum Marks: ____

Note: Answer from both the sections as directed. The figures in the right-handed margin indicate marks.

Q. No		Marks
	Section-A	
	Answer the following questions:	5x4
1.	(a) Describe the molecular organization of eukaryotic chromosomes.	
	OR	
	Describe the biochemical processes involved in DNA methylation.	
	(b) Describe the zinc finger motif in eukaryotic transcription.	
	OR	
	Describe the role of promoter enhancers & factors in eukaryotic transcription.	
	(c) Describe the process of DNA rearrangement with examples.	
	OR	
	Explain developmental gene amplification and origin regulation in eukaryotes.	
	(d) Describe early development (fertilization, cleavage and blastulation) of <i>Drosophila melanogaster</i> .	
	OR	
	Describe the process of gastrulation in <i>Drosophila melanogaster</i> .	
	Section-B	
	Answer any four (04) of the following questions:	15x4
2.	What are covalent histone remodeling complexes? Describe the mechanism of action of a chromatin remodeling complex.	
3.	Describe the organization, evolution and significance of gene families.	
4.	Describe any three environmental factors that can affect human gene expression? Explain genes to environment interaction for each of the factors.	
5.	Describe the environmental modulation of gene activity and molecular basis with reference to thalassemia and cystic fibrosis.	
6.	Describe the structure of late gastrula, origin of dorsal ventral polarity and subsequent organogenesis in <i>Drosophila melanogaster</i> .	
7.	Describe the expression, mutation, and significance (functions) of genes grouped into Antennapedia and Bithorax complexes in the genome of <i>Drosophila melanogaster</i> .	