Tims question paper con	lai.	ns 4 primed	pages.	
Sr. No. of Question Paper	:	760	E	Your Roll No
Unique Paper Code	:	107693		
Name of the Course	:	B.Sc. (H): Botany/Zo		em/Bio-Med/Microbiology/
Name of the Paper	:	Genetics &	Genomics II (GC	GHT-602)
Semester	:	VI		
Duration: 3 Hours				Maximum Marks: 75
Instructions for Candid	<u>at</u>	<u>es</u>		
 Write your Roll No. Attempt Five questio Question No. 1 is con 	ns	in all.	neuratery on rec	eipt of this question paper.
1. (i) Define any five	the	e following	terms –	(5)
(a) Plaque				·
(b) Genetic fitr	ıes	S		
(c) Episome				
(d) Data curati	on			
(e) Transcriptor	mi	cs		
(f) PROSITE				
(g) Merozygote	;			
(ii) Differentiate bety	ve	en any four	the following pa	airs – (8)

(a) Orthologous and paralogous genes

(0) Temperate and virulent phage		
(c) Micro and Macroevolution		
(d) Pairwise and multiple sequence	ce alignment	
(e) LINES and SINES		
(f) Auxotrophs and prototrophs		
(iii) Match the following -		(6)
(a) Joshua Lederberg	(i) Jumping genes	
(b) Barbara McClintock	(ii) Bacterial conjugation	
(c) Francis Collins	(iii) Protein Database	
(d) Margaret Dayhoff	(iv) Drosophila development	
(e) Nusslein Volhard	(v) Natural selection	
(f) Alfred Wallace	(vi) Human Genome Project	
(iv) Expand any five of the following	_	(5)
(a) ITR	·	
(b) RTF		
(c) TIGR		
(d) Tn		
(e) ORF		
(f) OMIA		
(v) The following <i>E.coli</i> Hfr strains order –	donate genes to F-strain in the g	iven

Strain1	lac⁺	pro ⁺	tonr	azi ^r	leu ⁺
Strain2	bio+	his*	cys⁺	leu⁺	azi ^r
Strain3	str	thr⁺	gal⁺	bio⁺	his⁺
Strain4	str ^r	lac+	pro⁺	tonr	azir

All these Hfr strains were obtained from the same F⁺ strain. Give order of genes on original F⁺ strain. (3)

- 2. (a) Give an experimental evidence to prove that cell to cell contact is required for conjugation. (6)
 - (b) Explain Benzer's complementation test in bacteriophages and give its significance. (6)
- 3. (a) What are transposable genetic elements? Give the mechanism of their transposition. (6)
 - (b) What are homeotic genes? Compare homeotic genes of *Arabidopsis* with that of *Drosophila* giving suitable examples. (6)
- 4. (a) Highlight the important differences between shotgun and map-based cloning. (6)
 - (b) Discuss the role of various genes in determining the segmentation of Drosophila embryo.(6)
- 5. (a) What is bioinformatics? How this discipline has helped in studying genomes?
 - (b) Describe the different types of sequence submission tools at NCBI. (6)

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(d) Genetic drift

6.	Write short notes on any three of the following -			
	(a)	Swiss-Prot		
	(b)	Eukaryotic genome features		
	(c)	P elements		

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- 7. (a) State Hardy Weinberg law and apply this law to calculate allelic and genotypic frequencies in a population of 10,000 individuals in which 25 individuals were detected positive for a recessive disorder cystic fibrosis. (6)
 - (b) Discuss the neutral theory of molecular evolution? (6)