2019

(April)

BIOTECHNOLOGY

(Honours)

(Molecular Biology and Immunology)

Marks : 56

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer Question No. **1** which is compulsory and *any* **four** from the rest

1. Give reasons and explanations of the following : 3×4=12

(a) Hydrogen bonding is important for the specificity of base pairing in DNA double helix.

(b) Lac operon is considered to be an inducible operon.

(c) Active immunity is better than passive immunity.

(d) Exogenous peptides antigens can be presented by class I MHC molecules.

2. Write notes on the following : 2+2+2+2½+2½=11

(a) Okazaki fragments

(b) Post-transcriptional processing of mRNA

(c) DNA polymerases

(d) Antigen-antibody interaction

(e) Complement activation

3. Describe the structure and functions of immunoglobulins taking the example of IgG. 6+5=11

4. *(a)* Give an account of the various features of the genetic code. 6

(b) What is a promoter sequence? 5

5. *(a)* Describe the events in the DNA replication fork in prokaryotes. 6

(b) Explain the structure of bacterial RNA polymerase. 5

6. *(a)* Distinguish between B and T lymphocytes. 5

(b) Discuss the roles of helper T-cells and cytotoxic T-cells in normal immunity. 6

(Continued)

7. *(a)* Explain attenuation in mechanism of gene regulation with reference to Trp operon. 7

(b) Write a brief note on Rho-dependent termination of transcription in prokaryotes. 4

8. *(a)* Explain, with an appropriate diagram, the structure of a tRNA molecule. 6

(b) What do you understand by clonal selection theory? 5

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