

B.TECH. DEGREE EXAMINATIONS: NOVEMBER 2009

Fourth Semester

BIOTECHNOLOGY

U07BT405: Molecular Biology

Time: Three hours

Maximum Marks: 100

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

1. Different forms of a gene that exist within a population are termed as
a) alleles b) dominant trait c) DNA d) recessive trait
2. The scientist(s) who reported the nature of transforming principle is (are)
a) O. Avery C. Macleod & McCarty b) Griffith c) Hershey & Chase d) Watson & Crick
3. The scientist(s) who proposed the Semiconservative mode of replication in DNA is
a) Griffith b) Sanger & Coulson c) Watson & Crick d) Chargaff
4. The eukaryotes a significant fraction of DNA consist of repeated sequence was shown by
a) Wobble Hypothesis b) Chargaff's rule c) transforming principle d) Cot analysis
5. The RNA polymerase uses a ----- strand of DNA as template for the synthesis of RNA molecule
a) antisense (non coding) strand b) sense (coding) strand c) c DNA d) unwinding strand
6. The transcription factor required for transcription initiation by all the three RNA polymerases is
a) TFIID b) TBP c) TFIIA d) TFII H
7. ----- is codon is called as an initiation codon
a) AAG b) ACG c) AUG d) AGG
8. The enzyme involved in the charging of t RNA is
a) aminoacyl DNA synthetase b) aminoacyl m RNA synthetase
c) aminoacyl r RNA synthetase d) aminoacyl t RNA synthetase
9. The gene *lacZ* codes for ----- enzyme in lac operon
a) β - galactosidase b) permease c) transacetylase d) lipase
10. In ----- repair mechanism the DNA damaged is repaired by the formation of new template
a) Excision repair b) recombination repair c) SOS repair d) photoreactivation

PART B (10 x 2 =20 Marks)

11. Define Crossing over.
12. Define prophage.
13. Define Okazaki fragment.
14. List the significant features of rolling circle mode of replication.
15. Comment on rho dependent termination of transcription.

16. Define ribozyme.
17. Define mutation.
18. Define Wobbling hypothesis.
19. Differentiate between transition and transversion.
20. Define polycistronic m RNA.

PART C (5 x 14 =70 Marks)

21. (a) Discuss on the following:

- i) Mechanism of epistasis (7)
- ii) Mechanism of transformation (7)

(OR)

(b) Explain the following:

- i) Bacterial conjugation (7)
- ii) O. Avery C. Maclead & McCarty experiment (7)

22. (a) i) Events in the replication fork. (7)

- ii) Replication of linear viral DNA. (7)

(OR)

(b) i) D-loop synthesis. (7)

- ii) Telomere replication in eukaryotes (7)

23. (a) Elaborate on the mechanism of action of Transcription Factors in the process of transcription.

(OR)

(b) i) Eukaryotic termination of transcription. (7)

- ii) RNA splicing. (7)

24. (a) i) Features of genetic codon table (10)

- ii) Suppressor mutation (4)

(OR)

(b) Define Translation and add notes on eukaryotic protein synthesis.

25. (a) Do you agree with the statement that *lac* operon is a good example for both positive and negative gene control? If yes/ no justify your answer.

(OR)

(b) i) Attenuation in *trp* operon (7)

- ii) Excision repair mechanism (7)
