

This question paper contains 4 printed pages]

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S. No. of Question Paper : 8538

Unique Paper Code : 216/223/385

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Name of the Paper : MBHT-301: Molecular Biology-I

Name of the Course : B.Sc. (H) Anthropology, Biochemistry, Biological Science,

Bio-medical Science, Botany, Microbiology, Zoology

Semester : III

Duration : 3 Hours

Maximum Marks : 75

*(Write your Roll No. on the top immediately on receipt of this question paper.)*

**Attempt five questions in all including**

**Question no.1 which is compulsory.**

1. (a) Fill in the blanks:

- (i) Okazaki fragments are found in synthesis of..... DNA.
- (ii) The enzyme that removes the RNA primer after DNA replication in eukaryotes is.....
- (iii) Linking number is the sum of two geometric components called ..... and .....
- (iv) Separation of two strands of DNA by heating is called .....
- (v) A novel structure called ..... is discovered at the ends of mammalian telomere.

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P.T.O.

(b) Match the following :

- |                         |                      |
|-------------------------|----------------------|
| (i) John Cairns         | rRNA                 |
| (ii) Adapter hypothesis | Arthur Kornberg      |
| (iii) Ribosome          | Chargaff             |
| (iv) DNA Polymerase     | Watson and Crick     |
| (v) Composition of DNA  | $\theta$ replication |

5

(c) Explain briefly:

- (i) Processivity
- (ii) Replisome
- (iii) Ribozyme
- (iv) Intron
- (v) Genome

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2. Differentiate :

- (i) B and Z types of DNA
- (ii) Nucleotide and Nucleoside
- (iii) Chromatin and Chromosomes
- (iv) Constitutive and Facultative heterochromatin
- (v) Denaturation and Renaturation

3×5=15

3. (a) Describe any *two* classical experiments which demonstrate that DNA is the genetic material. 9
- (b) What do you understand by Central Dogma? 2
- (c) There are 64 codons that code for 20 amino acids. Explain. 2
- (d) What is the function of kinetochore? 2
4. (a) Give an account of Watson and Crick's double stranded molecule of DNA. 7
- (b) Comment on the structure and role of the following :
- (i) mRNA 4
- (ii) tRNA 4
5. (a) List the various steps involved in the initiation of DNA synthesis in *E.coli*. Discuss the role of different enzymes or proteins in this process. 9
- (b) Discuss the DNA damage caused by deamination, depurination and dimerization. 6
6. (a) Describe the protein composition of nucleosome. Mention the significance of H-1 histone. 7
- (b) Discuss the role of telomerase in replication of 5' end of linear chromosome. 4
- (c) List the salient features of genetic code. 4

7. Write short notes on any *three* :

- (i) Thymine dimer
- (ii) RNA as genetic material
- (iii) Cot curves
- (iv) Mismatch repair.

5×3=15