BIOLOGY

BOTANY AND ZOOLOGY FOR NEET AND AIIMS

MOLECULAR BASIS OF INHERITANCE

Exercise I The Dna Replication And Transcription

1. Genetic material in most of the organisms

A. DNA

B. RNA

C. Both

D. None

Answer: A

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2. Genetic material in some viruses like retro viruses

A. DNA

B. RNA

C. Both

D. None

Answer: B

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3. The length of DNA in bacteriophage $\phi \times 174$

A. 5386 bases

B. 48502 bp

C. 4.6×10^6 bp

D. 3.3×10^9 bp

Answer: A

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4. Length of haploid content of human DNA is

A. 5386 bp $\times 3.4A^0$

B. 48502 bp $\times 3.4A^0$

C. 4.6×10^6 bp $\times 3.4A^0$

D. $3.3 \times 10^9 bp \times 3.4A^0$

Answer: D

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5. Among the pyrimidines, this is common for both DNA and RNA

A. Uracil

B. Cytosine

C. Thymine

D. Both 1 and 3

Answer: B

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6. In a dinucleotide, number of ester bonds formed between the two nucleotides is

A. 1

B. 2

C. 3

D. 4

Answer: B

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7. Number of ester bonds in a helics of B-DNA

A. 16

B. 20

C. 18

D. 9

Answer: C

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8. These are projected inside from the poly nucleotide backbone

A. Nitrogenous bases

B. Sugars

C. Phosphates

D. All these

Answer: A

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9. Double Helix model for the structure of DNA was proposed by

A. James Watson and Francis Crick

B. Maurice Wilkins and Rosalind Franklin

C. Francis Crick and Maurice Wilkins

D. Rosalind Franklin and James Watson

Answer: A

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10. The number of bp in each turn of B-DNA helix is

A. 1

B. 10

C. 20

D. 5

Answer: B

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11. The central dogma in molecular biology was proposed by

A. Watson

B. Wilkins

C. Crick

D. Franklin

Answer: C

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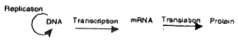
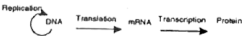
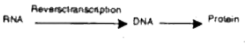
12. The central dogma in molecular biology was proposed by

A. 

B. 

C. 

D. 

Answer: A

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13. Reverse transcription occurs in

A. Some viruses

B. Some prokaryotes

C. All viruses

D. All organisms

Answer: A

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14. DNA is wrapped around the histone octamer to form

A. Nuclein

B. Nucleous

C. Nucleosome

D. Nucleus

Answer: C

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15. Number of base pairs of DNA helix in a typical nucleosome

A. 200

B. 100

C. 500

D. 2000

Answer: A

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16. In chromatin these are seen as beads-on-string

A. Genes

B. Nucleosomes

C. Centromeres

D. Centrioles

Answer: B

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17. Transcriptionally active chromatin is

A. Euchromatin

B. Heterochromatin

C. Both

D. None

Answer: A

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Exercise I The Search For Genetic Material

1. Griffith conducted his transformation experiments on

A. Escherichia coli

B. Streptococcus pyogenes

C. Diplococcus pneumoniae

D. Streptomyces griseus

Answer: C

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2. S. strain of Diplococcus is

A. Smooth, capsulated non virulent form causing death in mice

B. Smooth, non-capsulated virulent form causing no death in mice

C. Smooth, non-capsulated non virulent form causing no death in mice

D. Smooth, capsulated virulent form causing death in mice

Answer: D

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3. From his transformation experiments Griffith concluded that transforming principle might be

A. DNA

B. Polysaccharide capsule

C. A compound required for capsule synthesis

D. Either (2) or (3)

Answer: D

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4. O.T. Avery, Mac Leod and Mc Carty identified this as the genetic material / active factor / trans-formation principle

A. DNA

B. RNA

C. Polysaccharide

D. Proteins

Answer: A

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5. Side by side experiments are conducted, to identify DNA as genetic material, unequivocally by

A. Griffith

B. O.T. Avery, Mac Leod and Mc Carty

C. D. Hershy and M.Chase

D. Wattson and Crick

Answer: C

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6. In their side by side experiments Hershy and Chase incorporated ^{35}S into

A. Bacterial DN

B. Protein capsid of phage

C. Cytoplasm of bacteria

D. Phage DNA

Answer: B

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7. The active component of the bacteriophage that transmits the infective character is

A. The protein

B. Either protein or DNA

C. 355

D. The DNA

Answer: D

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8. These molecules have the ability to direct their duplications

A. DNA and RNA

B. DNA and Proteins

C. RNA and proteins

D. DNA, RNA and proteins

Answer: A

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9. Reactive group of RNA is

A. Phoshate

B. Pentose

C. 2.-OH group

D. Nitrogen base

Answer: C

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10. RNA mutates faster than DNA because

A. RNA is more stable

B. RNA is unstable

C. RNA is noncatalytic

D. RNA is less reactive

Answer: B

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11. Viruses having RNA genome and shorter lifespan

A. Mutate and evolve slowly

B. Mutate slowly but evolve fastly

C. Mutate and evolve faster

D. Mutate fastly and evolve slowly

Answer: C

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12. The first evolved genetic materias was/were

A. RNA

B. DNA

C. DNA

D. All these

Answer: A

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13. The essential life process (es) evolved around RNA is/are

A. Metabolism

B. Translation

C. Splicing

D. All these

Answer: D

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14. DNA resists changes by evolving a process of

A. Replication

B. Translation

C. Transcription

D. Repair

Answer: D

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Exercise I Dna Replication

1. While proposing double helical structure for DNA, Watson and Crick proposed scheme for

A. RNA transposition

B. DNA replication

C. DNA repair

D. Translation

Answer: B

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2. During replication of DNA, the number of template strands is

A. 1

B. 2

C. 4

D. 3

Answer: B

3. When a DNA molecule undergoes replication the number of new strands formed is

A. 1

B. 2

C. 4

D. None

Answer: B

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4. When a DNA molecule with one radioactive strand undergoes repeated replications in a medium without radioactivity for five times

the number of radio labelled strands in the daughter DNA molecules

A. 2

B. 1

C. 16

D. 32

Answer: B

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5. Semiconservative replication of DNA was first shown in

A. Drosophila melanogaster

B. Escherichia coli

C. Diplococcus pneumoniae

D. Neurospora crassa

Answer: B

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6. In their semiconservative experiment Meselson and Stahl used

A. ^{14}C

B. ^{32}P

C. ^{15}N

D. ^{35}S

Answer: C

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7. The DNA that was extracted from the Ist generation of E.coli in the Meselson and Stahl.s experiment is

A. Heavy

B. Hybrid

C. Light

D. Both light and medium

Answer: B

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8. Taylor etal, conducted semicon servation experiments on

A. Vicia faba

B. Vinca rosea

C. E. coli

D. Drosophila

Answer: A

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9. The experiments that proved the DNA in chromosomes also replicate semiconservatively were conducted by

A. Hershey and Chase

B. Taylor etal

C. Avery etal

D. Griffith

Answer: B

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10. In E.coli, complete DNA replication requires

A. 38 hours

B. 20 minutes

C. 19 minutes

D. 3 minutes

Answer: C

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11. For long, DNA molecules, the replication occurs within a small opening of the DNA helix referred to as

A. Origin site

B. Replication fork

C. Molecular scissors

D. Molecular glue

Answer: B

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12. DNA dependent DNA polymerases catalyse polymerization of DNA in

A. Only 3. $\rightarrow$ 5. direction

B. Only 5. $\rightarrow$ 3.direction

C. Both direction

D. Irregular directions

Answer: B

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13. DNA replication is continuous

A. On the template with polarity 3. $\rightarrow$ 5.

B. On the template with polarity 5. $\rightarrow$ 3.

C. On both the templates

D. On none of the templates

Answer: A

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14. Molecular glue or gum is

A. DNasc

B. DNA polymerase

C. DNA ligase

D. DNA dependent DNA polymerase

Answer: C

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15. A failure in cell division after DNA replication results into

A. Haploidy

B. Diploidy

C. Polyploidy

D. Aneuploidy

Answer: C

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16. When cell division fails after S - phase (DNA replication) in a diploid cell, the ploidy is

A. Haploid

B. Diploid

C. Tetraploid

D. Triploid

Answer: C

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Exercise I Transcription

1. The process of copying genetic information from one strand of the DNA into RNA is termed as

A. Transcription

B. Translaton

C. Replication

D. Duplication

Answer: A

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2. In transcription

A. The total DNA of an organism gets duplicated

B. Only a segment of DNA is copied into RNA

C. Only one of the strands of DNA is copied into RNA

D. Both (2) and (3) occur

Answer: D

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3. RNA transcribed from the following segment of DNA is

3. - ATGCATGCATGC - 5. Template strand

5. - TACGTACGTACG - 3. Coding strand

A. 3. - ATGCATGCATGC - 5.

B. 5. - TACGTACGTACG - 3.

C. 3. - AUGCAUGCAUGC - 5.

D. 5 - UACGUACGUACG - 3.

Answer: D

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4. In a transcription unit the terminator is located towards

A. 3. - end of coding strand

B. 5. - end of coding strand

C. 3. - end of template strand

D. Upstream of the structural gene

Answer: A

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5. The DNA sequence that provides binding site for RNA polymerase is

A. Regulater

B. Promoter

C. Terminator

D. Operator

Answer: B

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6. Presence of this in a transcription unit also defines the template and coding strands

A. Regulater

B. Promoter

C. Terminator

D. Operator

Answer: B

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7. This is usually defined as the end site of the process of transcription

A. Regulater

B. Promoter

C. Terminator

D. Operator

Answer: C

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8. Additional sequences of transcription unit

A. Regulator

B. Promotor

C. Terminator

D. Exons

Answer: A

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9. The structural gene in a transcription unit could be said as polycistronic

A. Mostly in prokaryotes

B. Mostly in prokaryotes

C. Both

D. None

Answer: A

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10. Reverse transcription is depicted as

A. DNA $\rightarrow$ RNA $\rightarrow$ Protein

B. RNA $\rightarrow$ DNA $\rightarrow$ Protein

C. RNA $\rightarrow$ DNA $\rightarrow$ Protein

D. RNA $\rightarrow$ Protein $\rightarrow$ RNA

Answer: B

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11. This is the process by which the biological information contained in the base sequence of DNA is made available to the cell

A. Gene supression

B. Gene regulation

C. Gene expression

D. Gene flow

Answer: C

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12. During transcription, the synthesizing mRNA grows in

A. 3. $\rightarrow$ 5. direction on coding strand

B. 3. $\rightarrow$ 5. direction on non coding strand

C. 5. $\rightarrow$ 3. direction on noncoding strand

D. 5. $\rightarrow$ 3. direction on coding strand

Answer: C

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13. The strand of DNA which is complimentary to the template strand is

A. Antisense strand

B. Noncoding strand

C. Sense strand

D. Both 1 & 2

Answer: C

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14. During transcription, when DNA unzips, this enzyme binds to one strand of DNA

A. RNase

B. DNA polymerase

C. DNase

D. RNA polymerase

Answer: D

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15. The synthesis of a polypeptide chain or a protein from mRNA is called

A. Transcription

B. Transformation

C. Tranduction

D. Translation

Answer: D

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16. N-terminus of polypeptide is related to

A. 3.prime of mRNA

B. 3. prime of coding strand

C. 3. prime of template

D. 5. prime of mRNA

Answer: D

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17. This type of RNA provides the template for protein synthesis

A. m RNA

B. t RNA

C. r RNA

D. s RNA

Answer: A

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18. This type of RNA carries the genetic code

A. mRNA

B. t RNA

C. r RNA

D. s RNA

Answer: A

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19. This type of RNA brings the aminoacids and reads the genetic code

A. m RNA

B. t RNA

C. r RNA

D. sn RNA

Answer: B

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20. his RNA plays structural and catalytic role during translation

A. m RNA

B. t RNA

C. r RNA

D. s RNA

Answer: C

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21. Transcription of RNA is initiated when DNA dependent RNA polymerase binds to

A. Operator

B. Regulator

C. Promoter

D. Terminator

Answer: C

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22. RNA polymerase on its own is capable of catalyzing the process of

A. Elongation

B. Initiation

C. Termination

D. All these

Answer: A

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23. Initiation of transcription is by

A. Only σ (sigma) factor

B. Only RNA polymerase

C. Only ρ (rho) factor

D. RNA polymerase when associated with σ factor

Answer: D

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24. Termination of transcription is by

A. Only ρ factor

B. Only σ factor

C. RNA polymerase when associated with ρ factor

D. RNA polymerase when associated with σ factor

Answer: C

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25. Kinds of RNA polymerases in the nucleus of eukaryotes

A. One

B. Two

C. Three

D. Four

Answer: C

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26. In eukaryotes RNA polymerase I transcribes

A. r RNAs (28 S, 18 S and 5.8 S)

B. t RNA, 5S rRNA and sn RNA s

C. Heteroegenous nuclear RNA (hn RNA)

D. All these

Answer: A

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27. In eukaryotes RNA polymerase III is responsible for the transcription of

A. r RNAs (28 S, 18 S and 5.8 S)

B. t RNA, 5S rRNA and sn RNA s

C. Heterogenous nuclear RNA (hn RNA)

D. All these

Answer: B

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28. This RNA undergoes additional processing called as capping and tailing

A. sn RNA

B. 5 sr RNA

C. m RNA

D. hn RNA

Answer: D

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29. In the processing of hn RNA tailing involves the attachment of

A. Adenylate residues at the 3.- end of hnRNA in a template dependent manner

B. Adenylate residues at the 5. - end of hn RNA in a template independent manner

C. Adenylate residues at the 3.- end of hn RNA in a template independent manner

D. Guanosine residues at the 3.- end of hn RNA in a template independent manner

Answer: C

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30. Most of the eukaryotic genes have stretches of bases that code for amino acids, which are called

A. Exons

B. Introns

C. Axons

D. Cistrons

Answer: A

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31. The stretches of eukaryotic genes which do not code for amino acids are called

A. Axons

B. Cistrons

C. Introns

D. Exons

Answer: C

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32. Eukaryotic genes are called

A. Split genes

B. Discontinuous genes

C. Continuous genes

D. Both 1 and 2

Answer: D

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33. The process of removal intron transcripts and joining of exon transcripts in the hnRNA is called

A. RNA polymerisation

B. RNA splitting

C. RNA splicing

D. RNA translation

Answer: C

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34. In eukaryotes, hn RNA transforms into mRNA by

A. 5. capping

B. Intron transcripts removal and exon transcripts joining

C. Polyadenylation at 3. end

D. All these steps

Answer: D

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35. In eukaryotes, mostly mRNA is

A. Bicistronic

B. Tricistronic

C. Monocistronic

D. Polycistronic

Answer: C

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36. In eukaryotes, mostly a single mRNA is synthesized from

A. Many structural genes

B. A single structural gene

C. Two structural genes

D. A cluster of structural genes

Answer: B

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Exercise I Genetic Code

1. The following codon do not code for any amino acid are

A. UAA

B. UGA

C. UAG

D. All

Answer: D

2. Anticodon occurs over

A. tRNA

B. DNA

C. mRNA

D. rRNA

Answer: A

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3. UAG is called

A. Ochre

B. Amber

C. Opal

D. Initiator

Answer: B

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4. Find out the odd one

A. UAG

B. AUG

C. UGA

D. UAA

Answer: B

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5. The initator codon is

A. AUG

B. UAG

C. UAA

D. UGA

Answer: A

6. Genetic code is same in all living organisms hence it is called

A. Colinear

B. Universal

C. Unambiguous

D. Commaless

Answer: B

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7. UAG (amber), UAA (ochre) and UGA (opal) codes serve as

A. Initiator

B. Terminator

C. Degenerate

D. Colinear

Answer: B

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8. The multiple codons specifying one amino acid are grouped together, hence codons are

A. Degenerate

B. Ordered

C. Unambiguous

D. Punctuationless

Answer: B

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9. AUG codes for

A. Valine

B. Glutamic acid

C. Phenyl alanine

D. Methionine

Answer: D

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10. Initiator codon in eukaryotes

A. GUG

B. AUG

C. UAG

D. UGA

Answer: B

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11. Initiator codon only in the prokaryotes

A. AUG

B. GUG

C. UGA

D. UAA

Answer: B

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12. Opal

A. UAA

B. UAG

C. GUG

D. UGA

Answer: D

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13. RNA codon for DNA codon ATG will be

A. AUG

B. UTG

C. UAC

D. TAC

Answer: C

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14. The arrangement of aminoacids in a polypeptide is determined by

A. DNA

B. r-RNA

C. S-RNA

D. t-RNA

Answer: A

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15. Which of the following is not applicable to genetic code?

A. Degenerate

B. Ambiguous

C. Universal

D. Ordered

Answer: B

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16. Codon is a triplet of nucleotides that code for

A. One amino acid

B. One nucleic acid

C. One fatty acid

D. One glucose molecule

Answer: A

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17. Initiator codons

A. AUA and UAG

B. UGA and AUG

C. UAA and AUG

D. AUG and GUG

Answer: D

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18. In eukaryotes, translation of mRNA into a polypeptide is initiated by

A. UGA

B. UAA

C. UAG

D. AUG

Answer: D

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19. Which of the following pair have a double function?

A. AUG, GUG

B. UAA, UGA

C. UGA, GUG

D. UAA, AUG

Answer: A

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20. Which one of the following codons codes for the same information as UGC?

A. UGU

B. UGA

C. UAG

D. UGG

Answer: A

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21. Codons that specify same amino acids are called

A. synonyms

B. autonyms

C. synergestic

D. antagonistic

Answer: A

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22. RNA and DNA were artificially synthesised "in vitro" by

A. Ochoa and Nirenberg

B. Ochoa and Kornberg

C. Kornberg and Nirenberg

D. Nirenberg and Khorana

Answer: D

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23. Nirenberg synthesised a mRNA containing 34 polyadenine (A-A-A-A-A-A...) and found a polypeptide formed of 11 polylysine. It proved that the genetic code for lysine is

A. lone-adenine

B. AA doublet

C. AAA triplet

D. many adenines

Answer: C

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Exercise I Translation Gene Expression And Regulation

1. Translation in eukaryotes occurs

A. In the nucleus

B. On the ribosomes

C. In the nucleolus

D. In the Golgi complex

Answer: B

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2. The gene which synthesises repressor is

A. Operator gene

B. Regulator gene

C. Promoter gene

D. Structural gene

Answer: B

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3. Genetic unit present in the up stream of structural genes

A. Regulator

B. Operator

C. Repressor

D. Inducer

Answer: B

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4. Operon concept was proposed by

A. Jacob-Monod

B. Griffith-Avery

C. Watson-Crick

D. Beadle-Ephrussi

Answer: A

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5. The second step of the protein synthesis is referred to as

A. Transcription

B. Translation

C. Transversion

D. Transformation

Answer: B

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6. The complementary copy of RNA synthesized from DNA template is

A. t-RNA

B. r-RNA

C. m-RNA

D. TMV

Answer: C

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7. m RNA is formed from one strand of DNA. This strand is called

A. Antisense

B. Sense

C. Cistron

D. Recon

Answer: A

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8. m RNA which translates the permease protein is transcribed by which structural gene

A. Z

B. A

C. Y

D. C

Answer: C

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9. Which is target for the attachment of repressor protein produced by the regulator gene?

A. Promoter

B. Inducer

C. Operator

D. Structural gene

Answer: C

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10. In eukaryote gene, the stretches of bases that do not code for amino acids are called

A. Exons

B. Introns

C. Cistrons

D. Mutons

Answer: B

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11. In bacterium, permease is located in

A. The cell wall

B. The cell membrane

C. The ribosomes

D. The cytoplasm

Answer: B

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12. In bacteriun E.coli function of this is clearly not known

A. Transacctylase

B. Permease

C. A. gene

D. Repressor protein

Answer: A

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13. Transcription by structural genes is catalysed by enzyme

A. RNase

B. RNA polymerase

C. DNA polymerase

D. Nuclease

Answer: B

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14. Inducer of Lac operon is

A. Repressor protein

B. Lactose

C. RNA polymerase

D. Permease

Answer: B

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15. Haemoglobin is a

A. Monomer

B. Dimer

C. Trimer

D. Tetramer

Answer: D

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16. The number of α polypeptides present in the haemoglobin

A. 4

B. 1

C. 2

D. 3

Answer: C

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17. 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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18. In negative operon

A. Inducer binds to repressor

B. Inducer binds to corepressor

C. Corepressor binds to aporepressor

D. A repressor is not formed

Answer: C

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19. The genes that are responsible for directing the sequences of amino acids for a given protein are

A. Initiator

B. Operator

C. Regulator

D. Repressor

Answer: A

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20. Actual site of transcription intiation in Lac operon is

A. Promoter region

B. Operator

C. Inhibitor

D. Structural genes

Answer: A

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21. The genes which regulate the expression of other genes are

A. Constitutive genes

B. Regulated genes

C. Regulator genes

D. Operator gene

Answer: C

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22. An operon consists of

A. Structural genes

B. Operator gene

C. Promoter gene

D. All these

Answer: D

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23. Cistrons, that codes for a polypeptide, in an operon are called

A. Regulator genes

B. Structural genes

C. Premoter genes

D. Operator genes

Answer: B

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24. The region in an operon that controls the transcriptional activity is

A. .Regulator. region

B. Structural genes. region

C. Operator-promoter. region

D. .Inducer. region

Answer: C

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25. In the operon the gene that lies immediately upstream to the structural genes

A. Promoter gene

B. Operator gene

C. Regulator gene

D. Repressor gene

Answer: B

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26. When operator of operon is off

A. The structural genes cannot function

B. The inducer cannot function

C. The repressor protein cannot function

D. The repressor gene cannot function

Answer: A

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27. Operator of operon is the target for the attachment of

A. Inducer substance

B. Repressor protein

C. RNA polymerase

D. Repressor gene

Answer: B

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28. In Lac operon this lies upstream to the operator region

A. Inducer

B. Structural gene

C. Promoter region

D. Regulator gene

Answer: C

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29. In Lac operon RNA polymerase first binds to

A. The promoter region

B. The operator region

C. The repressor gene

D. The structural genes

Answer: A

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30. In the absence of this, the repressor protein binds to the operator and blocks the path of RNA polymerase and prevents the expression of structural genes

A. Promoter

B. Regulator

C. Inducer

D. Permease

Answer: C

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31. The inducer of Lac operon binds to

A. Repressor gene

B. Repressor protein

C. Operator gene

D. Promoter gene

Answer: B

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32. Molecules which are responsible for the expression of any operon by binding to the repressor are called

A. Lactose

B. Inducers

C. Promoter regions

D. Operator regions

Answer: B

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33. In eukaryotes, mRNA containing genetic code is formed by

A. Transcription from split genes

B. Transcription from hn RNA

C. RNA splicing from hn RNA

D. RNA splicing from DNA

Answer: C

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34. Spliceosomes remove

A. Introns from DNA

B. Intron transcripts from mRNA

C. Exon transcripts from hn RNA

D. Intro ntranscripts from hn RNA

Answer: D

 Watch Video Solution

35. Match List-I with List-II and select the correct option

List - I	List - II
I) ϕ x174	A) 3.3×10^9 bp
II) Lambda	B) 5386
III) *E. coli*	C) 48502 bp
IV) Human genome	D) 4.6×10^6 bp

A. $\begin{matrix} I & II & III & IV \\ B & C & D & A \end{matrix}$

B. $(I, II, III, IV), (B, C, A, D)$:}

C. $\begin{matrix} I & II & III & IV \\ C & B & D & A \end{matrix}$

D. $\begin{matrix} I & II & III & IV \\ B & A & D & C \end{matrix}$

Answer: A

Watch Video Solution

36. Match List-I with List-II and select the correct option.

List - I	List - II
I) Friedrich Meischer	A) Double helical model of DNA
II) Wilkins & Franklin	B) X-ray difraction data of DNA
III) Watson & Crick	C) $A + T \neq C + G$
IV) Meselson & Stahl	D) Nuclein
V) Chargaff	E) Proved semi-conservative replication of DNA

	I	II	III	IV	V
1)	D	A	B	E	C
2)	D	B	A	C	E
3)	C	B	A	E	D
4)	D	B	A	E	C

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37. Match List-I with List-II and select the correct option

List - I	List - II
I) RNA polymerase III	A) hn RNA
II) DNA polymerase	B) r RNAs
III) RNA polymerase II	C) t RNA
IV) RNA polymerase I	D) DNA

A. $\begin{matrix} I & II & III & IV \\ C & D & B & A \end{matrix}$

B. $\begin{matrix} I & II & III & IV \\ C & D & A & B \end{matrix}$

C. $\begin{matrix} I & II & III & IV \\ D & C & A & B \end{matrix}$

D. $\begin{matrix} I & II & III & IV \\ A & D & C & B \end{matrix}$

Answer: B

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38. Match the following and select the correct option

List - I	List - II
A) AUG	I) Amber
B) UAG	II) Initiator codon in prokaryotes only
C) UGA	III) Ochre
D) GUG	IV) Methionine
E) UAA	V) Opal

	A	B	C	D	E
1)	IV	I	V	II	III
2)	II	I	V	IV	III
3)	IV	V	I	II	III
4)	IV	III	V	II	I

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39. Match the following regarding Lac operon and select the correct options.

List - I	List - II
A) Inducer	I) Code for polyptides
B) Operator	II) Site of transcription
C) Repressor	III) Site of transcription initiation
D) Structural gene	IV) Transcribed by regulator gene
	V) Target for attachment of repressor
	VI) Binds to repressor

A. $\begin{matrix} A & B & C & D \\ VI & V & IV & I \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ V & VI & III & II \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ VI & IV & I & II \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ II & V & IV & III \end{matrix}$

Answer: A

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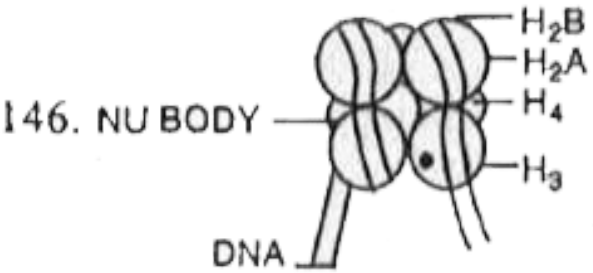
Exercise I Diagram Based Questions



1.

The figure is

A. Nucleus

B. Nucleolus

C. Nucleosome

D. Nuclein

Answer: C

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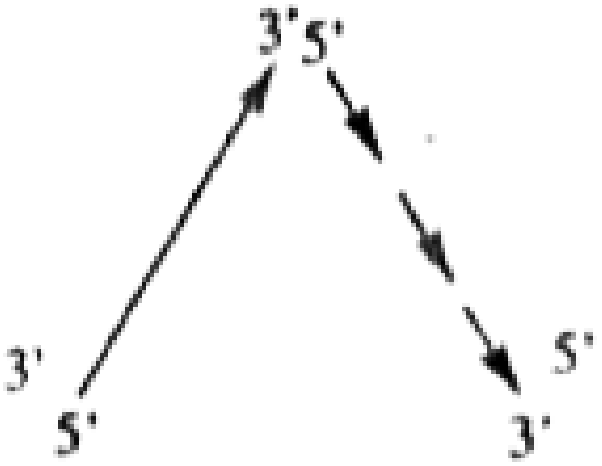

2. The diagram depicts

The diagram depicts

A. Transcription

B. Replication

C. Reverse transcription

D. Translation

Answer: B

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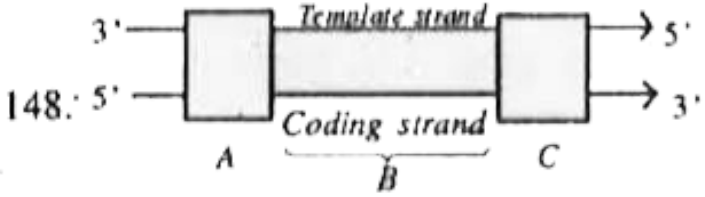
148.



3.

.A. in the above trancription unit is

A. Promoter

B. Terminator

C. structural gene

D. Regulator

Answer: A

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4. C. in the above transcription unit is

A. Promoter

B. Terminator

C. structural gene

D. Regulator

Answer: C

Watch Video Solution

5. C. in the above transcription unit is

A. Promoter

B. Terminator

C. structural gene

D. Regulator

Answer: B

Watch Video Solution

6. C. in the above transcription unit is

A. Promoter

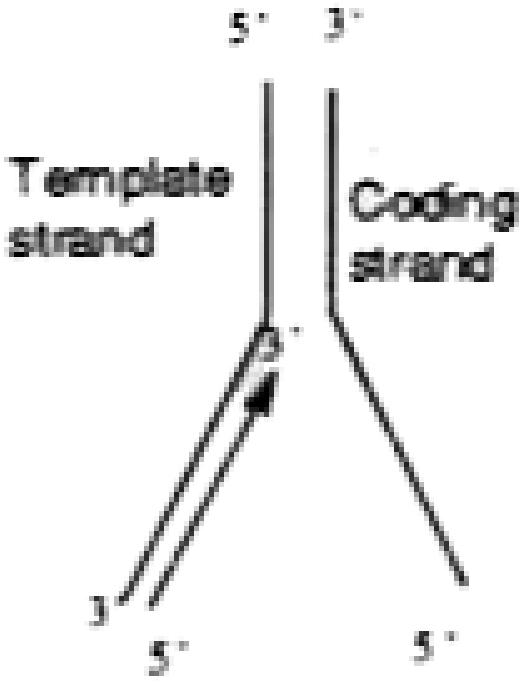
B. Terminator

C. structural gene

D. Regulator

Answer: A

Watch Video Solution

7. 

This diagram indicates

A. DNA replication

B. Reverse transcription

C. Transcription

D. Translation

Answer: C

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8. Which one represents the correct manner of DNA replication?

A. 

B. 

C. 

D. 

Answer: D

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Exercise I Human Genome Project

1. Largest human gene for .dystropin. has

A. 1.4 million bases

B. 30,000 bases

C. 2.4 million bases

D. 2968 bases

Answer: C

Watch Video Solution

2. Which of the following do not code for proteins?

A. Mini-satellite

B. Micro-satellite

C. VNTR

D. All the above

Answer: D

Watch Video Solution

3. DNA finger printing technique is based on

A. restriction endonuclease

B. polymorphism in repetitive DNA

C. Gel electrophoresis

D. Southern blotting technique

Answer: B

Watch Video Solution

4. The following are used as genetic markers

A. RFLPS

B. Repeated sequences

C. STRs

D. All the above

Answer: D

Watch Video Solution

5. In Human genonie project, the following is the most time consuming project

A. Sequencing the human genome

B. Physical mapping

C. Genetic mapping

D. Linkage mapping

Answer: A

 Watch Video Solution

6. The number of nucleotide base pairs in the haploid set of human chromosomes

A. 1.5 billions

B. 316.47 billions

C. 3 billions

D. 240 million

Answer: C

Watch Video Solution

7. In view of importance of genetic research, the genome of this plant is analysed

A. Lathyrus oderatus

B. Pisum sativum

C. Arabedopsis

D. Mimosa

Answer: C

Watch Video Solution

8. Genes essential for coding proteins in human genome are nearly

A. 2%

B. 28%

C. 30%

D. 1.2%

Answer: A

Watch Video Solution

9. Expressed sequence tags. are useful in identifying

A. whole set of genome

B. coding and non-coding sequences

C. genes that are expressed as RNA

D. polymorphism in VNTR

Answer: C

Watch Video Solution

10. Nucleotide base pairs in an average gene

A. 1.5 millions

B. 3000

C. 2416

D. 260

Answer: B

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11. The chroinosome with large number of genes known

A. 3^{rd}

B. 2^{nd}

C. 1^{st}

D. X-chrosome

Answer: C

Watch Video Solution

12. Number of SNPs (snips) in the non coding DNA of human genome

A. 2.2 million

B. 1.4 million

C. 1 billion

D. 3 billion

Answer: B

 Watch Video Solution

13. VNTR belongs to a class of satellite DNA which are referred to as

A. centromere

B. mini satellite

C. genes coding for proteins

D. SNP

Answer: B

Watch Video Solution

14. Who identified that the myoglobin gene contains many segments that vary in size and composition from individual to individual and developed the technique of DNA finger printing ?

A. Morgan

B. Jeffreys

C. Benzer

D. Henking

Answer: B

Watch Video Solution

15. Human chromosome 1 has many genes, nearly

A. 2.4 million genes

B. 2968 genes

C. 231 genes

D. 30,000 genes

Answer: B

Watch Video Solution

16. The complete sequencing of human genome was proposed in this year

A. 1985

B. 1995

C. 1986

D. 2003

Answer: C

Watch Video Solution

17. The human genome project was started in

A. October, 1990.

B. September, 1986

C. April, 2003

D. August, 1991

Answer: A

 Watch Video Solution

18. The human genome project was completed in

A. 2002

B. 1990

C. 2003

D. 1986

Answer: C

Watch Video Solution

19. Genes that are expressed as RNA are called

A. ESTs

B. Micro-satellites

C. VNTRs

D. SNPs

Answer: A

Watch Video Solution

20. In human genome, 1.4 million locations in DNA are the single base differences, these are called

A. Short tandem repeats

B. Varibale number tandem repeats

C. Single nucleotide polymorphs

D. All the three

Answer: C

Watch Video Solution

21. Human Genome project was the thought of

A. Jean Dausset

B. Watson

C. Crick

D. None of these

Answer: A

Watch Video Solution

22. The genome map was produced under human genome project in

A. 1992

B. 1994

C. 1996

D. 2000

Answer: B

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23. Which of the following is not a goal of HGP ?

A. addressing on ELSI

B. storage of information in data bases

C. physical mapping of human genome

D. identification of non-protein coding genes

Answer: D

Watch Video Solution

Exercise I Dna Finger Printing

1. DNA fingerprinting technique was discovered by

A. Wilmut

B. Jefferys

C. Eithoven

D. Kary Mullis

Answer: B

 Watch Video Solution

2. The nucleotides represented in the DNA 5^1 ___ CA CA CA CA CA _____ 3^1 are called

A. Repetitive sequences

B. cDNA

C. r DNA

D. Retro DNA

Answer: A

Watch Video Solution

3. A DNA fragment is

A. Positively charged

B. A buffer

C. Negatively charged

D. Neutral

Answer: C

Watch Video Solution

4. The percentage of base sequences that are nearly identical among all humans is

A. $90\ \%$

B. $80\ \%$

C. $99.9\ \%$

D. $89.9\ \%$

Answer: C

Watch Video Solution

5. In human genome, this constitutes very large amount

A. Protein coding DNA

B. Non protein coding DNA

C. Junk DNA

D. Structural DNA

Answer: C

Watch Video Solution

6. In human genome, random variations occur as often as one in every 200 nucleotides, in this DNA

A. Unexpressed DNA

B. Expressed DNA

C. Structural DNA

D. None of these

Answer: A

Watch Video Solution

7. DNA finger printing involves

A. Identification of differences in all regions of DNA sequence

B. Identification of differences in some specific regions in DNA sequence

C. Identification of similarities in any region of DNA sequence

D. None of these

Answer: B

Watch Video Solution

8. Pickout the correct statement related to the DNA present in mini-satellites and microsatellites

A. These sequences code for some specific proteins

B. These sequences show very low degree of polymorphism

C. These sequences normally do not code for any protein

D. These sequences never undergo any mutations

Answer: C

Watch Video Solution

9. DNA sequences present in mini-satellites and micro-satellites show high degree of polymorphism due to

A. Natural selection

B. Sexual recombinations

C. Mutations

D. All the three

Answer: C

10. The heritable mutations observed in a population at high frequency is referred to as

A. DNA polymorphism

B. Genetic recombinations

C. RNA polymorphism

D. None of these

Answer: A

 Watch Video Solution

11. Alec J.Jeffreys discovered the fundamental technique involved in DNA finger printing, while he was studying the gene for

A. dystrophin

B. myoglobin

C. haemoglobin

D. tubulin

Answer: B

Watch Video Solution

12. In gel electrophoresis, the smallest DNA pieces travel

A. longer distances

B. shorter distances

C. moderate distances

D. none of these

Answer: A

Watch Video Solution

13. Pick out the correct statement from the following in relation to gel electrophoresis

A. The smallest DNA pieces travel the shorter distances

B. The larger DNA pieces are close to the top of the gel

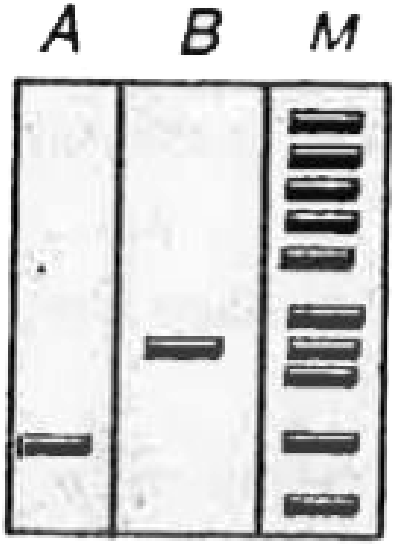
C. The larger DNA pieces travel the longer distances

D. The shorter DNA pieces are close to the top of the gel

Answer: B

 Watch Video Solution

14. Observe the following diagram and identify the correct option



A. A has more repeats than B

B. The number of repeats are same in both A&B

C. A is close to the top of the gel

D. B has more repeats than A

Answer: D

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15. During DNA finger printing, the double stranded DNA is split into single stranded DNA by using

A. agarose gel

B. radioactive DNA probe

C. acidic chemicals

D. alkaline chemical

Answer: D

Watch Video Solution

16. The process of transfer of DNA pieces on to the surface of the nylone membrane is called

A. blotting

B. gel electrophoresis

C. autoradiography

D. isolation of DNA from the sample

Answer: A

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17. DNA finger printing is useful in

A. Taxonomical applications

B. Pedigree analysis

C. Anthropological studies

D. All the three

Answer: D

 Watch Video Solution

18. The stable inheritance of a gene through generations is known as

A. DNA typing

B. Forensic analysis

C. Pedigree analysis

D. Anthropological studies

Answer: C

Watch Video Solution

19. This is used to establish, paternity or maternity with higher degree of certainty

A. Blood grouping

B. Serological tests

C. DNA finger printing

D. Pedigree analysis

Answer: C

Watch Video Solution

20. The property of a genetic marker

A. Polymorphism

B. Monomorphism

C. Always with a known function

D. Always a repertitive sequence

Answer: A

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21. Duplicated genes are

A. Encode closely related proteins

B. Are Identical proteins

C. Are Noncoding genes

D. Are Extragenic regions

Answer: A

Watch Video Solution

22. DNA finger print profile will be exactly same of :

A. Siblings

B. Offsprings

C. Identical twins

D. Fraternal twins

Answer: C

Watch Video Solution

Exercise Ii

1. Number of nucleosomes in a typical mammalian cell

A. 3.3×10^7

B. 1.65×10^9

C. 3.3×10^9

D. 1.65×10^9

Answer: A

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2. Segments of lagging strand formed during DNA synthesis are

A. Polymerase fragment

B. RNA fragment

C. Okazaki fragments

D. Epimerase activity

Answer: C

Watch Video Solution

3. Who established that RNA can be genetic material?

A. Griffith

B. Conrat

C. Lederberg

D. Nirenberg and Mathaei

Answer: B

4. Nucleotide arrangement in DNA can be seen by

A. X-ray crystallography

B. Electron microscope

C. Ultracentrifuge

D. Light microscope

Answer: A

Watch Video Solution

5. Nuclear DNA sends information for protein synthesis through

A. tRNA

B. mRNA

C. rRNA

D. All the above

Answer: B

6. DNA synthesis can be measured by estimating incorporation of radio-labelled

A. Uracil

B. Ribose sugar

C. Thymidine

D. Adenine

Answer: C

 Watch Video Solution

7. Enzyme required for removing RNA primer during DNA replication is

A. Primase

B. Ligase

C. DNA polymerase I

D. DNA polymerase III

Answer: C

Watch Video Solution

8. Which one is involved in DNA repair?

A. Ligase

B. Primase

C. DNA polymerase III

D. DNA polymerase I

Answer: D

 Watch Video Solution

9. Portion of gene which is transcribed but not translated is

A. Exon

B. Intron

C. Cistron

D. Codon

Answer: B

Watch Video Solution

10. In eukaryotes, conversion of hn RNA into mRNA is directed by

A. Nucleosomes

B. Spliceosomes

C. Mesosomes

D. Karyosomes

Answer: B

Watch Video Solution

11. Spliceosomes are associated with

A. DNA

B. hn RNA

C. mRNA

D. tRNA

Answer: B

Watch Video Solution

12. Antisense technology is use of

A. Complementary RNA for stopping expression of a gene

B. RNA polymerase for synthesis of DNA

C. Cell displaying foreign synthesis of DNA

D. Tissue culture for obtaining somaclonal variations

Answer: A

 Watch Video Solution

13. Translation is synthesis of

A. DNA over DNA

B. RNA over DNA

C. DNA over RNA

D. Protein over RNA

Answer: D

Watch Video Solution

14. To initiate translation, the mRNA first binds to

A. Smaller ribosomal sub unit

B. Larger ribosomal sub unit

C. Whole ribosome

D. No such specificity exists

Answer: A

 Watch Video Solution

15. Consider the following nucleic acids

a) DNA b)r-RNA c) t-RNA d) m-RNA

Choose the correct sequence of their arrangement according to their participation in protein synthesis

A. a, b, c, d

B. b, c, d, a

C. c, b, a, d.

D. a, d, b, c

Answer: D

 Watch Video Solution

16. The ribosomal binding loop of tRNA is

A. DHU loop

B. anticodon loop

C. T Ψ , C loop

D. III loop

Answer: C

Watch Video Solution

17. Which one of the following is most specific region on tRNA?

A. Amino acid attachment site

B. Amino acid recognition site

C. Codon recognition site

D. Ribosome recognition site

Answer: C

Watch Video Solution

18. During the process of translation, in a polyribosome complex, the ribosome present towards 5.end of mRNA has

A. longest polypeptide chain

B. smallest polypeptide chain

C. all ribosomes have polypeptide chains of equal size

D. a chain without .met .

Answer: B

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19. Which of the following statements are true of all t-RNAS ?

a) The 5.-end has guanine residue

b) They are single chains

c) The anticodon loop is identical

d) The .3-end base sequence is CCA.

Select the correct answer using the codes given below :

A. a, b and c

B. a, c and d

C. a, b and d

D. b, c and d

Answer: C

Watch Video Solution

20. Consider the following processes

a) Synthesis of t-RNA

b) Attachment of an amino acid to ATP

c) Acetylation of amino acid attached to t-RNA

d) Charging of t-RNA Which of the above is/are the functions of aminoacyl t-RNA synthetase ?

A. a,b and c

B. a and c

C. b and d

D. d only

Answer: C

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21. Which of the following is the smallest RNA ?

A. mRNA

B. tRNA

C. Chromosomal RNA

D. Ribosomal RNA

Answer: B

 Watch Video Solution

22. The first translated codon in any mRNA binds to an anticodon is

A. 3. UAC 5.

B. 5. UAC 3.

C. 3. UAU 5.

D. 5. CAU 3.

Answer: A

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23. Which of the following is not true for an anticodon?

A. It consists of three nucleotides

B. It is the basic unit of the genetic code

C. It extends from one end of a tRNA molecule

D. t may pair with more than one codon, especially if it has the base inosine in its third position

Answer: B

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24. During protein synthesis, amino acids recognise and get attached to tRNA with the help of

A. ribosomes, sigma and rho factors

B. mRNA

C. aminoacyl tRNA synthetase

D. tRNA

Answer: C

Watch Video Solution

25. The ribozyme acts as a catalyst for the formation of

A. ester bond

B. hydrogen bond

C. peptide bond

D. phosphodiester bond

Answer: C

Watch Video Solution

26. tRNA recognises amino acyl RNA synthetase by

A. T Ψ C loop

B. DHU loop

C. Anticodon

D. AA site

Answer: B

Watch Video Solution

27. In DNA model of Watson & Crick, the major grooves are site of

A. binding of histone proteins

B. binding of acidic proteins

C. binding of RNA molecules

D. binding of glycoproteins

Answer: B

 Watch Video Solution

28. DNA absorb λ_{max}

A. 600 Å (260 nm)

B. 7600 Å (760 nm)

C. 3900 Å (390 nm)

D. 3000 Å (300 nm)

Answer: A

Watch Video Solution

29. In DNA and RNA, pentose sugar has furanose ring. It is

A. aldose type

B. ketose type

C. pyranose

D. nonreducing type

Answer: A

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30. Eukaryotic mRNAs are associated with proteins to form ribonucleoprotein complexes. Some of these may remain in cytoplasm for a long time before being genetically expressed. Such complexes are called

A. polysomes

B. ribonucleoprotein fibres

C. pro-oncogenes

D. informosomes

Answer: D

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31. DNA strands are termed antiparallel because of

A. H-bonds

B. phospho-diester bonds

C. disulphide (S-S bnds)

D. none of the above

Answer: B


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32. The base sequence for a nucleic acid segment is given as GAG AGG GGA CCA. From this, it can be concluded that it is a segment of a

A. DNA strand

B. mRNA strand

C. tRNA strand

D. Data insufficient

Answer: D

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33. Which is the correct sequence based on increasing molecular weight?

A. RNA-DNA-rRNA

B. RNA-rRNA-DNA

C. rRNA-DNA-RNA

D. DNAS-tRNA-rRNA

Answer: B

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34. A piece of nucleic acid used to find the sequence of bases in a gene, by forming a hybrid with it, is called

A. retrogene

B. vector

C. carrier

D. probe

Answer: D

Watch Video Solution

35. In .Z. DNA, pitch of each turn of helix is

A. 34 Å

B. 340 nm

C. 250 nm

D. 45 Å

Answer: D

Watch Video Solution

36. Diameter and pitch per turn of helix of .A. model of DNA is

A. 26 Å & 25 Å

B. 20 Å & 34 Å

C. 18 Å & 46 Å

D. 19 Å & 20 Å

Answer: A

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37. The double helical molecular model of DNA was given by Watson and Crick. But .DNA is double stranded. was suggested by

A. Hershey and Chase

B. Wilkins and Franklin

C. Griffith

D. Avery et at

Answer: B

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38. Proteins that help to open up DNA helix in front of the replication fork in prokaryotes are

A. topoisomerases

B. unwindases (helicases)

C. polymerase I

D. exonucleases and endonuclease

Answer: B

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39. Eukaryotes differ from prokaryotes in the mechanism of DNA replication due to

A. number of origins of replication

B. semi discontinuous rather than semi continuous replication

C. use of DNA primer rather than RNA primer

D. unidirectinal rather than bidirectional replication

Answer: A

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40. Which of the following genetic units moves from one chromosome to another or from one replicon to another and causes genetic changes?

A. Muton

B. Replicon

C. Transposon

D. Cistron

Answer: C

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41. If 50 heavy DNA $\left(N^{15}\right)$ molecules are replicated 2 times in N^{14} medium

A. 100 half heavy and half light and 100 light DNA molecules

B. 100 heavy and 100 light DNA molecules

C. 50 heavy and 150 light DNA molecules

D. none of the above

Answer: A

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42. Taylor experiment on Vicia faba (faba bean) root tips using autoradiography demonstrates that

A. DNA replication is continuous

B. DNA replicates in discontinuous manner

C. Chromosomes show semiconservative replication of DNA

D. DNA replicates in conservative manner

Answer: C

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43. Which one of the following ratios is variable but constant for a species?

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

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

C. $\frac{[A+U]}{[G+C]}$

D. none of these

Answer: A

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44. All the body cells are of same origin and therefore, have same genes, yet they differ in

structure and function because they synthesize different

A. histones

B. ribosomes

C. mRNA molecule

D. tRNA molecules

Answer: C

 Watch Video Solution

45. If a wrong base added, it is removed and then proper base is usually added during DNA replication by

A. DNA polymerase I

B. Ligase

C. DNA polymerase II

D. RNA primer

Answer: A

Watch Video Solution

46. RNA polymerase, discovered by Ochoa (1953) is a holoenzyme and has how many poly-peptide chains ?

A. 5

B. 2

C. 1

D. 4

Answer: A

 Watch Video Solution

47. The number of start codons and stop codons in a genetic code are

A. 2 + 3 = 5

B. 1 + 3 = 4

C. 1 + 1 = 2

D. 3

Answer: A

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48. If a triplet on template DNA is AAA, what will be the anticodon on tRNA

A. UUU

B. AAA

C. TTT

D. AUG

Answer: B

 Watch Video Solution

49. Who suggested that diseases are caused by inborn errors of metabolism?

A. Beadle & Tatum

B. Rosa Franklin

C. Hershey & Chase

D. Archibald Garrod

Answer: D

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50. Auxotroph is

A. organism capable of growing on minimal medium

B. capable of manufacturing all complex food materials

C. primitive autotrophic organisms

D. nutritional mutant

Answer: D

Watch Video Solution

51. Which one of the following is not uniform in all DNA molecules?

A. The arrangement of sugar-phosphate groups

B. The pattern of the helix structure

C. The pairing of adenine with thymine and cytosine with guanine

D. The sequence of nitrogenous bases on a strand of DNA

Answer: D

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52. In many cells ribosomes occur in chains along messenger RNA. What is the advantage of this arrangement as compared to a situation in which ribosomes occur singly?

A. A greater variety of polypeptides can be produced

B. Polypeptides can be produced more rapidly

C. Fewer RNA molecules are used in protein synthesis

D. The probability of gene mutation occurring is less

Answer: B

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53. Which of the following statements is wrong?

A. Basic composition of DNA varies from one species to another

B. The DNA extracted from closely related species have similar base composition

C. DNA specimens isolated from different animals of the same species have the similar base composition

D. The base composition of DNA in a given species does not change with age of nutritional state

Answer: A

 Watch Video Solution

54. cValue (constant value) of DNA refers to

A. total amount of DNA per somatic cell

B. total amount of DNA/base pairs per genome

C. amount of DNA in autosomes

D. amount of DNA which is heritable and present in autosomes

Answer: B

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55. In tryptophan operon, the tryptophan acts as

A. corepressor

B. promoter

C. apo-repressor

D. operator

Answer: A

 Watch Video Solution

56. Aporepressor is inactive repressor in Tryptophan repressible operon system. It is

A. always protein

B. may be protein or a nucleic acid

C. a metabolite

D. a substrate

Answer: A

Watch Video Solution

57. Pribnow box is involved in

A. Protein synthesis

B. DNA synthesis

C. RNA synthesis

D. DNA replication

Answer: C

 Watch Video Solution

58. Transition mutation is due to replacement of

A. GC by TA

B. AT by CG

C. CG by GC

D. AT by GC

Answer: D

Watch Video Solution

59. Which step of translation does not consume high energy PO_4 bond ?

A. Translocation

B. tRNA activation

C. Amino acid activation

D. Peptydyl transferase reaction

Answer: D

Watch Video Solution

60. Repetitive DNA occurs in

A. satellite DNA

B. transposons

C. heteromeric region of Y chromosomne

D. all of the above

Answer: D

Watch Video Solution

61. C-value paradox refers to the presence of

A. Less number of RNA polymerase than needed for RNA synthesis

B. Larger number of ribosomes than needed for plypeptide synthesis

C. Less number of t-RNA than needed for polypeptide formation

D. More DNA than needed for coding

Answer: D

Watch Video Solution

62. In lac operon, a helper protein that binds to the promotor and facilitaties attachment of RNA polymerase and accelerates the rate of transcription. This protein is called

A. Catabolic activator protein

B. Inactive repressor protein

C. Essential metabolic protein

D. Amini acid activating enzyme

Answer: A

Watch Video Solution

63. Which antibiotic inhibits interaction between tRNA and mRNA during bacterial protein synthesis?

A. Erythromycin

B. Neomycin

C. Sireptomycin

D. Tetracycline

Answer: B

Watch Video Solution

64. Consider the following statements

a) A component of the nucleotide sequence that makes up the prokaryotic promoter is CATT box

b) A component of the nucleotide sequence that makes up the eukaryotic promoter is TATA box.

Which of the statements given above is/are correct?

A. a only

B. b only

C. Both a and b

D. Neither a nor b

Answer: B

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65. How many high-energy phosphate bonds are utilized in the process of activation of one amino acid for protein synthesis?

A. Four

B. Two

C. Ten

D. Three

Answer: B

Watch Video Solution

66. Which histone is absent in a nucleosome?

A. H_1

B. H_2

C. H_3A

D. H_4

Answer: A

Watch Video Solution

67. In E.coli, which of the following codons are recognized by the release factor RF_1?

A. UAG and UGA

B. UAA and UGG

C. UAG and UAA

D. UAG and UUA

Answer: C

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68. During DNA synthesis, both strands require an RNA primer to start elongation because it is an

A. RNA polymerase that synthesizes short stretches of RNA

B. RNA ATPase that synthesizes short stretches of complementary DNA

C. DNA polymerase that synthesizes short stretches of DNA

D. DNA ATPase that synthesizes short stretches of complementary RNA

Answer: A

 Watch Video Solution

69. Many antibiotics inhibit prokaryotic translatin without disrupting protein synthesis of the host cell. These antibiotics work via all of the following mechanisms EXCEPT

A. Antibiotics bind to the ribosomal 50S subunit to prevent translation

B. Antibiotics bind to the ribosomal 40S subunit to prevent translation

C. Antibiotics bind 70S ribosomes a similar sites and with similar efficacies

D. Antibiotics bind free ribosomes in the cytoplasm

Answer: B

 Watch Video Solution

70. Which of the following is an example of a transversion?

A. Cytosine - guanine

B. Thymine - uracil

C. Adenine - guanine

D. Cytosine - thymine

Answer: A

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71. One gene-one enzyme relationship was established for the first time in

A. Salmonella typhimurium

B. Escherichia coli

C. Diplococcus pneumoniae

D. Neurospora crassa

Answer: D

Watch Video Solution

72. Gene regulation governing lactose operon of E.coli that involves the lac 1 gene product is

A. negative and inducible because repressor protein prevents transcription

B. negative and repressible because repressor protein prevents transcription

C. feedback inhibition because excess of β-galactosidasse can switch off transcription

D. positive and inducible because it can be induced by lactose

Answer: A

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73. In tryptophan synthesis pathway, tryptophan acts as a corepressor. What is its role as a corepressor?

A. It prevents transcription of the genes of the operon

B. It binds to the promoter that blocks the attachment of RNA polymerase

C. It binds to the tryptophan repressor to change it into its active form

D. It binds to the operator gene at an allosteric site to swich off the operon

Answer: C

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74. The net electric charge on DNA and histones

A. both positive

B. both negative

C. negative and positive, respectively

D. zero

Answer: C

 Watch Video Solution

75. Wobble position means

A. base pairing

B. altered base on code

C. third altered base on code

D. none of the above

Answer: C

Watch Video Solution

76. Teminism is

A. a reverse central dogma

B. a central dogma of molecular biology

C. a circular flow of hereditary material

D. an effect of cytoplasm on functioning of DNA

Answer: A

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77. The smallest unit of genetic material, which when mutated produces a phenotypic effect, is

A. recon

B. muton

C. nucleic acid

D. cistron

Answer: B

 Watch Video Solution

78. Translocation involves

A. the movement of the tRNA from the A-site to the P-site due to movement of ribosome.

B. the movement of the mRNA strand one triplet length in the A-site

C. the release of the unattached tRNA from the E-site

D. All of the above

Answer: A

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79. Which of the following is not involved in the formation of a eukaryotic transcription initiation complex?

A. Transcription factors

B. snRNA

C. RNA polymerase-II

D. Promoter

Answer: B

Watch Video Solution

80. A prokaryote gene of 600 nucleotides long can code for a polypeptide chain of about, how many amino acids ?

A. 100

B. 200

C. 300

D. 600

Answer: B

Watch Video Solution

81. All of the following are transcribed from DNA except

A. exons

B. introns

C. rRNA

D. DNA

Answer: D

Watch Video Solution

82. Inducible enzymes are

A. usually involved in anabolic pathways

B. produced when a small molecule (inducer) inactivates the repressor protein

C. Produced when an activator molecule enhances the attachment of RNA polymerase with the operator

D. regulated by inherently inactive repressor molecules

Answer: B

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83. In E.coli, tryptophan switches off the trp operon by

A. inactivating the repressor protein

B. inactivating the gene for the first enzyme in the pathway by feedback inhibition

C. binding to the repressor and increasing the latters affinity for the operator

D. binding to the operator

Answer: C

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84. The control of gene expression is more complex in eukaryotic cells because the

A. gene expression differentiates specialized cells

B. the chromosomes are linear and more numerous

C. operons are controlled by more than one promoter region

D. inhibitory or activating molecules may not help to regulate transcription

Answer: A

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85. What are proteosomes?

A. Complexes of snRNA and proteins that excise introns

B. Small, positively charged proteins that form the core of nucleosomes

C. Enormous protein complexes that degrade unneeded proteins in the cell

D. Complexes of transcription factors whose protein-protein interactions are required for enhancing gene transcription

Answer: B

 Watch Video Solution

86. One gene-one polypeptide hypothesis was proposed by

A. Linus Pauling

B. V Ingram

C. Beadle and Tautum

D. Brenner

Answer: B

87. A single anticodon can recognise more than one codon of mRNA. This phenomenon is termed as

A. Richmond and Lang effect

B. gene flow hypothesis

C. wobble hypothesis

D. template hypothesis

Answer: C

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88. What becomes established from the wobble hypothesis?

A. Process of peptide chain elongation

B. Economy of the number of tRNA molecules

C. Process of peptide chain initiation

D. Process of peptide chain termination

Answer: B

Watch Video Solution

89. In a codon, wobbling is generally restricted to

A. first N base

B. third N base

C. second N base

D. any base

Answer: C

Watch Video Solution

90. The contribution of cytoplasmic DNA in cell.s total DNA is

A. $65\ \%$

B. $1 - 5\ \%$

C. $10 - 12\ \%$

D. $0 - 0.5\%$

Answer: B

 Watch Video Solution

91. An antibiotic, which inhibits translation in eukaryotes is

A. chloromycetin

B. penicillin

C. puromycin

D. tetracycline

Answer: C

Watch Video Solution

92. Genes, which are inactive for long periods, have the tendency to be bound to

A. each other

B. methyl groups

C. actin and myosin

D. nucleolus

Answer: B

Watch Video Solution

93. Non-constitutive genes express themselves only when needed, are also called as

A. structural gene

B. promoter gene

C. house-keeping genes

D. luxury genes

Answer: D

Watch Video Solution

94. Cistron was called as functional gene in 1955 by

A. Bateson

B. Waldeyer

C. Benzer

D. Bailing

Answer: C

Watch Video Solution

95. When gene resemble functional genes, but donot produce functional substance are called

A. jumping gene

B. overlapping gene

C. pseudogene

D. non-functional gene

Answer: C

Watch Video Solution

96. In trp operon, the corepressor is

A. tryptophan

B. lactose

C. β-galactoside

D. glucose

Answer: A

 Watch Video Solution

97. In both inducible and repressiblc systems, the synthesis of protein is controlled by

A. operator gene through regulator gene

B. regulator gene through operator gene

C. promoter gene through regulator gene

D. operator gene through regulator and promoter genes

Answer: A

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98. Transcription is most similar to

A. chemiosmosis

B. DNA replication

C. facilitated transport

D. translation

Answer: B

Watch Video Solution

99. The terms cistron, recon and muton were proposed by

A. Bateson

B. J Lederberg

C. S Benzer

D. TH Morgan

Answer: C

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100. The expression of genes is regulated by

A. metabolic conditions

B. physiological conditions

C. environmental conditions

D. all of the above

Answer: D

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101. Who were the first to elucidate a transcriptionally regulated system?

A. Fracois Jacob and Jacque Monod

B. Alfred Hershey and Martha Chase

C. Oswald Avery and MacLeod

D. Sever Ochoa and Nirenberg

Answer: A

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102. Regulation of lac operon by repressor is referred to as

A. positive regulation

B. negative regulation

C. feed back regulation

D. none of these

Answer: B

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103. RNA acted upon by enzyme

A. ribozyme

B. ribonuclease

C. peptidal transferase

D. All of these

Answer: B

Watch Video Solution

104. Who discovered retroviruses?

A. HM Temin

B. D Baltimore

C. Both 1 and 2

D. Crick

Answer: C

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105. Codes on mRNAs for proteins are

A. zig-zag

B. coplaner

C. colinear

D. none of these

Answer: C

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106. Barbora Mc Clintock is famous for her work on (discovery of transposons)

A. rice

B. wheat

C. maize

D. sugarcane

Answer: C

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107. Gene and cistron are sometimes used as synonyms because

A. one gene contains one cistron

B. one gene contains many cistrons

C. one gene contains no cistrons

D. one cistron contains many genes

Answer: A

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108. The development in application of mapping, sequencing and computational procedures for the analysis of entire genome of organisms comes under

A. Molecular biology

B. Eugenics

C. Genomics

D. Euphenics

Answer: C

Watch Video Solution

Watch Video Solution

109. HGP was closely associated with rapid development of a new area in biology called

A. Bioinformatics

B. Bioenergetics

C. Biotechnology

D. Biochemistry

Answer: A

Watch Video Solution

110. Advancement in automating DNA sequencing and development in computer programming, made the DNA sequencing of larger genomes a real possibility during the mid of

A. 1970.s

B. 1960.s

C. 1990.s

D. 1980.s

Answer: D

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111. The first completely sequenced genome was

A. DNA with histone proteins of human mitochondrion

B. Circular genome of human mitochondrion

C. Protein coding genes of human genome

D. Double helical genome of human golgi complex

Answer: B

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112. The genome of human mitochondrion is with

A. 16, 159 bp

B. 2 billion bp

C. 19, 129 bp

D. 3.2 million bp

Answer: A

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113. Pickout the correct statement from the following

A. Mitochondrial genome is large than that of nuclear genome.

B. Mitochondrial genome is 300,000 times larger that of nucleus.

C. Nuclear genome is smaller than that of mitochondrial genome.

D. Nuclear genome is nearly 200,000 times larger than that of mitochondrion.

Answer: D

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114. Structural genomics includes

A. Genetic mapping

B. Physical mapping

C. Sequencing

D. All the three

Answer: D

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115. This field of genomics deals with the comprehensive analysis of functions of genes and non-gene sequences is

A. Structural genomics

B. Functional genomics

C. Comparitive genomics

D. All the three

Answer: B

 Watch Video Solution

116. Sub field of genomics that deals with the comparison of entire genomes of different species is

A. Functional genomics

B. Structural genomics

C. Comparitive genomics

D. Comparitive bioinformatics

Answer: C

Watch Video Solution

117. The comparitive genomics enhances the understanding of

A. functions of each genome and their evolutionary relationships

B. functions of only one genome

C. non-functional genes of both the genomes

D. functions of some genes of each genome and their structural

relationships.

Answer: A

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118. The successful completion of all original goals of the human genome project was announced by

A. National Human Genome Research Institute

B. Human Genome Organisation

C. International Consortium of Human Genome Project

D. Department of energy and National Institutes of Health

Answer: C

 Watch Video Solution

119. The percentage of gene containing regions in human genome, covered by HGP is about

A. $80\ \%$

B. $90\ \%$

C. $99\ \%$

D. $100\ \%$

Answer: C

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120. Nearly 100 genes of this plant are similar to disease causing genes of humans

A. Pisum sativum

B. Mirabilus jalapa

C. Antirrhinum majus

D. Arabidopsis thaliana

Answer: D

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121. Pickout the mis-match

A. Escherichia coli - 4.64 M bp

B. Saccharomyces cerevisiae - 12,067,280bp

C. Caenorhabditis elegans - 100.3 M bp

D. Drosophila melanogaster - 120 M bp

Answer: D

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122. 99% of genes of this animal are direct counter parts of the humans

A. Rana tigrina

B. Mus musculus

C. Struthio camelus

D. Drosophila melanogaster

Answer: B

 Watch Video Solution

123. Non pathogenic, bisexual nematode is

A. Caenorhabditis elegans

B. Loa loa

C. Enterobius vermicularis

D. Ancylostoma duodenale

Answer: A

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124. In human genome, the intergenic regions contain

A. Gene related sequences

B. Intragenic DNA

C. Extragenic DNA

D. 1 & 3 are correct

Answer: D

Watch Video Solution

125. The percentage of extragenic DNA in human genome is about

A. 20 %

B. 80 %

C. 70 %

D. 30 %

Answer: C

Watch Video Solution

126. Structural DNA that organizes the structure of chromosome, is located in

A. Centromere

B. Telomere

C. Satellites

D. All the three

Answer: D

Watch Video Solution

Exercise Ii Dna Finger Printing

1. Any inherited physical or molecular characteristic that differs among individuals and is easily detectable in the laboratory is called

A. Mini-satellites

B. RNA polymorphs

C. Coding DNA

D. Genetic marker

Answer: D

2. Generally the genetic markers are

A. Genes

B. DNA polymorphs

C. DNA segments that have no coding function

D. All the three

Answer: D

Watch Video Solution

3. Read the following statements about genetic markers and pickout the incorrect one

A. The genetic markers must be polymorphic, so that they are useful in mapping.

B. The genetic markers may be genes or DNA segments that have no known coding function

C. DNA polymorphs have variations in their DNA sequences.

D. DNA polymorphs differ in their nucleotide sequences or constant number of randomly repeated sequences.

Answer: D

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4. The examples of DNA polymorphisms are

A. SNPs

B. STRs

C. VNTRs

D. All the three

Answer: D

Watch Video Solution

5. Mini-satellites are generally rich in

A. A-T pairs

B. G-C pairs

C. A-G pairs

D. T-C pairs

Answer: B

Watch Video Solution

6. Identify the correct statement in relation to micro-satellite

A. It occur in more than 1000 locations in human genome

B. It is 2 to 6 bp in length

C. It occur in all locations of human genome

D. It is 10 to 60 bp in length

Answer: B

Watch Video Solution

7. Satellite DNA consists of

A. large arrays of tandemly repeating non coding DNA

B. small arrays of coding DNA

C. moderate arrays of coding DNA

D. large arrays of non-repeating, non-coding DNA

Answer: A

Watch Video Solution

8. Satellite DNA is the main component of

A. telomeres

B. centromeres

C. long arms

D. short arms

Answer: B

Watch Video Solution

9. Read the following statements about satellite DNA and pick out the correct one

A. It is not found in centromeres

B. It consists of non repetitive coding DNA

C. It is a structural constituent of hetero-chromatin

D. It occurs in all locations of human genome

Answer: D

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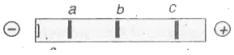
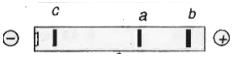
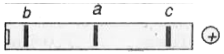
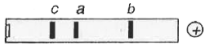
10. Match of the following

A) Replication	1) Formation of RNA from DNA
B) Transcription	2) Synthesis of copy of DNA
C) Translation	3) Single strand of DNA
D) Template	4) Synthesis of proteins by RNA

A. 

B. 

C. 

D. 

Answer: C

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Exercise Iii Previous Aipmt Neet Questions

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

A. Lactose and galactose

B. Glucose

C. Galactose

D. Lactose

Answer: D

Watch Video Solution

2. The two polypeptides of human insulin are linked together by

A. Disulphide bridges

B. Hydrogen bonds

C. Phosphodiester bond

D. Covalent bond

Answer: A

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

A. UAG

B. AUG

C. UGA

D. UAA

Answer: B

Watch Video Solution

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

A. DNA - DNA hybridization

B. Polymerae chain reaction

C. Zinc finger analysis

D. Restriction enzymes

Answer: C

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

A. Chargaff.s rule

B. Complementary base pairing

C. 5. phosphoryl and 3. hydroxyl ends

D. Heterocyclic nitrogenous bases

Answer: A

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6. Balbiani rings are sites of

A. RNA and protein synthesis

B. Lipid synthesis

C. Nucleotide synthesis

D. Polysaccharide synthesis

Answer: A

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7. Satellite DNA is important because it

A. Codes for enzymes needed for DNA replication

B. Codes for proteins needed in cell cycle

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

D. Does not code for proteins and is same in all members of the population

Answer: C

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8. Is sea urchin DNA, which is double stranded, 17% of the bases were shown to be cytosine. The percentages of the other three bass expected to be present in this DNA are

A. G 17%, A 16.5%, T 32.5%

B. G 17%, A 33%, T 33%

C. G 8.5%, A 50%, T 24.5%

D. G 34%, A 24.5%, T 24.5%

Answer: B

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9. DNA is not present in

A. Ribosomes

B. Nucleus

C. Mitochondria

D. Chloroplast

Answer: A

Watch Video Solution

10. Identify the correct order of organisatin of genetic material from largest lo smallest

A. Chromosome, genome, nucleotide, gene

B. Chromosome, gene, genome, nucleotide

C. Genome, chromosome, nucleotide, gene

D. Genome, chromosome, gene, nucleotide

Answer: D

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11. Select the correct option

Direction of RNA synthesis	Direction of reading of the template DNA strand
A. $3. - 5.$	$3. - 5.$
B. $5. - 3.$	$3. - 5.$
C. $3. - 5.$	$5. - 3.$
D. $5. - 3.$	$5. - 3.$

Answer: B

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12. Commonly used vectors for human genome sequencing are

A. T/A Cloning Vectors

B. T - DNA

C. BAC and VAC

D. Expression Vectors

Answer: C

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13. What is it that forms the basis of DNA Fingerprinting?

A. The relative amount of DNA in the ridges and grooves of the fingerprints

B. Satellite DNA occurring as highly repeated short DNA segments

C. The relative proportions of purines and pyrimidines in DNA

D. The relative difference in the DNA occurrence in blood, skin and saliva

Answer: B

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14. Which one of the following is wrongly matched?

A. Operon - Structural genes, operator and promoter

B. Transcription - Writing information from DNA to t-RNA

C. Translation - Using information in m-RNA to make protein

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

Answer: B

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15. The diagram shows an important concept in the genetic implication of DNA. Fill in the blanks A to C. DNA $\xrightarrow{A}$ mRNA $\xrightarrow{B}$ Protein

underset(C)overset("Proposed by")to`

Proposed by

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

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

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

D. A-translation B-transcription C-Erevin Chargaff

Answer: A

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16. Which enzyme/s will be produced in a cell in which there is a nonsense mutation in the lac Y gene?

A. Transacetylase

B. Lactose permease and transacetylase

C. β-galactosidase

D. Lactose permease

Answer: C

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17. If one strand of DNA has the nitrogenous base sequence as ATCTG, what would be the complementary RNA strand sequence?

A. UAGAC

B. AACTG

C. ATCGU

D. TTAGU

Answer: A

 Watch Video Solution

18. Removal of RNA polymerase III from nucleo-plasm will affect the synthesis of

A. hn RNA

B. m RNA

C. r RNA

D. t RNA

Answer: D

 Watch Video Solution

19. Which one of the following is not a part of a transcription unit in DNA?

A. A terminator

B. A promoter

C. The structural gene

D. The inducer

Answer: D

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20. Removal of introns and joining of exons in a defined order during transcription is called

A. inducing

B. slicing

C. splicing

D. looping

Answer: C

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21. Satellite .DNA. is useful tool in

A. Organ transplantation

B. Sex determination

C. Forensic science

D. Genetic engineering

Answer: C

Watch Video Solution

22. Which one of the following palindromic base sequences in DNA can be easily cut at about the middle by some particular restriction enzyme?

A. 5. _____ CGTTCG____ 3.

3.___ ATGGTA___5.

B. 5. ___GATATG____ 3.

3.____CTACTA____5.

C. 5. _____GAATTC___3.

3._____ CTT AAG_____ 5.

D. 5. _______CACGTA_____ 3.

3.___CTCAGT___5.

Answer: C

Watch Video Solution

23. Which one of the following has its own DNA?

A. Mitochondria

B. Dictyosome

C. Lysosome

D. Peroxisome

Answer: A

Watch Video Solution

24. Satellite .DNA. is useful tool in

A. Genetic engineering

B. Organ transplantation

C. Sex determination

D. Forensic science

Answer: D

Watch Video Solution

25. What is not true for genetic code?

A. A codon in mRNA is read in a non contiguous fashion

B. It is nearly universal

C. It is degenerate

D. It is unambiguous

Answer: A

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26. Whose experiments cracked the DNA and discovered unequivocally that a genetic code is a "triplet"

A. Hershey and Chase

B. Morgan and Sturtevant

C. Beadle and Tatum

D. Nirenberg and Mathaei

Answer: A

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27. There is no DNA in

A. Mature RBCs

B. A mature spermatozoan

C. Hair root

D. An enucleated ovum

Answer: A

Watch Video Solution

28. Sickel-cell anemia is

A. Caused by substitution of valine by glutamic acid in the beta globin chain of

haemoglobin

B. Caused by a change in a single base pair of DNA

C. Characterized by elongated sickle like RBCs with a nucleus

D. An autosomal linked dominant trait

Answer: B

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29. The genetic defect adenosine deaminase (ADA) deficiency may be cured permanently by

A. Administering adenosine deaminase activators

B. Introducing bone marrow cells producing ADA into cells at early embryonic stages

C. Enzyme replacement therapy

D. Periodicinfusion of genetically engineered lymphocytes having functional ADA cDNA

Answer: B

Watch Video Solution

30. What is not true for genetic code?

A. It is unambiguous

B. A codon in mRNA is read in a non contiguous fashion

C. It is nearly universal

D. It is degenerate

Answer: B

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31. In the DNA molecule

A. There are two strands which run antiparallel one in 5. $\rightarrow$ 3. direction and other in 3. $\rightarrow$ 5.

B. The total amount of purine nucleotides and pyrimidine nucleotides is not always equal

C. There are two strands which run parallel in the 5. $\rightarrow$ 3. direction

D. The proportion of adenine in relation to thynine varies with the organism

Answer: A

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32. Which one of the following of codons is correctly matched with their function or the singnal for the particular amino acid?

A. UUA, CUA-Leucine

B. GUU, GCU-Alanine

C. UAG, UGA-Stop

D. AUG, ACG-Start/Methionine

Answer: A

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33. Differentiation of organs and tissues in a developing organism is associated with

A. Developmental mutation

B. differential expression of genes

C. lethal mutations

D. deletion of genes

Answer: B

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34. During transcription, RNA polymerase holo-enzyme binds to a gene promoter and assumes a saddle-like structure. What is it.s DNA binding sequence ?

A. AATT

B. CACC

C. TATA

D. TTAA

Answer: C

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35. The length of DNA molecule greatly exceeds the dimensions of the nucleus in eukaryotic cells. How is this DNA accommodated?

A. Super-coiling in nuclosomes

B. DNase digestion

C. Through elimination of repetitive DNA

D. Deletion non-essential genes

Answer: A

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36. The Okazaki fragments in DNA chain growth

A. Polymerize in the 3. to 5. direction and forms replication fork

B. Prove semiconservative nature of DNA replication

C. Polymerize in the 5. to -3. direction nad explain 3. to -5. DNA replication

D. Result one of transcription

Answer: C

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Exercise Iii Previous Aipmt Neet Questions Afmc

1. Removal of introns and joining of exons in a defined order during transcription is called

A. splicing

B. tailing

C. transformation

D. capping

Answer: A

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2. The functional unit of DNA molecule that codes for a particular gene product is

A. Cistron

B. Exon

C. Intron

D. Gene

Answer: A

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3. What is not true for genetic code?

A. A codon in mRNA is read in a non contiguous fashion

B. It is nearly universal

C. It is degenerate

D. It is unambiguous

Answer: A

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4. Sickle cell anaemia is

A. an autosomal linked dominant trait

B. caused by substitution of valine by glutamic acid in the β-globin chain of haemoglobin

C. caused by a change in base pair of DNA

D. characterized by elongated sickle like RBCs with a nucleus

Answer: A

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5. A nutritionally wild type organisms, which does not required any additional growth supplement is known as

A. Phenotype

B. Holotype

C. Auxograph

D. Prototroph

Answer: D

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