

This question paper contains 3 printed pages]

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S. No. of Question Paper : 1530

Unique Paper Code : 223451

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Name of the Paper : Molecular Biology (LSPT-407)

Name of the Course : B.Sc. (Prog.) Life Science

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

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

Answer five questions in all, including Q. No. 1 which is compulsory.

Illustrate your answers with appropriate diagrams wherever necessary.

1. (a) Define the following :

- (i) Codon
- (ii) Shine and Dalgarno sequence
- (iii) Metastasis
- (iv) Ribozyme
- (v) Promoter.

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(b) Expand the following :

- (i) SINES
- (ii) PDGF

P.T.O.

(iii) ORF

(iv) cDNA

(v) RNP.

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(c) Give the contribution of the following :

(i) Griffith

(ii) John Cairns

(iii) Arthur Kornberg

(iv) Meselson and Stahl

(v) Jacob and Monod.

5

(d) Differentiate between the following :

(i) Euchromatin and heterochromatin

(ii) Topoisomerase I and Topoisomerase II

(iii) Silent and missense mutation

(iv) Purines and pyrimidines

(v) B-DNA and Z-DNA.

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(e) Fill in the blanks :

(i) Separation of two strands of DNA by heating is called .....

(ii) DNA replication begins at the ..... end of the template strand. 2

2. (a) Describe the process of transcription in prokaryotes. 6  
(b) Discuss the relationship of cell cycle to cancer. 6
3. (a) Elaborate with the help of diagrams, the structure of DNA as proposed by Watson and Crick. 6  
(b) Explain the intrinsic pathway to explain the regulation of apoptosis with the help of suitable illustrations. 6
4. (a) Discuss the mechanism of initiation of DNA replication in prokaryotes. 6  
(b) Explain the salient features of genetic code. 6
5. (a) Explain semiconservative model of DNA replication and discuss the experiment which established this mode of DNA replication. 6  
(b) Describe briefly the lac operon and how it controls the metabolism of lactose in prokaryotes. 6
6. Write short notes on any *three* of the following : 3×4
  - (a) Clover leaf model of tRNA
  - (b) Rolling circle DNA replication
  - (c) Hershey and Chase experiment
  - (d) Stem cell.