	Utech
Name:	
Roll No.:	To the same (y' Exercising and Exercise)
Invigilator's Signature :	

CS/M.Tech(BT)/SEM-2/MBT-215B/2012 2012

GENOMICS AND PROTEOMICS

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:

 $10 \times 1 = 10$

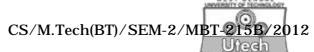
- i) Human genome contains
 - a) 3.2×10^{9} nucleotide pairs
 - b) 4.1×10^{9} nucleotide pairs
 - c) 3.0×10^{9} nucleotide pairs
 - d) none of these.
- ii) Mean gene size of man is
 - a) 29,000 nucleotide pairs
 - b) 27,000 nucleotide pairs
 - c) 26,000 nucleotide pairs
 - d) 25,000 nucleotide pairs.

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- iii) Number of genes in drosophila genome is
 - a) 40,000 nucleotide pairs
 - b) 14,000 nucleotide pairs
 - c) 21,000 nucleotide pairs
 - d) 15,000 nucleotide pairs.
- iv) ORFs stands for
 - a) origin reading frames
 - b) original reading frames
 - c) operating reading frames
 - d) open reading frames.
- v) SNP stands for
 - a) single nucleotide polymorphism
 - b) simple nucleotide polymorphism
 - c) sample nucleotide polymorphism
 - d) shotgun nucleotide polymorphism.
- vi) Dscan proteins of drosophila contain
 - a) 4 axons
- b) 5 axons
- c) 6 axons
- d) 1 axon.
- vii) Horizontal gene transfer refers to
 - a) transfer of gene from mother to son
 - b) transfer of gene mother to daughter
 - c) from mother to grand daughter
 - d) none of these.
- viii) Conserved syntene refers to
 - a) retention of original gene sequence
 - b) original gene sequence
 - c) original gene combination
 - d) original DNA sequence.



- ix) Human chromosome 22 is about
 - a) 46 Mb in length
- b) 48 Mb in length
- c) 22 Mb in length
- d) 44 Mb in length.
- x) Embryonic stem cells are suitable for
 - a) gene replacement
 - b) gene manipulation
 - c) gene supplementation
 - d) gene duplication.
- xi) Transgenic mice with a mutant DNA helicase is suitable to study
 - a) premature ageing
 - b) premature puberty
 - c) premature sexuality
 - d) delayed reproductive performance.
- xii) Genetic engineering is also known as
 - a) gene manipulation
 - b) recombinant DNA technology
 - c) R-DNA technology
 - d) RNA technology.

GROUP - B

(Short Answer Type Questions)

Write short nortes on any five of the following.

 $5 \times 3 = 15$

- 2. α -helix of protein and its molecular background of folding
- 3. APC
- 4. Bcl to family
- 5. β -sheet
- 6. Chaperon

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- 7. DNA micro-array
- 8. Haplotype block
- 9. G-protein
- 10. PCR
- 11. Primary transcript
- 12. RNA interference
- 13. sn RNA
- 14. Wnt protein.

GROUP - C

(Long Answer Type Questions)

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

- 15. What is proteomics? What is the application of ion exchange chromatography in protein purification technique? Comment on the isoelectric focusing. 2+8+5
- 16. Comment on the principle of mass spectrophotometry. Discuss the MALDI-TOP technique to calculate the characteristics of a protein. What is EDMAN degradation?

5 + 7 + 3

17. What is protein array? How does it differ from DNA array? Discuss critically the applications of protein micro-arrays.

2 + 3 + 10

- 18. What is Anfinsen's dogma? How will you depict the relationship between protein folding and amino acid sequence? Discuss Levinthal paradox. 3 + 7 + 5
- 19. Describe any major neurogenerative disease caused due to incorrect protein folding. Comment on the application of NMR in studying protein architecture and folding. 10 + 5
- 20. What is human genome project? State the salient features of human genome project completed recently. What is NGP? How is it relevant with human genome project? What are the ethical issues related with human genomic project?

2 + 3 + 2 + 3 + 5

