BIOLOGY

BOOKS - KUMAR PRAKASHAN KENDRA BIOLOGY (GUJRATI ENGLISH)

MOLECULAR BASIC OF INHERITANCE

Section A Exam Oriented Questions Answers From Darpan

1. What are Genetic material ?

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2. What are the properties of Genetic material (DNA/RNA) ?

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3. State the physical structure of DNA.

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4. Describe the structure of polynucleotide chain of DNA or RNA ?

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5. Give the historical background of DNA.

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6. Describe double helix structure of DNA and how are the sequences of other strand predicted.

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7. What is central dogma and describe the packing of DNA helix ?

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8. Write S.N. on packing of DNA Helix.

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9. If the length of E. Coli DNA is 1.36 mm, calculate the number of base pairs in E. Coli.

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10. How it was proved that DNA is the Genetic material ?

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11. Describe different experiment which proves that DNA is a Genetic material.

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12. Describe Transforming Principle.

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13. Write short note on Biochemical characterisation of Transforming Principle.

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14. Describe Hershey - Chase experiment or How it was proved the DNA is genetic material ?

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15. Write a comparative note the properties of DNA and RNA.

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16. Describe in short about RNA.

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17. Write short note on RNA World.

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18. Describe Replication of DNA and Give experimental proof for it.

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19. Describe semiconservative replication of DNA step by step.

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20. Describe various enzymes involved for DNA Replication.

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21. Bescribe Transcription.

View Text Solution

22. Write short note on Transcription unit.

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23. Write a explanatory note on Transcription unit and the gene.

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24. Explain different types of RNA and Explain the process of transcription.

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25. Describe the process transcription in Eukaryotes.

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26. How did Genetic code came into existance ?

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27. State the salient features of genetic code.

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28. How are mutations and genetic code related ?

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29. Describe tRNA as adapter molecule.

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30. Describe the structure of tRNA.

View Text Solution

31. Describe the process of translation.

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32. Write an explanatory note of gene expression.

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33. Write short note on lac operon.

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34. What is Human Genome Project ?

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35. What are the goals of HGP ?

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36. Which methodologies were applied in HGP ?

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37. Mention salient features of human genome.

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38. What are the application and future challenges of HGP ?

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39. Write a explanatory note on DNA Fingerprinting

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40. Write short note on Polymorphism

View Text Solution

41. Describe the technique of DNA fingerprinting.

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Section B Difference Scientific Reason

1. Give differences

Codons and Anticodons Codons

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2. Give differences

VNTR and Probe

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3. Give differences

Unambiguous Codon and Degenerate Codon

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4. Give differences

DNA and RNA

View Text Solution

5. Give scientific reasons

DNA polymorphism is the basis of genetic mapping of human genome.

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6. Give scientific reasons

Unambiguous, Universal and degenerate are some of the terms used for

the genetic code.

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7. Give scientific reasons

Viruses can be used in the manufacturing proteins.

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8. Give scientific reasons

Both the strands of DNA are not copied during transcription.

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9. Give scientific reasons

DNA polymerase plays a dual function during DNA replication.

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10. Give scientific reasons

It is essential that tRNA binds to both amino acids and mRNA codon during protein synthesis.

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11. Give scientific reasons

Transcription and translation could be coupled in prokaryotic cell but not in eukaryotic cell.

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12. Give scientific reasons

DNA and not RNA is the genetic material in majority of organisms.

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Section C Objective Questions Answers

1. Match the columns

Column - I		Column - II	
(a)	U U U	(i)	Serine
(b)	G G G	(ii)	Methionine
(c)	U C U	(iii)	Phenylalanine
(d)	C C C	(iv)	Glycine
(e)	A U G	(v)	Proline

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2. Match the columns

Column - I		Column - II	
(a)	Helicase	(i)	Joining of nucleotides
(b)	Gyrase	(ii)	Opening of DNA
(c)	Primase	(iii)	Unwinding of DNA
(d)	DNA Polymerase III	(iv)	RNA Priming

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3. Match the columns

Column - I		Column - II	
(a)	Splicing	(i)	Lac Operon
(b)	Okazaki fragments	(ii)	Lagging strands
(c)	Jacob and Monad	(iii)	Lactose
(d)	Inducer	(iv)	Removals of intron

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4. Definitions/Explanation

Probe :

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5. Definitions/Explanation

Sticky end :

View Text Solution

6. Definitions/Explanation

VNTR :

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7. Definitions/Explanation

Transgene :

View Text Solution

8. Definitions/Explanation

Bacteriophages :

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9. Definitions/Explanation

DNA :

View Text Solution

10. Definitions/Explanation

DNA Nucleoside :

View Text Solution

11. Definitions/Explanation

Histones :

View Text Solution

12. Definitions/Explanation

Histone octomer :

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13. Definitions/Explanation

Nucleosome :

View Text Solution

14. Definitions/Explanation

Chromatin :

View Text Solution

15. Definitions/Explanation

Euchromatin :

View Text Solution

16. Definitions/Explanation

Heterochromatin :

View Text Solution

17. Definitions/Explanation

Semiconservative DNA replication :

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18. Definitions/Explanation

Replication fork :

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19. Definitions/Explanation

Transcription :

View Text Solution

20. Definitions/Explanation

A promoter :

View Text Solution

21. Definitions/Explanation

The structural gene :

View Text Solution

22. Definitions/Explanation

A terminator :

View Text Solution

23. Definitions/Explanation

Gene :

View Text Solution

24. Definitions/Explanation

Cistron :

View Text Solution

25. Definitions/Explanation

Exons :

View Text Solution

26. Definitions/Explanation

Introns :

View Text Solution

27. Definitions/Explanation

Split gene :

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28. Definitions/Explanation

Splicing :

View Text Solution

29. Definitions/Explanation

Capping :

View Text Solution

30. Definitions/Explanation

Tailing :

View Text Solution

31. Definitions/Explanation

Operator gene :

View Text Solution

32. Definitions/Explanation

Regulatorgene :

View Text Solution

33. Definitions/Explanation

Promotergene :

View Text Solution

34. Definitions/Explanation

DNA polymorphism :

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35. Definitions/Explanation

Sequence Annotation :

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36. Full forms

DNA :

View Text Solution

37. Full forms

RNA :

View Text Solution

38. Full forms

E. coli :

View Text Solution

39. Full forms

EM :

View Text Solution

40. Full forms

NHC :

View Text Solution

41. Full forms

mRNA :

View Text Solution

42. Full forms

tRNA :

View Text Solution

43. Full forms

rRNA :

View Text Solution

44. Full forms

SnRNA :

View Text Solution

45. Full forms

hnRNA :

View Text Solution

46. Full forms

UTR :

View Text Solution

47. Full forms

HGP :

View Text Solution

48. Full forms

ELSI :

View Text Solution

49. Full forms

ESTS :

View Text Solution

50. Full forms

BAC :

View Text Solution

51. Full forms

YAC :

View Text Solution

52. Full forms

SNPs :

View Text Solution

53. Full forms

VNTR :

View Text Solution

54. Full forms

PCR :

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Section D Textual Exercise

1. Group the following as nitrogenous bases and nucleosides : Adenine, Cytidine, Thymine, Guanosine, Uracil and Cytosine.

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2. If a double stranded DNA has 20 per cent of cytosine, calculate the per cent of adenine in the DNA.

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3. If the sequence of one strand of DNA is written as follows :

$5' - \mathrm{ATGCATGCATGCATGCATGCATGCATGC} - 3'$

Write down the sequence of complementary strand in $5' \rightarrow 3'$ direction.

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4. If the sequence of the coding strand in a transcription unit is written as follows : $5' - \mathrm{ATGCATGCATGCATGCATGCATGCATGC} - 3'$ Write down the sequence of mRNA.

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5. Which property of DNA double helix led Watson and Crick to hypothesise semi-conservative mode of DNA replication ? Explain.

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6. Depending upon the chemical nature of the template (DNA or RNA) and the nature of nucleic acids synthesised from it (DNA or RNA), list the types of nucleic acid polymerases.

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7. How did Hershey and Chase differentiate between DNA and protein in their experiment while proving that DNA is the genetic material ?

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8. Differentiate between the followings:

Repetitive DNA and Satellite DNA

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9. Differentiate between the followings:

mRNA and tRNA

View Text Solution

10. Differentiate between the followings:

Template strand and Coding strand

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11. List two essential roles of ribosome during translation.

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12. In the medium where E. coli was growing, lactose was added, which induced the lac operon. Then, why does lac operon shut down some time after addition of lactose in the medium ?

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13. Explain (in one or two lines) the function of the followings : (a) Promoter (b) tRNA (c) Exons

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14. Why is the Human Genome project called a mega project ?

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15. What is DNA fingerprinting ? Mention its application.

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16. Briefly describe the following :

Transcription

View Text Solution

17. Briefly describe the following :

Polymorphism

View Text Solution

18. Briefly describe the following :

Translation

View Text Solution

19. Briefly describe the following :

Bioinformatics

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Section E Solution Of Ncert Exemplar Multiple Choice Questions Mcqs

1. In a DNA strand the nucleotides are linked together by

A. glycosidic bonds

B. phosphodiester bonds

C. peptide bonds

D. hydrogen bonds

Answer: B

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2. A nucleoside differs from a nucleotide. It lacks the

A. base

B. Sugar

C. phosphate group

D. hydroxyl group

Answer: C

View Text Solution

3. Both deoxyribose and ribose belong to a class of sugars called

A. trioses

B. hexoses

C. pentoses

D. polysaccharides

Answer: C

View Text Solution

4. The fact that a purine base always pairs through hydrogen bonds with a pyrimidine base In the DNA double helix leads to

A. the antiparallel nature

B. the semiconservative nature

C. uniform width throughout DNA

D. uniform length in all DNA

Answer: C

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5. The net electric charge on DNA and histones is

A. both positive

B. both negative

C. negative and positive, respectively

D. zero

Answer: C

View Text Solution

6. The promoter site and the terminator site for transcription are located at

A. 3' (downstream) end and 5' (upstream) end, respectively of the transcription unit

B. 5' (upstream) end and 3' (downstream) end, respectively of the transcription unit

C. the 5' (upstream) end

D. the 3' (downstream)

Answer: C

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7. Which of the following statements is the most appropriate for sickle cell anaemia ?

A. It cannot be treated with iron supplements

B. It is a molecular disease

C. It confers resistance to acquiring malaria

D. All of the above

Answer: D

View Text Solution

8. Which of the following is true with respect to AUG ?

A. It codes for methionine only

B. It is an initiation codon

C. It codes for methionine in both prokaryotes and eukaryotes

D. All of the above

Answer: D

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9. The first genetic material could be

A. protein

B. carbohydrates

C. DNA

D. RNA

Answer: D

View Text Solution

10. With regard to mature mRNA in eukaryotes

A. exons and introns do not appear in the mature RNA

B. exons appear but introns do not appear in the mature RNA

C. introns appear but exons do not appear in the mature RNA

D. both exons and introns appear in the mature RNA

Answer: B

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11. The human chromosome with the highest and least number of genes in them are respectively

A. Chromosome 21 and Y

B. Chromosome 1 and X

C. Chromosome 1 and Y

D. Chromosome X and Y

Answer: C

View Text Solution

12. Who amongst the following scientists had no contribution in the development of the double helix model for the structure of DNA ?

A. Rosalind Franklin

B. Maurice Wilkins

C. Erwin Chargaff

D. Meselson and Stahl

Answer: D

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13. DNA is a polymer of nucleotides which are linked to each other by $3' - 5'$ phosphodiester bond. To prevent polymerisation of nucleotides, which of the following modifications would you choose ?

A. Replace purine with pyrimidines

B. Remove/Replace 3' OH group in deoxy ribose

C. Remove/Replace 2' OH group with some other group in deoxy ribose

D. Both (B) and (C)

Answer: B

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14. Discontinuous synthesis of DNA occurs in one strand, because:

A. DNA molecule being synthesised is very long

B. DNA dependent DNA polymerase catalyses polymerisation only in one direction $(5' \rightarrow 3')$

C. it is a more efficient process

D. DNA ligase joins the short stretches of DNA

Answer: B

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15. Which of the following steps in transcription is catalysed by RNA polymerase ?

A. Initiation

B. Elongation

C. Termination

D. All of the above

Answer: B

View Text Solution

16. Control of gene expression in prokaryotes take place at the level of:

A. DNA-replication

B. Transcription

C. Translation

D. None of the above

Answer: B

View Text Solution

17. Which of the following statements is correct about the role of regulatory proteins in transcription in prokaryotes ?

A. They only increase expression

B. They only decrease expression

C. They interact with RNA polymerase but do not affect the expression

D. They can act both as activators and as repressors

Answer: D

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18. Which was the last human chromosome to be completely sequenced ?

A. Chromosome 1

B. Chromosome 11

C. Chromosome 21

D. Chromosome X

Answer: A

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19. 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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20. While analysing the DNA of an organism a total number of 5386 nucleotides were found out of which the proportion of different bases

were :

$\text{Adenine} = 29\,\%$, $\text{Guanine} = 17\,\%$, $\text{Cytosine} = 32\,\%$, $Thy\,\text{min}\,e = 17\,\%$

Considering the Chargaff's rule it can be concluded that

A. it is a double stranded circular DNA

B. It is single stranded DNA

C. It is a double stranded linear DNA

D. No conclusion can be drawn

Answer: B

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21. In some viruses, DNA is synthesised by using RNA as template. Such a DNA is called:

A. A-DNA

B. B-DNA

C. cDNA

D. rDNA

Answer: c

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22. If Meselson and Stahl's experiment is continued for four generations in bacteria, the ratio of $N^{15}/N^{15} : N^{15}/N^{14} : N^{14}/N^{14}$ containing DNA in the fourth generation would be

A. $1:1:0$

B. $1:4:0$

C. $0:1:3$

D. $0:1:7$

Answer: d

View Text Solution

23. If the sequence of nitrogen bases of the coding strand of DNA in a transcription unit is: $5' - \mathrm{AT\,GAATG} - 3'$, the sequence of bases in its RNA transcript would be

A. $5' - \mathrm{AUGAAUG} - 3'$

B. $5' - \mathrm{UACUUAC} - 3'$

C. $5' - \mathrm{CAUUCAU} - 3'$

D. $5' - \mathrm{GUA\,AGUA} - 3'$

Answer: a

View Text Solution

24. The RNA polymerase holoenzyme transcribes

A. the promoter, structural gene and the terminator region

B. the promoter and the terminator region

C. the structural gene and the terminator region

D. the structural gene only.

Answer: c

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25. If the base sequence of a codon in mRNA is $5' - \mathrm{AUG} - 3'$, the sequence of tRNA pairing with it must be:

A. $5' - \mathrm{UAC} - 3'$

B. $5' - \mathrm{CAU} - 3'$

C. $5' - \mathrm{AUG} - 3'$

D. $5' - \mathrm{GUA} - 3'$

Answer: a

View Text Solution

26. The amino acid attaches to the tRNA at its:

A. 5' - end

B. 3' end

C. Anti codon site

D. DHU loop

Answer: b

View Text Solution

27. To initiate translation, the mRNA first binds to

A. The smaller ribosomal sub-unit

B. The larger ribosomal sub-unit

C. The whole ribosome

D. No such specificity exists

Answer: a

View Text Solution

28. In E.coli, the lac operon gets switched on when

A. lactose is present and it binds to the repressor

B. repressor binds to operator

C. RNA polymerase binds to the operator

D. lactose is present and it binds to RNA polymerase

Answer: a

View Text Solution

Section E Solution Of Ncert Exemplar Very Short Answer Type Questions Vsqs

1. What is the function of histones in DNA packaging ?

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2. Distinguish between heterochromatin and euchromatin. Which of the two is transcriptionally active ?

View Text Solution

3. The enzyme DNA polymerase in E.coli is a DNA dependent polymerase and also has the ability to proof-read the DNA strand being synthesised. Explain. Discuss the dual polymerase.

View Text Solution

4. What is the cause of discontinuous synthesis of DNA on one of the parental strands of DNA ? What happens to these short stretches of

synthesised DNA ?

View Text Solution

5. Given below is the sequence of coding strand of DNA in a transcription unit $3' - \mathrm{AATGCAGC\,TATTAGG} - 5'$ write the sequence of

(a) its complementary strand

(b) the mRNA

View Text Solution

6. What is DNA polymorphism ? Why is it important - to study it ?

View Text Solution

7. Based on your understanding of genetic code, explain the formation of any abnormal hemoglobin molecule. What are the known consequences of such a change ?

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8. Sometimes cattle or even human beings give birth to their young ones that are having extremely different sets of organs like limbs/ position of eye(s) etc. Comment.

View Text Solution

9. In a nucleus, the number of ribonucleoside triphosphates is 10 times the number of deoxy x10 ribonucleoside triphosphates, but only deoxy\ ribonucleotides are added during the DNA replication. Suggest a mechanism.

View Text Solution

10. 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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View Text Solution

11. Name any three viruses which have RNA as the genetic material.

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Section E Solution Of Ncert Exemplar Short Answer Type Questions

1. Define transformation in Griffith's experiment. Discuss how it helps in the identification of DNA as the genetic material.

View Text Solution

2. Who revealed biochemical nature of the transforming principle ? How was it done ?

View Text Solution

3. DNA caused the Discuss the significance of heavy isotope of nitrogen in the Meselson and Stahl's experiment.

View Text Solution

4. Define a cistron. Giving examples differentiate between monocistronic and polyeistronic transcription unit.

View Text Solution

5. Give any six features of the human genome.

View Text Solution

6. During DNA replication, why is it that the entire molecule does not open in one go ? Explain replication fork. What are the two functions that the monomers (dNTPs) play ?

View Text Solution

7. Retroviruses do not follow central Dogma. Comment.

View Text Solution

8. In an experiment, DNA is treated with a compound which tends to place itself amongst the stacks of nitrogenous base pairs. As a result of this, the distance between two consecutive base increases, from 0.34nm to 0.44 nm calculate the length of DNA double helix (which has 2×10^9 bp) in the presence of saturating amount of this compound.

View Text Solution

9. What would happen if histones were to be mutated and made rich in acidic amino acids such as aspartic acid and glutamic acid in place of basic amino acids such as lysine and arginine?

View Text Solution

10. Recall the experiments done by Frederick Griffith, Avery, MacLeod and McCarty, where DNA was speculated to be the genetic material. If RNA, instead of DNA was the genetic material, would the heat killed strain of Pneumococcus have transformed the R-strain into virulent strain ? Explain.

View Text Solution

11. You are repeating the Hershey-Chase experiment and are provided with two isotopes: $^{32}P$and ^{15}N (in place of ^{35}S in the original experiment). How do you expect your results to be different ?

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12. There is only one possible sequence of amino acids when deduced from a given nucleotides. But multiple nucleotides sequence can be

deduced from a single amino acid sequence. Explain this phenomena.

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13. A single base mutation in a gene may not 'always' result in loss or gain of function. Do you think the statement is correct ? Defend your answer.

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14. A low level of expression of lac operon occurs at all the time. Can you explain the logic behind this phenomena.

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15. How has the sequencing of human genome opened new windows for treatment of various genetic disorders. Discuss amongst your classmates.

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16. The total number of genes in humans is far less $(< 25,000)$ than the previous estimate (upto - 1,40,000 gene). Comment.

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17. Now, sequencing of total genomes getting is getting less expensive day by the day. Soon it may be affordable for a common man to get his genome sequenced. What in your opinion could be the advantage and disadvantage of this development ?

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18. Would it be appropriate to use DNA probes such as VNTR in DNA finger printing of a bacteriaphage ?

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19. During in vitro synthesis of DNA, a researcher used 2', 3'- dideoxy cytidine triphosphate as raw nucleotide in place of 2'-deoxy cytidine. What would be the consequence ?

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20. What background information did Watson and Crick have made available for developing a model of DNA ? What was their contribution ?

View Text Solution

21. What are the functions of (i) methylated guanasine cap, (ii) poly-A "tail" in a mature on RNA ?

View Text Solution

22. Do you think that the alternate splicing of exons may enable a structural gene to code for several isoproteins from one and the same gene ? If yes, how ? If not, why so ?

View Text Solution

23. Comment on the utility of variability in number of tandem repeats during DNA finger printing.

View Text Solution

Section E Solution Of Ncert Exemplar Long Answer Type Questions

1. Give an account of Hershey and Chase experiment. What did it conclusively prove? If both DNA and proteins contained phosphorus and sulphur do you think the result would have been the same ?

View Text Solution

2. During the course of evolution why DNA was chosen over RNA as genetic material? Give reasons by first discussing the desired criteria in a molecule that can act as genetic material and in the light of biochemical differences between DNA and RNA.

View Text Solution

3. Give an account of post transcriptional modifications of a eukaryotic mRNA.

View Text Solution

4. Discuss the process of translation in detail.

View Text Solution

5. Define an operon, giving an example, explain an Inducible operon.

View Text Solution

6. 'There is a paternity dispute for a child'. Which technique can solve the problem. Discuss the principle involved.

View Text Solution

7. Give an account of the methods used in sequencing the human genome.

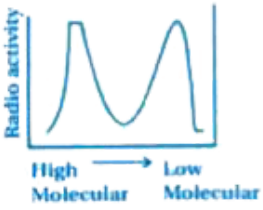
View Text Solution

8. List the various markers that are used in DNA finger printing.

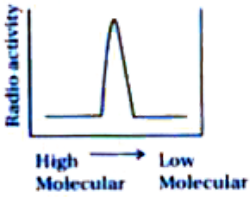
View Text Solution

9. Replication was allowed to take place in the presence of radioactive deoxynucleotides precursors in E.coli that was a mutant for DNA ligase. Newly synthesised radioactive DNA was purified and strands were separated by denaturation. These were centrifuged using density gradient centrifugation. Which of the following would be a correct result

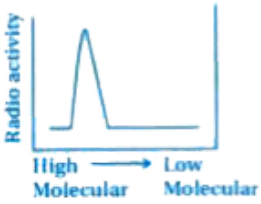
A.



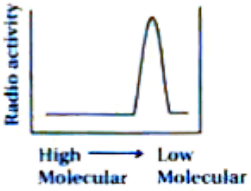
B.



C.



D.



Answer: D

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Section F Multiple Choice Questions Mcqs Mcqs From Daran Based On Textbook

1. Name the scientist, who has worked on pneumococcus bacteria ?

A. Neuton

B. Mendel

C. Griffith

D. Watson

Answer: C

View Text Solution

2. Which species of pneumococcus bacteria found poisonous ?

A. S-I

B. S-II

C. R-II

D. S-III

Answer: D

View Text Solution

3. Which species of pneumococcus bacteria forms rough colonies ?

A. S-II

B. R-I

C. S-III

D. R-I

Answer: D

View Text Solution

4. After injection the R-II bacteria and heat killed S-III bacteria into mices, what was observed ?

A. All mice are live

B. All mice are died due to pneumococcus injection

C. Some mice are live, some are died.

D. Mice are live with the pneumococcus injection.

Answer: B

View Text Solution

5. Avery, Mc carty and MacLeod scientists supported which scientist's experiment ?

A. Mendel

B. Wilkinson

C. Griffith

D. Ervin

Answer: C

View Text Solution

6. How many Nucleotide's were found in the gene of yeast ?

A. 71

B. 73

C. 75

D. 77

Answer: D

View Text Solution

7. In DNA which kind of bond's found in co-valency ?

A. Hydrogen bond

B. Peptide bond

C. Phosphate bond

D. Phosphodiester hond

Answer: D

View Text Solution

8. In DNA [A] + [G] .....

A. [T] + [C]

B. [T] - [C]

C. $[T] \times [C]$

D. (A) and (C) both

Answer: A

View Text Solution

9. Which ratio is changes with the diversity of organisms ?

A. $\frac{A+G}{T+C}$

B. $\frac{A+T}{G+C}$

C. $\frac{G+T}{C+A}$

D. $\frac{G+C}{A+T}$

Answer: B

View Text Solution

10. Who is functioned very well as a messenger as well as transporter ?

A. DNA

B. Nucleotide

C. RNA

D. All of the above

Answer: C

View Text Solution

11. Which scientists has given the double helix structure of DNA ?

A. Watson, Crick, Wilkinson

B. Ervin

C. Avery, Macleod

D. Dr. Khorana and Mc Carty

Answer: A

View Text Solution

12. By which enzyme the newly synthesized chain is formed in DNA ?

A. DNA polymerase

B. Phosphodiesterase

C. DNA polymerase-II

D. DNA-polymerase-II

Answer: C

View Text Solution

13. When DNA polymerase-III is being activated ?

A. When short chain of DNA is formed

B. When primer is formed

C. At the time of lagging strand formed

D. At the time of nucleotides formed

Answer: B

View Text Solution

14. Which enzyme is firstly attached in the initiation of transcription ?

A. Transcriptase

B. Polymerase

C. Ligase

D. RNA polymerase

Answer: A

View Text Solution

15. Protein synthesis is always initiated by which amino acid ?

A. Methionin

B. Lysine

C. Serine

D. Valine

Answer: A

View Text Solution

16. Which sugar is added in the medium of E-coli culture ?

A. Glucose

B. Maltose

C. Lactose

D. Sucrose

Answer: C

View Text Solution

17. The processes of structural gene regulated by operator site is regulated by what ?

A. Structural protein

B. Repressor protein

C. Promoter

D. Regulatory gene

Answer: B

View Text Solution

18. Which protein is responsible for the switching on and off of operator ?

A. Repressor protein

B. Regulatory protein

C. Structural protein

D. Promoter

Answer: A

View Text Solution

19. Which of the following alternative is true for an operon ?

A. Operator gene + promoter gene + repressor gene + initiator gene

B. Regulator gene + promoter gene + operator gene + structural gene

C. Structural gene + repressor gene + deyene-rate codon + Initiator gene

D. Regulator protein + initiator gene + regulator gene + structural gene

Answer: B

View Text Solution

20. The rate of synthesis of m-RNA is regulated by what ?

A. Promoter gene

B. Regulatory gene

C. Operator gene

D. Structural gene

Answer: A

View Text Solution

21. The process of translation to synthesize a protein is regulated by which gene ?

A. Promoter gene

B. Regulatory gene

C. Operator gene

D. Repressor gene

Answer: C

View Text Solution

22. Which genes function for negative regulation ?

A. Regulatory

B. Repressor gene

C. Promoter

D. Structural gene

Answer: A

View Text Solution

23. By what name the process of determination and collection of the sequence of nucleotides known ?

A. Database

B. Gene mapping

C. HGP

D. Genomics

Answer: A

View Text Solution

24. How many nucleotide base does a human genome contain ?

A. $1 >$ billion

B. $2 >$ billion

C. $3 >$ billion

D. $3 >$ million

Answer: C

View Text Solution

25. By the help of DNA fingerprinting from the blood stains on the cloths of Abraham Lincoln, his which deficiency was discovered ?

A. Turner syndrome

B. Kline felter's syndrome

C. Marfan's syndrome

D. Malaria, typhoid

Answer: C

View Text Solution

26. Which of the following is used for making a DNA fingerprint ?

A. The things used by the person

B. Bones

C. Various chemicals and medicines

D. Blood, semen, hair bulb.

Answer: C

View Text Solution

27. In order to make a DNA fingerprint, which of the following enzyme are used to digest the DNA ?

A. Maltase, lactase, sucrase

B. Restriction digestion, restriction endonuclease

C. Peptidase - nucleopeptidase

D. Hexokinase dehydrogenase

Answer: B

View Text Solution

28. The principal genetic material of living being is.....

A. RNA

B. DNA

C. Both (A) and (B)

D. None of above

Answer: B

View Text Solution

29. Transcription means the synthesis of .....

A. DNA

B. RNA

C. Proteins

D. Lipids

Answer: B

View Text Solution

30. Genetic code means .....

A. singlet code

B. doublet code

C. triplet code

D. none of the above

Answer: C

View Text Solution

31. RNA is genetic material in .....

A. bacteria

B. plant viruses

C. fungi

D. none of the above

Answer: B

View Text Solution

32. TMV contains a genetic material .....

A. DNA

B. RNA

C. DNA and RNA

D. chromosome

Answer: B

View Text Solution

33. Duplication of DNA is called .....

A. transduction

B. translation

C. replication

D. chromosom

Answer: C

View Text Solution

34. Gene is a .....

A. a segment of DNA

B. one nucleotide

C. DNA and RNA both

D. protein synthesis

Answer: A

View Text Solution

35. In Operon model, regulator gene functions as

A. repressor

B. regulator

C. Inhibitor

D. all of the above

Answer: D

View Text Solution

36. Transfer of information from DNA to RNA is called .....

A. transcription

B. translation

C. transduction

D. migration

Answer: A

View Text Solution

37. Who supported Griffith experiment by molecular explanation ?

A. Watson and Crick

B. M. Nirenberg and M. Khorana

C. Miescher and Fleming

D. Avery, Mc Carty and MacLeod

Answer: D

View Text Solution

38. Gene controls

A. heredity but not protein synthesis.

B. biochemical reaction of some enzymes.

C. protein synthesis and heredity.

D. protein synthesis but not heredity.

Answer: C

View Text Solution

39. Protein synthesis takes place on the surface of

A. DNA

B. mitochondria

C. nucleus

D. ribosomes

Answer: D

View Text Solution

40. Anticodon is associated with

A. t-RNA

B. r-RNA

C. m-RNA

D. DNA

Answer: A

View Text Solution

41. From what way the growth occurred in living being ?

A. Cell expansion

B. Cell division

C. Cell differentiation

D. Cell organelles

Answer: B

View Text Solution

42. A new DNA molecule synthesized from preexistence DNA is called .....

A. gamatogenesis

B. genolysis

C. replication

D. reproduction

Answer: C

View Text Solution

43. Which type of bonds are present in between the two helics of DNA ?

A. Hydrogen bond

B. Phosphate bond

C. Nitrogen bond

D. Chlorine bond

Answer: A

View Text Solution

44. In the replication process the two way directional activity known as .....

A. one directional

B. two directional

C. three directional

D. growth

Answer: B

View Text Solution

45. Which bonds are formed between the complementary nucleotides of RNA present on template strand ?

A. Ester bond

B. Phospho diester bond

C. Hydrogen bond

D. Phosphate bond

Answer: B

View Text Solution

46. In cytoplasm after replacement of with what m-RNA attached ?

A. Cell nucleus

B. Lysosome

C. Ribosome

D. Glycogen

Answer: C

View Text Solution

47. To indicate one Amino acid if two-two nitrogen bases joined, then how many codes are obtain ?

A. 8

B. 16

C. 24

D. 32

Answer: B

View Text Solution

48. To indicate one amino acid if more than one code is used, then what are the codes called ?

A. Initiation codon

B. Nonsense codon

C. Degenerate codon

D. Termination codon

Answer: C

View Text Solution

49. Which of the following sequence of protein synthesis is true ?

A. $\mathrm{DNA} \rightarrow \mathrm{m\text{-}RNA} \rightarrow \mathrm{protein}$

B. $\mathrm{DNA} \rightarrow \mathrm{t\text{-}RNA} \rightarrow \mathrm{protein}$

C. $\mathrm{DNA} \rightarrow \mathrm{m\text{-}RNA} \rightarrow \mathrm{t\text{-}RNA} \rightarrow \mathrm{protein}$

D. $\mathrm{DNA} \rightarrow \mathrm{t\text{-}RNA} \rightarrow \mathrm{m\text{-}RNA} \rightarrow \mathrm{protein}$

Answer: A

View Text Solution

50. Tumor virus contain which as a genetic material ?

A. DNA

B. RNA

C. Protein

D. Carbohydrate

Answer: B

View Text Solution

51. In cytoplasm, differents amino acids are transported by what ?

A. Virus

B. Bacteria

C. m-RNA

D. t-RNA

Answer: D

View Text Solution

52. In Eukaryotic cell who helps to decide the sequence of three nucleotides on the m-RNA ?

A. met-t-RNA

B. f-met-t-RNA

C. t-RNA synthatase

D. Amino acyl t-RNA

Answer: B

View Text Solution

53. In which process protein elongation factor and GTP serves as a energy source ?

A. In reverse transcription

B. Regulation process of gene expression

C. Arrangement of genetic code which present on m-RNA

D. Differenciation process of genetic information

Answer: C

View Text Solution

54. Chain is functioned as a polypeptide, after removal of which group ?

A. Formyl group

B. Non-formyl group

C. Promoter gene

D. Enzymes

Answer: A

View Text Solution

55. Which place is seen after the promoter ?

A. Place of sign

B. Initiation place

C. Termination codon

D. Degenerate codon

Answer: B

View Text Solution

56. When was the analysis of the working draft of the genome published ?

A. 36557

B. 36923

C. 37288

D. 37653

Answer: B

View Text Solution

57. In which years was the arrangement of sequence of HGP finished ?

A. 36982

B. 37347

C. 37712

D. 38078

Answer: C

View Text Solution

58. Which of the following is true for genetic codes ?

A. It is duplex and unique

B. It is triplet, universal and unique

C. It is meaningless and does not indicate an amino acid

D. All of the above

Answer: B

View Text Solution

59. Which statement is true for HGP (Human Genome Project) ?

A. To decide the base pairing for synthesizing DNA

B. RNA synthesis and protein synthesis

C. The study of process of DNA replication

D. All of the above

Answer: A

View Text Solution

60. Join correct column.

Column - I		Column - II	
(a)	Fedric Griffith	(W)	Virulent species have smooth surface
(b)	S-III	(X)	Avirulent species have rough surface
(c)	R-II	(Y)	Bacterial transformation
(d)	Griffith effect	(Z)	Experiments done on pneumococcus bacteria

A. (a - Z), (b - W), (c - X), (d - Y)

B. (a - Y), (b - W), (c - X), (d - Z)

C. (a - Y), (b - X), (c - Z), (d - W)

D. (a - W), (b - X), (c - Z), (d - Y)

Answer: A

View Text Solution

61. Join correct column.

Column - I		Column - II	
(a)	DNA replication	(W)	During replication, two directional process
(b)	Two directional process	(X)	Making the short chained RNA
(c)	RNA polymerase	(Y)	Making bonds together of nucleotide
(d)	Ligase	(Z)	Maintain semiconcentrative mode

A. (a- X), (b- Y), (c - Z), (d - W)

B. (a -W), (b -Z), (c - X), (d -Y)

C. (a- Z), (b - W), (c - X), (d - Y)

D. (a - Y), (b - X), (c - W), (d - Z)

Answer: C

View Text Solution

62. Join correct column.

Column - I		Column - II	
(a)	*m*-RNA	(W)	Transport the different amino acid in cytoplasm
(b)	*t*-RNA	(X)	Separate the polypeptide amine parent
(c)	Nonsense codon	(Y)	Transfer the characteristics from to progeny
(d)	Gene	(Z)	Having the information about protein synthesis

A. (a - X), (b - Z), (c - W), (d - Y)

B. (a - Z), (b - W), (c - X), (d - Y)

C. (a - X), (b - Y), (c - Z), (d - W)

D. (a - Y), (b - Z), (c - W), (d - X)

Answer: B

View Text Solution

63. Join correct column.

Column - I		Column - II	
(a)	Repressor protein	(W)	Having the codes for protein's synthesis
(b)	Structural gene	(X)	Controlling the transcription
(c)	Promoter gene	(Y)	Switchin on/off the operator
(d)	Operator gene	(Z)	It's a segment of DNA

A. (a - Z), (b - Y), (c - W), (d - X)

B. (a - W), (b - Z), (c - X), (d - Y)

C. (a - Y), (b - Z), (c - X), (d - W)

D. (a - Y), (b - W), (c - Z), (d - X)

Answer: D

View Text Solution

Section F Multiple Choice Questions Mcqs Mcqs Asked In Competitive Exam

1. What happen if in code 25 no. UAA mutant or transformed in UAA in 50 amino acid polypeptide gene ?

A. Make 25 amino acid polypeptide

B. 24 amino acid polypeptide

C. 24 and 25 amino acid with two polypeptide

D. Polypeptide with 49 amino acid

Answer: B

View Text Solution

2. In the dictionary of genetic condons, how many codons are these of 20 amino acids ?

A. 60

B. 20

C. 64

D. 61

Answer: D

View Text Solution

3. DNA fingerprint is associated with .....

A. to molecular analysis of DNA prints or images.

B. to analysis tech. for DNA printing.

C. for different DNA model by molecular analysis tech.

D. for individual fingerprint.

Answer: A

View Text Solution

4. In a disorder, when adenine is replaced by guanine is an example of

A. disorder of change of skeleton

B. transcription

C. transition

D. transversion

Answer: C

View Text Solution

5. Which of the following, uses RNA as a template and synthesis DNA ?

A. DNA polymerase

B. RNA polymerase

C. Reverse transcriptase

D. RNA polymerase dependant on DNA

Answer: C

View Text Solution

6. In DNA chain growth of Okazaki fragments for .....

A. by making fork, replication proceeds in 3' to 5' direction.

B. DNA replication proves the meaning of conservative properties.

C. it forms in direction of 5' to 3' direction and results in DNA replication in and 3' to 5' direction.

D. results into transcription.

Answer: C

View Text Solution

7. In eukaryotes, the length of DNA molecular increases the volume of cell nucleus. How does this DNA arrange ?

A. Getting most higher folds in nucleosomes

B. DNA digestion.

C. By removing repetitive DNA

D. By removing unwanted genes

Answer: A

View Text Solution

8. As per the human genome sequences, expression is .....

A. messenger RNA

B. DNA sequences

C. ribosomes

D. transfer - RNA

Answer: B

View Text Solution

9. Molecular base transcription of organ differentiation is based on .....

A. ribosome

B. part of transcription

C. code

D. RNA polymerase

Answer: D

View Text Solution

10. In DNA molecule .....

A. the number of pyrimidine and pyurin nucleotide

B. two stand which parallel from 5' to 3' direction.

C. in living organism ademin and thymine ratio- is unequals.

D. in that two strands are antiparallel to each other direction of one is 5' to 3' and other is 3' to 5'.

Answer: D

View Text Solution

11. Pair of coding which are according for their function or specific code for amino acid.

A. GUU, GCU - alanin

B. UAG, UGA - termination code

C. AUG, ACG - starting code or metheonin

D. UUA, UCA - lucin

Answer: B

View Text Solution

12. The pair of nitrogen base of nucleotides are wrong

A. thymin, uresil - pyrimidine

B. uresil, cytosin pyrimidine

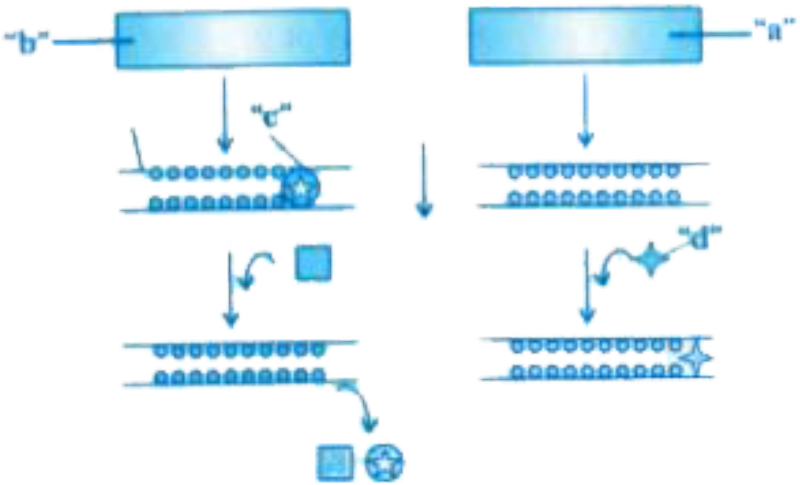
C. guanine, adenine purine

D. adenine, thymin purine

Answer: D

View Text Solution

13. Identify the diagram "a" and "b" given below, and what does "c" and "d" in the given diagram ?



A. a = Negative regulation

b = Positive regulation

C = Effector molecule

d = Inhibitor

B. a = Positive regulation

b = Negative regulation

c = Inhibitor

d = Effector molecule

C. a = Positive regulation

b = Negative regulation

c = Effector molecule

d = Inhibitor

D. a = Negative regulation

b Positive regulation

c = Inhibitor

d= Effector molecule

Answer: B

View Text Solution

14. Which option shows the correct steps for making DNA fingerprinting ?

(a) Separation of DNA fragments by electrophoresis

(b) The DNA band pattern is transferred to nylon membrane or nitro cellulose.

(c) Extraction of DNA from the sample cells.

(d) Restriction digestion DNA is cut into sections by using restriction endonuclease.

A. $\mathrm{d} \rightarrow \mathrm{b} \rightarrow \mathrm{c} \rightarrow \mathrm{a}$

B. $\mathrm{c} \rightarrow \mathrm{d} \rightarrow \mathrm{a} \rightarrow \mathrm{b}$

C. $\mathrm{b} \rightarrow \mathrm{d} \rightarrow \mathrm{a} \rightarrow \mathrm{c}$

D. $\mathrm{c} \rightarrow \mathrm{a} \rightarrow \mathrm{b} \rightarrow \mathrm{d}$

Answer: B

View Text Solution

15. Which of the following option is correct for the chronology of various stages of transcription ?

A. DNA polymerase unite at the place on DNA, where transcriptase is to start rarr any one chain acts as templet rarr tRNA get bind wit specific protein.

B. Transcriptase will unit mRNA at place where transcription is to start rarrany one chain will act as templet mRNA unite with specific protein.

C. Transcriptase will unite on DNA at the place where transcription is to start rarr one of these two chains acts as template rarr specific protein get bind to RNA.

D. None of the given.

Answer: C

View Text Solution

16. DNA replication is called semi-conservative why

A. At the end of replication each RNA possesses one parental chain and the other newly synthesized chain.

B. At the end of replication each DNA molecule is consist of one parent DNA chain and the other newly symthesized DNA chain

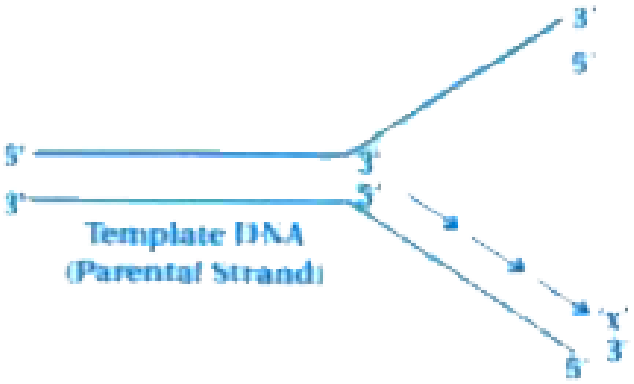
C. After replication each DNA molecule is synthesized from parental strand.

D. At the end of DNA is replication only half DNA is synthesized

Answer: B

View Text Solution

17. Which option is correct for the statements given in reference to the daughter strand formed at the region labelled as "X" in the given diagram ?



(i) In it first of all DNA polymerase forms primer

(ii) After primer is formed, DNA polymerase III is activated

(iii) Ligase is important at the end of synthesis of strand

(iv) Here many primers are formed for synthesis of strand

A. (ii), (iii)

B. (i), (ii), (ii)

C. (ii), (iii), (iv)

D. (i), (iii), (iv)

Answer: C

View Text Solution

18. Which gene is present on part of DNA in Lac Operon ?

A. Structural gene

B. Regulator gene

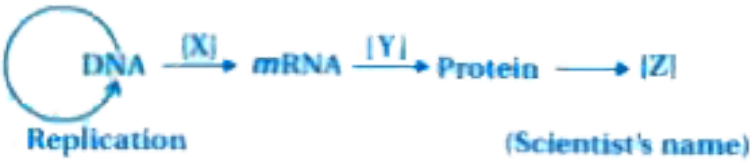
C. Promotor gene

D. All of these

Answer: D

View Text Solution

19. Give the correct labelling of X, Y and Z with the following diagram of central Dogma.



A. X: Translation, Y : Elongation,

Z : Erwin Chargaff

B. X: Transcription, Y : Replication,

Z : D. Baltimore

C. X : Translation, Y: Transcription,

Z : H.M. Temin

D. X : Transcription, Y: Translation, Z: EH.C. Crick

Answer: D

View Text Solution

20. STOP signals are seen on .....

A. None of the given

B. t - RNA

C. m-RNA

D. r-RNA

Answer: C

View Text Solution

21. Which enzyme is produced for the digestion of Lactose by the 'a' side of structural gene as a resulting transcription of Lac m-RNA when represser molecule is not joined with operator (O)?

A. Transacetylase

B. Transcyclase

C. p - Galactosidase

D. Permease

Answer: A

View Text Solution

22. 

What is X, Y, Z in the given figure of DNA.

A. X - Promotor, Y - Coding sequence,

Z - Initiation site.

B. X - Termination site, Y - Coding sequence,

Z - Promotor,

C. X - Promotor, Y - Coding sequence

Z - Termination site.

D. X - Termination site, Y - Coding sequence,

Z- Initiation site.

Answer: C

View Text Solution

23. Give the correct essential enzyme synthesized when lactose sugar is added to the culture of E-coli for the conversion of lactose into galactose.

A. Trans-acetylase

B. Permease

C. Reverse transcriptase

D. Both Trans-acetylase and permease

Answer: D

View Text Solution

24. For the statements given for genetic code, which of the below given option is correct ?

Statement P: The sequence of genetic codes and the sequence of amino acids in protein molecules do not show linear parallelism.

Statement Q: Genetic code is universal.

Statement R: Genetic code is specific, one codon specifies the position of many kinds of amino acids.

A. Statement P is false and Statement Q, R are true.

B. Statement P, Q are true, Statement R is false.

C. Statement P, R are true, Statement Q is false.

D. Statement P, R are false, Statement Q is true.

Answer: D

View Text Solution

25. Which amino acid is having three genetic codes ?

A. Leu

B. Ileu

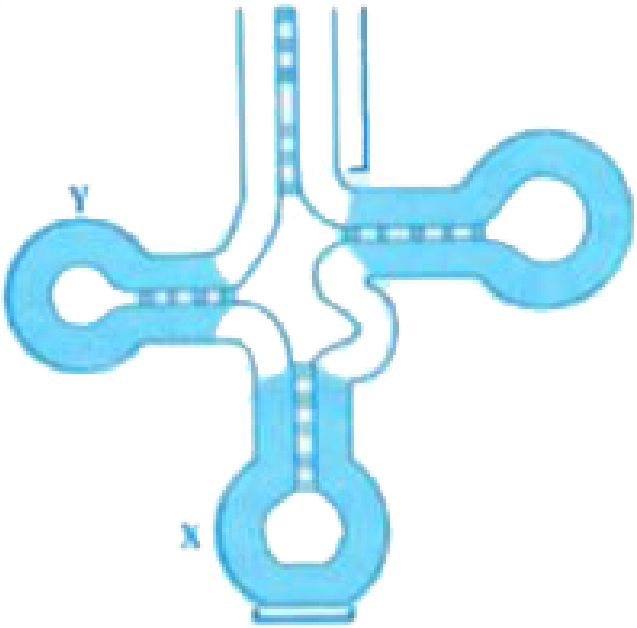
C. Phe

D. Gly

Answer: B

View Text Solution

26. Identify the name of X and Y in transfer RNA loop.



A. X = Variable loop, Y = D loop

B. X = Anticodon loop, Y = D loop

C. X = Anticodon loop, Y = Acceptor chain

D. X = D loop, Y = Variable loop

Answer: B

View Text Solution

27. 

Name the process X and Y given in the given flow chart.

A. X = Translation, Y = Transcription

B. X = Transcription, Y Translation

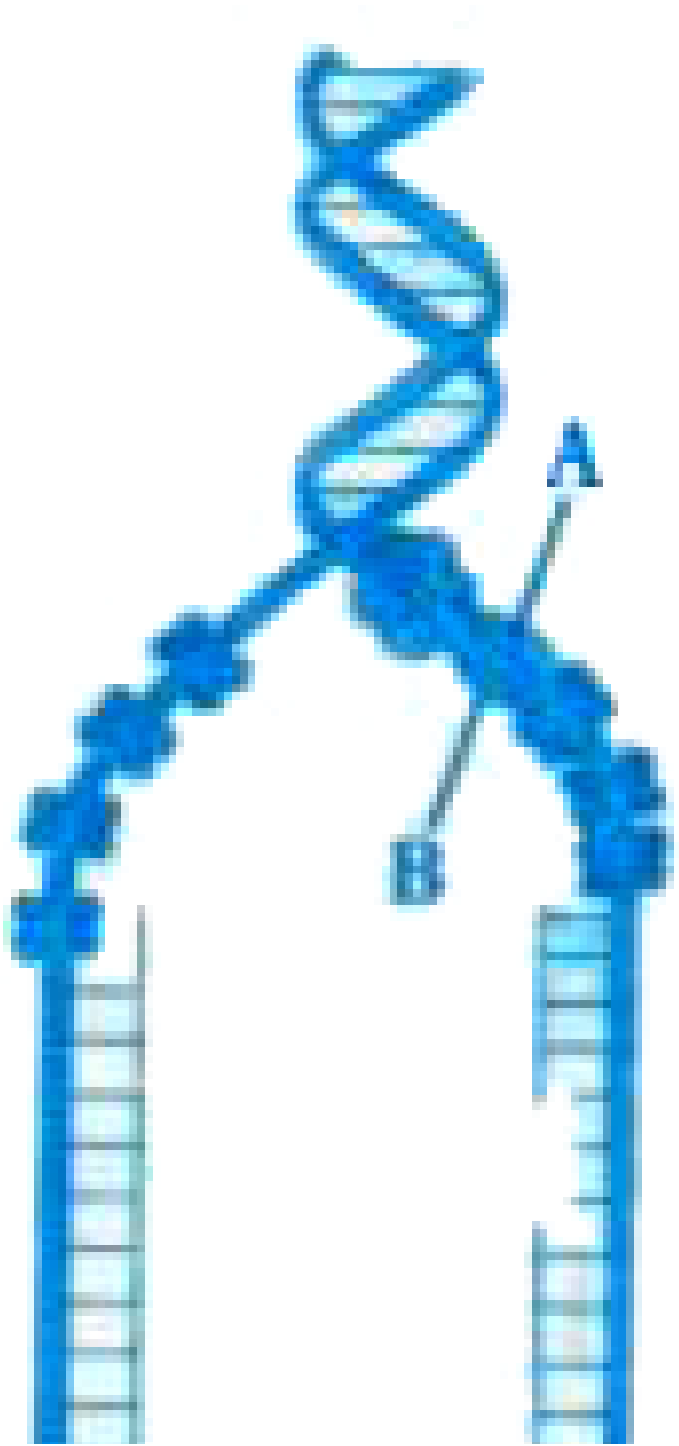
C. X = Gene synthesis, Y = Transcription

D. X = Gene transcription, Y = Gene isolation

Answer: B

View Text Solution

28. What is "A" and "B" in given diagram ?



A. A = RNA Primer

B = RNA Helicase

B. A = RNA Primer

B = DNA Helicase

C. A = Single strand Binding Protein

B = DNA Helicase

D. A = Lagging strand

B = Movement of Helicase

Answer: B

View Text Solution

29. Which amino acid determines by four genetic codes ?

A. Leucine (Leu)

B. Proline (Pro)

C. Serine (Ser)

D. Tyrosine (Tyr)

Answer: B

View Text Solution

30. A: The DNA fingerprint is the same for every cell, tissue and organ of a person.

R: DNA fingerprint is used for treatment of inherited disorders like Huntigton's disease, Alzheimer's and Sickle cell anemia.

A. A and R both are correct. R is explanation of A.

B. A and R both are correct but R is not explanation of A.

C. A is correct and R is wrong.

D. A is wrong and R is correct.

Answer: C

View Text Solution

31. Gene regulation governing lactose operon of E-coli that involves the lac I gene product is :

A. Positive and inducible because it can be induced by lactose

B. Negative and inducible because repressor protein prevents transcription.

C. Negative and repressible because repressor protein prevents transcription.

D. Feedback inhibition because excess of b-glactosidase can switch off transcription

Answer: C

View Text Solution

32. When mice were injected with a mixture of bacteria, avirulent pneumococcus bacteria and heat killed virulent, the mice were found dead due to pneumococcus infection. Why ?

A. Avirulent bacteria were destroyed by virulent bacteria

B. Avirulent stain transformed into virulent by entering in mice

C. Something from the virulent bacteria was transformed to the live avirulent bacteria as a result the avirulent bacteria transformed into virulent bacteria.

D. Heat killed pneumococcus bacteria injected in mice, transformed to the live bacteria.

Answer: C

View Text Solution

33. How many types of anticodons are present ?

A. Uncountable

B. 61

C. 3

D. 64

Answer: B

View Text Solution

34. In transcription why only one mRNA is synthesized from two DNA chains ?

A. One MRNA is synthesized by combined effect of two chains.

B. Both DNA chains act as DNA template

C. Out of two DNA chains, one acts as a template chain

D. Both the DNA chains become united and make one

Answer: C

View Text Solution

35. Who has proposed the rule -

[A] + [G] = [T] + [C], for ratio of Nucleotides ?

A. Dr. Hargovind Khorana

B. Crick and Wilkins

C. Erwin Chargaff

D. Watson and Crick

Answer: C

View Text Solution

36. According to observations of Human Genome project, which chromosome has minimum genes ?

A. On somatic chromosome

B. in Y

C. Both X Y

D. in X

Answer: B

View Text Solution

37. In DNA Replication Okazaki Fragments are made up of-

A. DNA and tRNA

B. DNA and RNA Polymerase

C. DNA and RNA Primer

D. DNA and DNA Helicase

Answer: C

View Text Solution

38. In Biological Evolution macro-molecules undergo aggregation and precipitation, which led to formation of organised structure called .....

A. Nucleic Acid

B. Cell

C. Coacervates

D. Precell

Answer: C

View Text Solution

39. In eukaryote what is the initiation codon for protein synthesis.

A. GUA

B. GCA

C. CCA

D. AUG

Answer: D

View Text Solution

40. DNA template strand having the sequences CTGATAGC which will complementary with RNA of which sequences ?

A. GUCTUTOCG

B. GACUAUCG

C. GAUTATUG

D. UACTATCU

Answer: B

View Text Solution

41. The pair of anticodons do not exist in such nitrogenous bases, whose triplet codons occurs in open situation in .....

A. m-RNA

B. r-RNA

C. t-RNA

D. s-RNA

Answer: C

View Text Solution

42. What 'lac' indicate in lac operon ?

A. 1,00,000 amount

B. Lactose

C. Lactase

D. insect

Answer: B

View Text Solution

43. In prokaryotic a during initiation of translation, GTP is essential in .....

A. the attachment of 505 subunit of ribosome to initiation complex.

B. production of fomyl methio t-RNA

C. the attachment of 305 subunit of ribosomes to m-RNA

D. the attachment of 305 m-RNA to fomyl methio t-RNA.

Answer: D

View Text Solution

44. The given triplet codons in protein synthesis, are true for their amino acids or are initiation of termination codons ?

A. UAC - tyrosine

B. UCG - initiation

C. UUU - termination

D. UGU - lucine

Answer: A

View Text Solution

45. During replication of bacterial chromosome, replication starts with origin and .....

A. RNA primer takes part

B. it is facilitated by telomeres

C. moves in one direction only

D. moves in two direction

Answer: D

View Text Solution

46. In genetically mutated organisms, the expression of newly formed genes in particular tissue is.....

A. enhancer

B. trans gene

C. promoter

D. reporter

Answer: B

View Text Solution

47. The E-coil cells, having '2' gene in lac operon do not grow on medium containing lactose as sole source of energy because,

A. in these cell, lac operon is active.

B. they cannot synthesis active β-galactosidase

C. E-coli cell do not utilize lactose in presence of glucose

D. they cannot transfer lactose from medium into the cells.

Answer: B

View Text Solution

48. Which enzyme/s will be produced in a cell in which there is a non-sense mutation in the lac Y-gene ?

A. β-galactosidase

B. Lactose permease

C. Transacetylase

D. Lactose permease and transacetylase

Answer: B

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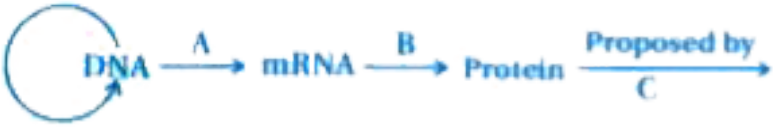
49. The diagram shows an important concept in the genetic implication of DNA. Fill in the blanks A to C.



A. A-transcription, B-replication, C-James Watson

B. A-translation, B-transcription, C-Erwin Chargaff

C. A-transcription, B-translation, C-Francis Crick

D. A-translation, B-extension, C-Rosalind Franklin

Answer: C

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50. Transformation was discovered by

A. Meselson and Stahl

B. Hershey and Chase

C. Griffith

D. Watson and Crick

Answer: C

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51. Which one of the following is wrongly matched ?

A. Transcription-Writing information from DNA to tRNA.

B. Translation-Using information in mRNA to make protein

C. Repressor protein-Binds to operator to stop enzyme synthesis

D. Operon-Structural genes, operator and promoter

Answer: A

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52. Satellite DNA is important because it

A. codes for proteins needed in cell cycle

B. shows high degree of polymorphism in population and also the same degree of polymorphism in an individual, which is heritable from parents to children

C. does not code for proteins and is same in all members of the population

D. codes for enzymes needed for DNA replication

Answer: B

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53. Identify the correct order of organisation of genetic material from largest to smallest.

A. Chromosome, gene, genome, nucleotide

B. Genome, chromosome, nucleotide, gene

C. Genome, chromosome, gene, nucleotide

D. Chromosome, genome, nucleotide, gene

Answer: C

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54. Which one of the following is not applicable to RNA ?

A. Complementary base pairing

B. 5' phosphoryl and 3' hydroxyl ends

C. Heterocyclic nitrogenous bases

D. Chargaff's rule

Answer: D

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55. Taylor conducted the experiments to prove semiconservative mode of chromosome replication on

A. Vinca rosea

B. Vicia faba

C. Drosophila melanogaster

D. E. coil

Answer: B

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56. The equivalent of a structural gene is

A. muton

B. cistron

C. operon

D. recon

Answer: B

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57. Which of the following rRNAs act as structural RNA as well as ribozyme in bacteria ?

A. 5 srRNA

B. 18 srRNA

C. 23 srRNA

D. 5-8 srRNA

Answer: C

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58. A molecule that can act as a genetic material must fulfill the traits given below, except

A. it should be able to express itself in the form of 'Mendelian characters'

B. it should be able to generate its replica

C. it should be unstable structurally and chemically

D. it should provide the scope for slow changes that are required for evolution

Answer: C

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59. DNA-dependent RNA polymerase catalyses transcription on one strand of the DNA which is called the

A. template strand

B. coding strand

C. alpha strand

D. anti strand

Answer: A

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60. Which of the following is required as inducer(s) for the expression of lac operon ?

A. galactose

B. lactose

C. lactose and galactose

D. glucose

Answer: B

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61. Which of the following is not required for any of the techniques of DNA fingerprinting available at present ?

A. Zinc finger analysis

B. Restriction enzymes

C. DNA-DNA hybridisation

D. Polymerase chain reaction

Answer: A

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62. A complex of ribosomes attached to a single strand of RNA is known as

A. polymer

B. polypeptide

C. okazaki fragment

D. polysome

Answer: D

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63. Which one of the following is the starter codon ?

A. UGA

B. UAA

C. UAG

D. AUG

Answer: D

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64. Which of the following RNAS should be most abundant in animals cell ?

A. rRNA

B. tRNA

C. mRNA

D. miRNA

Answer: A

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65. DNA replication in bacteria occurs

A. during S-phase

B. within nucleolus

C. prior to fission

D. just before transcription

Answer: C

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66. Spliceosomes are not found in cells of

A. plants

B. fungi

C. animals

D. bacteria

Answer: D

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67. The association of histone H1 with a nucleosome indicates

A. transcription is occurring

B. DNA replication is occurring

C. the DNA is condensed into chromatin fibre

D. the DNA double helix is exposed

Answer: C

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68. The final proof for DNA as the genetic material came from the experiments of

A. Griffith

B. Hershey and Chase

C. Avery, MacLeod and McCarty

D. Hargobind Khorana

Answer: B

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69. If there are 999 bases in an RNA that codes for a protein with 333 amino acids and the base at position 901 is deleted such that the length of the RNA becomes 998 bases, how many codons will be altered ?

A. 1

B. 11

C. 33

D. 333

Answer: C

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70. All of the following are part of an operon except

A. a promoter

B. an operator

C. an enhancer

D. structural genes

Answer: C

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71. AGGTATCGCAT is a sequence from the coding strand of a gene. What will be the corresponding sequence of the transcribed mRNA ?

A. UCCAUAGCGUA

B. AGGUAUCGCAU

C. ACCUAUGCGAU

D. UGGTUTCGCAT

Answer: B

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72. Select the correct match :

A. Francois Jacob and -Lac operon Jacques Monod

B. Alec Jeffreys - Streptococcus pneumonia

C. Matthew Meselson and - Pisum sativum E Stahl

D. Alfred Hershey and - TMV Martha Chase

Answer: A

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73. The experimental proof for semiconservative replication of DNA was first shown in a

A. Virus

B. Fungus

C. Plant

D. Bacterium

Answer: D

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74. Purines found both in DNA and RNA are :

A. Adenine and thymine

B. Adenine and guanine

C. Guanine and cytosine

D. Cytosine and thymine

Answer: B

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75. Under which of the following conditions will there be no change in the reading frame of following mRNA ?

5'AACAGCGGUGCUAUU3'

A. Insertion of G at 5th position

B. Deletion of G from 5th position

C. Insertion of A at G at 4th and 5th positions respectively

D. Deletion of GGU from 7th, 8th and 9th positions

Answer: D

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76. Expressed Sequence Tages (ESTS) refers to :

A. Genes expressed as RNA

B. Polypeptide expression

C. DNA polymorphism

D. Novel DNA sequences

Answer: A

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77. A gene locus has two alleles A, a. If the frequency of dominant allele A is 0.4 then what will be the frequency of homozygous dominant, heterozygous and homozygous recessive individuals in the population ?

A. 0.36 (AA), 0.48(Aa), 0.16 (aa)

B. 0.16 (AA), 0.24 (Aa), 0.36 (aa)

C. 0.16 (AA), 0.48 (Aa), 0.36 (aa)

D. 0.16 (AA), 0.36 (Aa), 0.48 (aa)

Answer: C

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78. Match the following genes of the Lac operon with their respective products.

(a) i gene -(i) b-galactosidase

(b) z gene -(ii) Permease

(c) a gene - (iii) Repressor

(d) y gene -(iv) Transacetylase

Select the correct option.

A. $\begin{matrix} A & B & C & D \\ (\mathrm{i}) & (\mathrm{ii}) & (\mathrm{iii}) & (\mathrm{iv}) \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ (\mathrm{iii}) & (\mathrm{i}) & (\mathrm{ii}) & (\mathrm{iv}) \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ (\mathrm{iii}) & (\mathrm{i}) & (\mathrm{iv}) & (\mathrm{ii}) \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ (\mathrm{iii}) & (\mathrm{iv}) & (\mathrm{i}) & (\mathrm{ii}) \end{matrix}$

Answer: C

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