



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/M.Sc. (GEN)/SEM-4/MSGEN (MBT)-403/2013  
2013**

**MEDICAL BIOTECHNOLOGY**

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.*

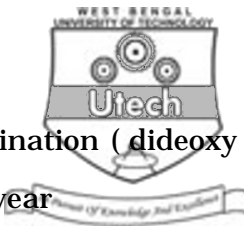
**GROUP – A**

**( Multiple Choice Type Questions )**

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

10 × 1 = 10

- i) Francis Collins and Lap-Chee Tsui identified the gene coding for the cystic fibrosis transmembrane conductance regulator protein ( CFTR ) on chromosome 7 that, when mutant, causes cystic fibrosis, in which year
- a) 1990
  - b) 1997
  - c) 1998
  - d) 1989.



- ii) Fred Sanger developed the chain termination ( dideoxy ) method for sequencing DNA in which year
- a) 1975                                      b) 1976
- c) 1977                                      d) 1978.
- iii) George Beadle and Edward Tatum irradiated the red bread mold, Neurospora, and proved that the gene produces its effect by regulating particular enzymes in which year
- a) 1940                                      b) 1943
- c) 1942                                      d) 1941.
- iv) Hermann J. Muller used x-rays to cause artificial gene mutations in Drosophila in which year
- a) 1925                                      b) 1927
- c) 1928                                      d) 1929.
- v) Harriet B. Creighton and Barbara McClintock demonstrated the cytological proof for crossing-over in maize in which year
- a) 1930                                      b) 1931
- c) 1925                                      d) 1933.





x) Which one among the following is not an example of DNA polymerase with proofreading activity ?

- a) Pfu-Turbo                      b) Amplitaq
- c) Deep Vent Taq              d) DNA pol III.

xi) RISC is present in the cytoplasm in the vesicles known as

- a) *p*-bodies                      b) *o*-bodies
- c) *m*-bodies                      d) *i*-bodies.

xii) All of the following techniques are useful tool to study DNA protein interaction *except*

- a) Electrophoretic mobility shift assay
- b) DNase I footprinting
- c) Methyl interference assay
- d) Yeast two hybrid assay.

xiii) The name of the first cloned mule was

- a) ANDI                              b) *Idaho Gem*
- c) Dolly                              d) Alba.

*In Pursuit of Knowledge and Excellence*

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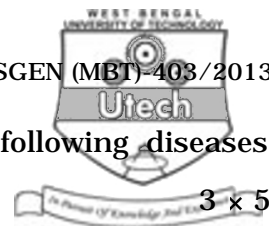


**GROUP – C**

**( Long Answer Type Questions )**

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

8. Genetic Markers studies suggest that Modern Human is distinct from Neanderthal Homo erectus. Explain with examples. All humans outside Africa share same subset of African diversity. How ?  $7 + 8$
9. What is Genetic Sex ? How sex of the embryo determined by Genotype ? How internal and external sex organ are differentiation are controlled by Genotype of embryo ?  $2 + 5 + 8$
10. What is Non-Mendelian inheritance ? What are the types of Non-Mendelian inheritance in human genetic disorders ? Define UPD with examples.  $3 + 5 + 7$
11. What is Genomics ? Why Study Genomes of Different organisms ? What is the rest of the human genome made up of ? What did they learn ?  $3 + 5 + 5 + 2$
12. What is SCID ? What are the causes of SCID ? What precisely has been done to patient Ashanti De Silva in 1990 by Dr. W. F. Anderson' group ( NIH ) in USA ?  $2 + 3 + 10$



13. Write short notes on Genetic factors in following diseases  
( any three ) :

3 × 5

- a) Schizophrenia
- b) Alzheimer disease
- c) Beta-Thalassaemia
- d) Diabetes mellitus
- e) Epilepsies
- f) Obesity
- g) Male Infertility.

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