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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.

(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 |

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(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

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7. Write short notes on any *three* :

(i) Thymine dimer

(ii) RNA as genetic material

(iii) Cot curves

(iv) Mismatch repair.

5×3=15

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