Name :	
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Invigilator's Signature :	

### CS/B.Sc.(H)/BT/GEN/MICRO-BIO/ MOL-BIO/SEM-6/MHG-601/2013

# 2013

## **MODEL ORGANISMS IN HUMAN GENOME PROJECT**

*Time Allotted* : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

# GROUP – A ( Multiple Choice Type Questions )

1. Choose the correct alternatives for any *ten* of the following :

 $10 \times 1 = 10$ 

i) Blastula period of zebra fish embryo lasts for

- a)  $2^{1/4}$  h to  $5^{1/4}$  h b)  $3^{1/4}$  h to  $5^{1/4}$  h
- c)  $4^{1/4}$  h to  $5^{1/4}$  h d) none of these.
- ii) Saccharomyces cerevisae genome contains
  - a) 10 pairs chromosomes
  - b) 12 pairs chromosomes
  - c) 14 pairs chromosomes
  - d) 16 pairs chromosomes.

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iii)	Am	ount of introns	out of	the total genome in			
	Sac	charomyces cerevis	<i>ae</i> is near	ly			
	a)	2%	b)	4%			
:)	C) T1	6%	a)	8%.			
1V)	was	was published in					
	a)	1996	b)	1997			
	c)	1998	d)	1999.			
v)	In orga	<i>E.coli</i> 4288 annot anized into	tated pro	otein-coding genes are			
	a)	2584 operons	b)	2250 operons			
	c)	1800 operons	d)	1500 operons.			
vi) The size of zebra fish zygote at the time o approximately				he time of fertilization is			
	a)	0·1 mm	b)	0·3 mm			
	c)	0·7 mm	d)	1·5 mm.			
vii)	The size of the <i>D.melanogaster</i> genome is						
	a)	100-megabase	b)	150-megabase			
	c)	180-megabase	d)	none of these.			
viii)	The <i>mel</i>	e average number o lanogaster is	of exons	per gene in Drosophila			
	a)	4	b)	7			
	c)	9	d)	12.			
ix)	In X o aut	In Drosophila melanogaster if the ratio of X chromosomes and the number of haploid sets of autosomes is $1.5$ , the sexual phenotype will be					
	a)	male	b)	female			
	c)	metafemale	d)	metamale.			

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	x)	In <i>I</i> is in	Drosophila melanogaste	er th	e locus of eyeless gene	
		a)	X chromosome	b)	chromosome 2	
		c)	chromosome 3	) d)	chromosome 4.	
	xi)	In <i>I</i> sma	Drosophila melanogaste llest one ?	er wł	nich chromosome is the	
		a)	X chromosome	b)	chromosome 2	
		c)	chromosome 3	d)	chromosome 4.	
	xii) Arabidopsis genome is organized into					
		a)	6 chromosomes	b)	5 chromosomes	
		c)	4 chromosomes	d)	10 chromosomes.	
	xiii)	The was	complete sequencing done in the year	of t	the Arabidopsis genome	
		a)	2000	b)	1995	
		c)	2002	d)	2005.	
	xiv)	Arak	pidopsis thaliana belong	gs to		
		a)	Solanaceae	b)	Malvaceae	
		c)	Zingiberaceae	d)	Brassicaceae.	
	xv) The total genome size of <i>Arabidopsis</i> is about					
		a)	125 mb	b)	135 mb	
		c)	175 mb	d)	225 mb.	
			GROUP -	В		
			( Short Answer Type	e Qu	estions )	
			Answer any three of	the f	following. $3 \times 5 = 15$	
2.	What are microsatellites ? What are their uses ? 3 + 2					
3.	What is Expressed Sequence Tag (EST) ?					
4.	What is RFLP ? What are their uses ?3 + 2					
5.	Write a short note on single nucleotide polymorphism.					
6.	Write a short note on Arabidopsis genome.					
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### **GROUP – C**

( Long Answer Type Questions)

- Answer any *three* of the following. 3 × 15 = 45
  7. Discuss the essential features of zebra fish genome ? Discuss the embryogenesis of Drosophila. How does it correlate with human genome ? 5 + 7 + 3
- 8. What is comparative genomics ? Briefly describe the process and applications of comparative genomic hybridization. Write in brief about structural genomics.
   2 + 8 + 5
- 9. What do you understand by HGP ? State the benefits and risks involved in human genome project. Explain briefly the ethical, legal and social issues related to Human Genome Project. What are the goals of HGP ? 2 + 5 + 5 + 3
- 10. Explain Bridges genic balance theory. Discuss the sexual reproduction in *E.coli*. Why mouse is regarded as a model organism. 5 + 5 + 5
- 11. Write short notes on any *three* of the following :  $3 \times 5$ 
  - a) Chromosome walking
  - b) FISH
  - c) VNTR
  - d) Beneficial mutation in human
  - e) Chemical cleavage method of DNA sequencing.

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