

M.TECH. DEGREE EXAMINATIONS: JUNE 2011

Second Semester

BIOTECHNOLOGY

BTY507: Advanced Molecular Biology and Genetic Engineering

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10 x 2 = 20 Marks)

1. Draw the structure of adenine and thymine basepairing showing hydrogen bonds
2. What are the two differences between B and Z DNA?
3. Differentiate between prokaryotic and eukaryotic translation
4. What are the components present in an operon?
5. What are cosmids?
6. Define shuttle vector with an example
7. What are inclusion bodies?
8. What is the necessity of construction of cDNA library?
9. What do you mean by positional cloning?
10. Name any two advantages of transgenic plants.

PART B (5 x 16 = 80 Marks)

11. a) (i) Explain in detail about structure and functions of tRNA and rRNA (12)
(ii) Write the salient features of Watson and Crick's DNA model (4)
(OR)
- b) (i) Discuss in detail on eukaryotic replication (10)
(ii) Write short notes on mismatch repair and SOS repair (6)
12. a) (i) Describe the components of RNA polymerase of *E.coli*. Explain the steps involved in prokaryotic transcription (14)
(ii) What is 5'-capping and what is its significance? (2)
(OR)
- b) (i) Write short notes on genetic code and Wobble hypothesis (8)
(ii) How is trp operon regulated at low level and high level tryptophan concentration? (8)

13. a) Write detailed note on eukaryotic expression vectors, their structure and applications

(OR)

b) Write short notes on the following:

(i) Transformation (4)

(ii) Types of PCR and their applications (12)

14. a) (i) What are the strategies that are to be followed to over express a foreign protein? (10)

(ii) Write short notes on reporter genes and their role (6)

(OR)

b) Write short notes on:

(i) Primer designing for PCR (8)

(ii) Screening of genetic libraries for the identification of a gene of interest (8)

15. a) (i) How is DNA fragment sequenced by chain termination method? (10)

(ii) Write short notes on any one method to produce a transgenic animal (6)

(OR)

b) (i) What are the procedures to be followed while releasing GMOs? (8)

(ii) Write short notes on ELISA of rDNA technology (8)
