



Name :

Roll No. :

Invigilator's Signature :

CS/B.Sc.(H)(Genetics/BT/Mol.Bio/Microbio)/SEM-6/MHG-601/2011

2011

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 × 1 = 10

- i) Research in molecular and developmental biology of *C. elegans* was provided by
- a) Sydney Brenner b) Andrew Fire
- c) Craig Mellow d) Craig Venter.
- ii) 'Dauer' state in *C. elegans* is alternative to
- a) 1st larval stage b) 2nd larval stage
- c) 3rd larval stage d) 4th larval stage.
- iii) Number of protein coding genes in *C. elegans* is approximately
- a) 10000 b) 20000
- c) 25000 d) 30000.

6701

[Turn over



- x) Which of the following statements about the yeast genome is not true ?
- a) Haploid chromosome number is 16
 - b) Relative distances of genes on the genetic and physical maps may differ
 - c) Relative order of genes on the genetic and physical maps may differ
 - d) The genetic map was determined by counting meiotic crossovers.
- xi) Who first described *C. elegans* as model organism ?
- a) Sydney Brenner
 - b) Harsley and Chase
 - c) Tatum
 - d) None of them.
- xii) allow researchers to study the transcription of thousands of genes simultaneously.
- a) Gel electrophoresis
 - b) Northern blots
 - c) Dot blots
 - d) Microarrays
 - e) None of these.
- xiii) The number of cells present in hermaphrodite is
- a) 959
 - b) 1000
 - c) 1031
 - d) None of these.
- xiv) The number of cells present in male is
- a) 959
 - b) 1000
 - c) 1031
 - d) None of these.
- xv) Protein array includes interactions of
- a) protein legand
 - b) protein-drug
 - c) protein-antibody
 - d) all of these.



GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. What are the features of microsatellites ? What are their importances in genome mapping ? $4 + 1$
3. Write a short note on gene antology.
4. What are model organisms ? Discuss the essential features of model organisms. $2 + 3$
5. Give a brief account of E. coli genome.
6. What is AFLP ? What are their uses ?
7. What is expressed sequence tag (EST) ?

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

8. Discuss how STS markers were used in Human Genome Project for physical mapping of genome. Discuss the principle of whole genome shotgun technique. $10 + 5$
9. Discuss in brief the embryonic development of zebra fish. Discuss the essential features of zebra fish genome with a special note on its homology with the human genome. $8 + 7$
10. Discuss why mouse is regarded as a model organism. What are the essential features of its genome. $5 + 10$
11. What is Human Genome Project (HGP) ? What are its goals ? Discuss how HGP was initiated, progressed and ended. Discuss the essential features of the genome of the worm used in HGP as a model organism. $1 + 2 + 7 + 5$
12. Write short notes on any *three* of the following : 3×5
 - a) Gene annotation
 - b) VNTRs
 - c) RFLP
 - d) DNA microarray.