



THAPAR INSTITUTE OF ENGINEERING & TECHNOLOGY, PATIALA
(Department of Biotechnology & Environmental Sciences)
B.Tech. III year Biotechnology (End semester Examination)
BT008: Cell and Molecular Biology

Time: 3 hours

Max. Marks: 36

Answer any six questions

1. Describe the *lac* operon of *E. coli* and explain how it is regulated? (6.0)
2. Describe the events of elongation phase of translation in bacteria. (6.0)
3. a) What are tautomeric forms of purines and pyrimidines and what type of base substitutions take place as a result of tautomeric shifts? (3.0)
b) Describe frameshift and aneuploid mutations. (3.0)
4. Write short notes of the following: (2 x 3= 6.0)
 - a) Auxotrophic mutants
 - b) How cAMP and CRP regulates *lac* operon?
 - c) Wobble hypothesis
5. Write short notes of the following : (2 x 3= 6.0)
 - a) tRNA processing
 - b) Initiation factors of translation in bacteria
 - c) Centromere
6. Describe the regulation of a negatively controlled operon involved in the synthesis of the amino acid tryptophan. (6.0)
7. a) Explain the role of different antibiotics which inhibit protein synthesis (3.0)
b) Explain briefly about site specific recombination. (3.0)
8. a) How Na^+/K^+ pump maintain electrochemical ion gradiation? (2.0)
b) Explain briefly the role of P53 protein in regulation of cell cycle. (2.0)
c) Explain how termination of DNA replication takes place in prokaryotes? (2.0)
