4/H—77 (iv) (Syllabus-2015)

2018

(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. Write notes on the following : 3×4=12

(a) Shine Dalgarno Sequence

(b) Ouchterlony Double Diffusion

(c) Haptens

(d) DNA Helicase

2. *(a)* Differentiate among *A*, *B* and *Z* DNA. 4

(b) Differentiate between innate and adaptive immunity citing one example of each. 7

3. (a) What is T_m? How is it related to GC content of DNA? Support your answer with suitable diagrams.

   (b) Describe the role of the RNA polymerases in the transcription process of eukaryotes.

4. (a) Define thymic education.

   (b) What is the role of disulphide bonds in maintaining the structural integrity of immunoglobulins?

   (c) With suitable diagrams, explain the function of reverse transcriptase enzyme. 6

5. Describe the structural organization of heavy and light chain of immunoglobulins. 11

6. (a) Differentiate between codon and anti-codon. 2

   (b) Briefly describe the role of *P* and *A* sites in translation process. 3

   (c) What do you mean by poly A tail? What is its use? 3

   (d) What is PCNA? What role does it play in DNA replication process? 3

(Continued)

7. (a) Define trans-esterification. Explain the process with the help of suitable diagrams in the context to the lariat intermediate formation. 6

   (b) "The *lac* operon is an example of an inducible operon." Explain this statement with the help of suitable diagrams. 5

8. (a) State the significance of neutrophils and basophils with the help of suitable illustrations. 4

   (b) Differentiate between progenitor and genitor cells. 2

   (c) Describe the process of termination of translation in prokaryotes. 5

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