

**Department of Biochemical Engineering and Biotechnology  
Indian Institute of Technology, Delhi  
BEL204 Molecular Biology & Genetics (II Semester, 2009-2010)**

**MAJOR**

**Date:** 06.05.2010      **Timing:** 10.30 a.m. – 12.30 p.m      **Maximum Marks:** 30

1. What are incomplete dominance and co-dominance? Write with examples for each and their expected phenotypic and genotypic ratios in F2 generation. 4
2. Describe the decisive point (lytic or lysogenic) in life cycle of bacteriophage  $\lambda$ . 4
3. What do you understand by the following? 8
  - (i) Transcription bubble
  - (ii) Concatemer
  - (iii) RNase P
  - (iv) HFT
  - (v) Dam methylase
  - (vi) Splicing
  - (vii) Transversion (in DNA damage)
  - (viii) Degeneracy (w.r.t. genetic code)
4. How is transformation different in  $G^+$  and  $G^-$  bacteria? 3
5. What is the significance of helper phage in transduction? Cite specific example. 3
6. What is the role of cAMP Receptor Protein ~~and~~ in *lac* and *ara* operons? 4
7. Give a possible explanation for the presence of Ts in DNA instead of Us. 2
8. Name the scientists credited with discovery of: 2
  - (i) DNA Polymerase (I)
  - (ii) Lac operon
  - (iii) Transformation
  - (iv) DNA structure