BIOLOGY

BOOKS - ARIHANT PRAKASHAN

MOLECULAR BASIS OF INHERITANCE

Topic 1 Practice Questions Exam S Textbook S Other Imp Questions 1 Mark Questions Exams Questions

1. The complementary base of adenine in RNA molecule is thymine. true or false

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2. Fill in the blanks:To form a continuous DNA molecule, the enzyme _____ joins okazaki fragments.

A. primase

B. polymerase

C. helicase

D. ligase

Answer:

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3. RNA does not have guanine as nitrogenous base. Correct the statements if required by changing the underlined word.

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4. Correct the statements, if required, by changing the underlined word(s)

The genetic information from DNA transferred to ribosomes through $\underline{ribosomal RNA}$.

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5. One of the nitrogenous bases of RNA is thymine.

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6. Correct the statements, if required, by changing the underlined word(s)

The $\underline{split}$ genes are needed constantly for cellular activity.

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7. In eukaryotic cells, the RNA transcribed from DNA is called-..... .

A. rRNA

B. cistron

C. cDNA

D. heterogeneous mRNA

Answer: D

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8. Nitrogenous bases do not contain :

A. hydrogen

B. nitrogen

C. carbon

D. phosphorus

Answer: D

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9. The process by which DNA of nucleus passes information to RNA is called :

A. translocation

B. transcription

C. translation

D. transduction

Answer: B

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10. ..... is the process in which information is carried from DNA to RNA.

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11. In 1869 , _____ discovered the DNA .

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12. One complet turn of B-DNA contains ....

number of nitrogenous bases. (10, 11,9,12)

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13. The most stable form of RNA is ..... RNA

(messenger, transfer, ribosomal)

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14. The enzyme referred to as Kornberg enzyme is _____

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15. The polymerase that has 5'-3' exonuclease property is known as ..... .(DNA pol-I, DNA pol-II, RNA pol, DNA ligase)

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16. The term gene was coined by _____

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17. The smallest part of gene is called as _____

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18. In split genes coding sequences are _____

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19. If in a double-stranded DNA there is 25% of thymine, then calculate the per cent of guanine.

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20. What is the complementary base of adenine in RNA?

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21. In a double helix if one strand is on 5' $\rightarrow$ 3', what will be arrangement of other strand?

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22. What are the basic proteins called in eukaryotic DNA?

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23. What type of genes do express continuously?

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24. Correct the sentences in each bit without changing the underlined words

A nucleoprotein is building block of all nucleic acid

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25. Watson and Griffith proposed the double helical structure of DNA

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26. Correct the sentences in each bit without changing the underlined words

The strand of the DNA double helix represent nucleotide phosphate backbone and are antiparallel

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27. Correct the sentences in each bit without changing the underlined words

The helical turns are right handed is $\underline{Z}$ DNA.

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28. Correct the sentences in each bit without changing the underlined words

Avery, Mc Carty and Macleod experimentally proved that the $\underline{\text{transforming principle}}$ is a protein.

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29. Correct the sentences in each bit without changing the underlined words

Meischer proposed the transforming principle

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30. Correct the sentences in each bit without changing the underlined words

In $\underline{DNAreplication}$ as per semiconservative

model, two new strands synthesised, form new DNA molecules.

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31. Correct the sentences in each bit without changing the underlined words

A primer is a small DNAor RNA strand hydrogen bonded to a template

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32. Correct the sentences in each bit without changing the underlined words

The enzyme ligase is responsible for $\underline{transcription}$

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33. Correct the sentences in each bit without changing the underlined words

The coding or translatable sequences are $\underline{\int rons}$

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34. Clover leaf model of tRNA was proposed by ..... .

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35. The enzyme ..... helps to join nucleotides.

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36. The DNA strand which takes part in transcription is called .. ..

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37. The enzyme .....hydrolyses DNA molecules.

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38. The segment of DNA that expresses specific character is called .....

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Topic 1 Practice Questions Exam S Textbook S Other Imp Questions 2 1 2 Marks Questions Exams Questions

1. Write a short note on tRNA

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2. Split genes

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3. Write a short note on central dogma.

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4. Describe Transcription in Prokaryotes?

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5. Okazaki fragments are :

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6. Housekeeping gene

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7. RNA splicing

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8. Explain the two factors responsible for conferring stability to double helix structure of DNA

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9. If adouble-stranded DNA has 20% of cytosine, calculate the percentage of adenine in the DNA.

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10. Describe the semiconservative model of DNA replication

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11. Name a few enzymes involved in DNA replication other than DNA polymerase and ligase. Name the key functions for each of them.

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12. Why hnRNA is required to undergo splicing?

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Topic 1 Practice Questions Exam S Textbook S Other Imp Questions 3 1 2 Marks Questions Exams Questions

1. Differentiate between

DNA and RNA

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2. Differentiate between mRNA and tRNA.

3. Purines and Pyrimidines

4. B-DNA and Z-DNA.

5. Differentiate between:

Exon and Intron

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6. Differentiate between:

Replication & Transcription.

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Topic 1 Practice Questions Exam S Textbook S Other Imp Questions 7 Marks Questions Exams

Questions

1. Describe the process of DNA replication.

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2. Describe the semiconservative model of DNA replication

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3. Describe the structure of DNA?

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4. Give an account of Griffith's experiment on transformation.

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5. Describe Griffith's experiments of transformation.

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6. Give evidence of DNA as genetic material.

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7. Describe Transcription in Prokaryotes?

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Topic 1 Topic Test 1

1. At 5' end of a polynucleotide chain

A. H-bond is present

B. –OH group is attached

C. PO_4^- group is attached

D. pentose sugar is attached

Answer: C

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2. In which one of the following, double-stranded RNA is present?

A. Bacteria

B. Chloroplast

C. Mitochondria

D. Reovirus

Answer: D

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3. DNA replication is

A. semiconservative, directional and continuous

B. semiconservative, bidirectional

C. semiconservative and semidiscontinuous

D. semiconservative only

Answer: C

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4. In eukaryotic cells, the RNA transcribed from DNA is called-..... .

A. rRNA

B. cistron

C. rDNA

D. heterogeneous mRNA

Answer: D

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5. $\underline{DNApolymerase-I}$ is mainly responsible for synthesis of new strand during DNA replication

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6. In prokaryotes, the origin is called.....

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7. Difference between Primary and secondary structure of Proteins.

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8. Distinguish between:Leading strand and lagging strand

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9. Differentiate between the following Transcription in prokaryotes and Transcription in eukaryotes.

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10. Describe the experiment which showed the biochemical characterisation of transforming principle.

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Topic 2 Practice Questions Exams Textbook S Other Imp Questions 1 Mark Questions Exam S Questions

1. Fill in the blanks:The example of start codon is _____

A. UAA

B. UGA

C. UAG

D. AUG

Answer: D

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2. Correct the statements, if required, by changing the underlined word(s)

The initiation codon AUG normally codes for formylated $\underline{cyst \in e}$.

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3. Which enzyme helps in joining DNA fragments?

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4. Initiation codon is :

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5. Correct the statements, if required, by changing the underlined word(s)

The $\underline{split}$ genes are needed constantly for cellular activity.

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6. Which procedure is followed for amplification of DNA?

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7. Termination codon which stops further addition of amino acids to the polypeptide chain is :

A. AAU

B. GUG

C. AUG

D. UAG

Answer: D

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8. Gene which is responsible for the synthesis of a polypeptide chain is called :

A. operator gene

B. regulatory gene

C. promoter gene

D. structural gene

Answer: D

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9. The peptide bonds are present between :

A. nucleic acids

B. organic acids

C. fatty acids

D. amino acids

Answer: D

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10. The sequence of structural gene in lac operon concept is :

A. permease

B. B-galactosidase

C. transacetylase

D. None of these

Answer: B

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11. A phenomenon where the third base of t-RNA at its 5 end can pair with a non-complementary base of m-RNA is called :

A. universality

B. colinearity

C. degenerency

D. wobbling

Answer: D

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12. Translation is the synthesis of

A. DNA from a mRNA template

B. protein from a mRNA template

C. RNA from a mRNA template

D. RNA from a DNA template

Answer: B

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13. Fill in the blanks: Operon concept was given by _____.

A. Hershey and Chase

B. Khorana and Ochoa

C. Watson and Crick

D. Jacob and Monod

Answer: D

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14. Complete sequence of amino acids in_ ..... Was proposed by Sanger.

(insulin, haemoglobin, kinetin, polymerase)

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15. When more than one codon codes for same amino acid, it is called ..... codon.

(degenerate, nonsense, universal)

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16. The termination factor that recognises the termination codon UAG is ..... . (only RF1, only RF2, both RF1 and.RF2. neither RF1 and RF2)

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17. The enzyme that removes formyl group from the first amino acid methionine of a newly synthesised polypeptide is……. (RF_3 translocase, deformylase, exoaminopeptidase)

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18. Some amino acids are coded by more than one codon hence the code is :

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19. What type of RNAs do carry amino acids to the site of protein synthesis ?

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20. Correct the sentences in each bit without changing the underlined words

The structural genes transcribe $\underline{tRNA \text{ and } rRNA}$.

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21. Correct the sentences in each bit without changing the underlined words

$\underline{P-site}$ in prokaryotes only accepts $(tRNA)^{met}$

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22. Correct the sentences in each bit without changing the underlined words

The example of regulatory gene is genes of $\underline{\text{respiratory enzymes}}$.

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23. Correct the sentences in each bit without changing the underlined words

The operator is under the control of a repressor molecule synthesised by structural gene which is not a part of operon.

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24. UAG is .. .. codon.

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25. The gene which becomes active due to the presence of specific substance is called .... gene.

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26. To identify criminals DNA." .... is done.

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Topic 2 Practice Questions Exams Textbook S Other Imp Questions 2 1 2 Marks Questions Exams Questions

1. Write short note on operon

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2. What are the forensic applications of DNA finger printing ?

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3. What is DNA fingerprint ? Mention its application.

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4. Write note

Applications of DNA fingerprinting

Watch Video Solution

5. Write short note on peptide bonds

Watch Video Solution

6. Write short note on aminoacylation in translation.

Watch Video Solution

7. Termination of translation

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Topic 2 Practice Questions Exams Textbook S Other Imp Questions 3 1 2 Marks Questions Exams Questions

1. Differentiate between : Induction and repression.

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2. Differentiate between the following Unambiguous and Degenerate codons.

Watch Video Solution

3. Differentiate between the following Translation in prokaryotes and Translation in eukaryotes.

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4. Differentiate between transcription and translation.

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Topic 2 Practice Questions Exams Textbook S Other Imp Questions 7 Marks Questions Exams Questions

1. Describe the transiation of prokaryotes.

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2. Describe the steps of biosynthesis of protein.

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3. Describe initiation step of translation in prokaryotes.

Watch Video Solution

4. Write note on

Genetic Code

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5. Give an account of the operon model.

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6. Write note on

Human genome project.

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Topic 2 Topic Test 2

1. The codon for anticodon $3' - UUA - 5'$ is

:

A. 5.-AAU-3 .

B. 3.-AUU-5.

C. 5.-AAT-3.

D. 3.-AAG-5.

Answer: A

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2. Which gene is responsible for the transcription of B-galactosidases?

A. lac A

B. lac Y

C. lac Z

D. regulator gene

Answer: C

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3. If a cell is treated with a chemical that blocks nucleic acid synthesis, which of the

following processes is the most likely one to be affected first?

A. DNA replication

B. tRNA synthesis

C. mRNA synthesis

D. Protein synthesis

Answer: A

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4. Fill In The blank : Aminoacyl synthetase enzyme take part in .....

A. attachment of mRNA to 30S ribosome

B. transfer of activated amino acids to tRNA

C. activation of amino acid

D. hydrolysis of ATP to AMP

Answer: C

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5. The ..... codes for the repressor in lac operon.

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6. The movement of a ribosome from 5' -3' end of mRNA to recognise all codons during protein synthesis is called ..... .

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7. RNA can give rise to DNA through the enzyme .....

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8. Write a short note on features of human genome project.

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9. Write short note on wobble hypothesis

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10. Degenerate codon and Nonsense codon.

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Chapter Test

1. One of the following is true with respect to AUG :

A. It codes for methionine only

B. It is also an initiation codon

C. It codes for methionine in both prokaryotes and eukaryotes

D. All of the above

Answer: D

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2. Which of the following are the functions of RNA ?

A. It is a carrier of genetic information from DNA to ribosomes synthesising polypeptides

B. It carries amino acids to ribosomes

C. It is a constituent component of ribosomes

D. All of the above

Answer: D

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3. The two strands of DNA are

A. similar in nature and complementary

B. antiparallel and complementary

C. basically different in nature

D. parallel and complementary

Answer: B

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4. A polypeptide is assembled on :

A. DNA molecule

B. nuclear membrane

C. nuclear pore

D. ribosome

Answer: D

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5. Which one of the following codons are not recognised by any aminoacyl tRNA?

A. UAA

B. UAG

C. UGA

D. All of these

Answer: D

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6. Correct the statement, if required, by changing the word " Galactose" is an inducer molecule

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7. As more than one triplet codon can specify one amino acid, the genetic code is called non-ambiguous.

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8. Termination codons are called Ochre, Amber and _____.

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9. New strands of DNA are formed only in the _____ direction.

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10. DR. Hargobind khurana has been awarded Nobel prize for research on :

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11. STOP codons are also known as ....

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12. .....is done to confirm the identify of Suspect involved in a crime.

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13. write short notes on the following -Ori

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14. write short notes on the following - Structure of lac operon

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15. write short notes on the following -Post transcriptional modifications

Watch Video Solution

16. write short notes on the following - Principle of DNA fingerprinting.

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17. Differentiate between:

Replication & Transcription.

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18. Differentiate between Repressor and Inducer.

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19. What is nucleic acid ? Describe the structure of DNA. How does it differ from RNA ?

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20. Discuss the process of translation in detail.

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