



BIOLOGY

BOOKS - MBD BIOLOGY (ODIA ENGLISH)

MOLECULAR BASIS OF INHERITANCE

Question Bank

1. Out of 64 codons , 61 codons code for 20 types of amino acids , it is called :

A. Degeneracy

B. Non ambiguous nature

C. Redundancy

D. Overlapping

Answer: A



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2. Repressor protein is produced by

A. Regulator gene

B. Operator gene

C. Structural gene

D. Promoter gene

Answer: A



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3. The portion of DNA which contains information for an entire polypeptide is called

:

A. Muton

B. Codon

C. Operon

D. Cistron

Answer: D



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4. Okazaki fragments are associated with which phenomenon ?

A. Translation

B. Replication of DNA

C. Transcription

D. Reverse transcription

Answer: B



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

A. Jacob and monad

B. David Baltimore

C. Alec Jeffery

D. None of these

Answer: A



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

A. Lac A, lac Y, lac Z

B. Lac A, lac Z , lac Y

C. Lac Y , lac Z, lac A

D. Lac Z , lac Y, lac A

Answer: D



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7. During transcription RNA polymerase holoenzyme binds to a gene promoter and

assumes a saddle-like structure. What is its DNA-binding sequence?

A. AATT

B. CACC

C. TATA

D. TTAA

Answer: C



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8. The two polynucleotide chains- in DNA are

- A. Discontinuous
- B. Antiparallel
- C. Semi conservative
- D. Parallel

Answer: B



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9. A codon consists of 3 bases and there are of 4 different kinds of bases in a nucleic acid altogether. how many codons will be there?

A. 64

B. 86

C. 22

D. 60

Answer: A



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10. Transcription involves transfer of the genetic information from DNA molecule to :

A. DNA molecule

B. RNA molecule

C. Protein

D. None of these

Answer: B



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11. 2003 was celebrated as the 50th anniversary of discovery of :

- A. Transposon by barbara mcclintock
- B. Structure of DNA by Watson and crick
- C. BOTH(A) AND (B)
- D. None of these

Answer: B



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12. The concept of one gene one enzyme was proposed by :

A. Beadle and Tatum

B. Watson and crick

C. Corners

D. Leeuwenhoek

Answer: A



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13. Cell/ organism carrying mutated gene is :

A. Cistron

B. Mutant

C. Muton

D. Recon

Answer: B



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14. t-RNA consisting of three unpaired bases constitute :

A. Codon

B. Anticodon

C. Clover-leaf model

D. Acceptor loop

Answer: B



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15. An enzyme which increases the rate of permeability across the membrane is :

A. Premease

B. Catalase

C. Gelatinase

D. Amylase

Answer: A



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16. Molecule into which the coded information in DNA transcribed is :

A. m-RNA

B. t-RNA

C. r-RNA

D. hn-RNA

Answer: A



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17. Nitrogenous bases do not contain :

A. Hydrogen

B. Nitrogen

C. Carbon

D. Phosphorus

Answer: D



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18. Which one of the following pairs of codons is correctly matched with their function or the signal for the particular amino acids ?

A. AUG ,ACG - start/Methionine

B. UUA , UCA -leucine

C. GUU , GCU -Alanine

D. UAG , UGA -STOP

Answer: D



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19. Polysome is formed by:

A. A ribosome with several subunits

B. Ribosomes attached to each other in a linear arrangement

C. Several ribosome attached to a single mRNA

D. Many ribosomes attached to a strand of endoplasmic reticulum

Answer: C



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20. In the DNA molecule:

A. The proportion of adenine in relation to thymine varies with the organism

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

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

equal.

D. there are two strands which run parallel

in the $5' \rightarrow 3'$

Answer: B



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21. Genetic information in a DNA molecule is coded in the

A. number of bases

B. Sequence of nucleotides

C. Length of DNA

D. number of nucleosides

Answer: B



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22. The sequence in m-RNA transcribed from a piece of DNA having a sequence ATTGCATCT

A. TAAATGGCC

B. UAACGUAGA

C. TAACGTAGA

D. AATTGCAGA

Answer: B



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23. A phenomenon where the third base of t-RNA at its 5' end can pair with a non-complementary base of m-RNA is called :

A. universality

B. Colinearity

C. degeneracy

D. Wobbling

Answer: D



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24. According to Chargaff's rule, which one is correct ?

A. $[A]+[T]=[G]+[C]$

B. $[A]+[C]=[G]+[T]$

C. $[A]+[G]=[T]+[C]$

D. BOTH(A) AND (B)

Answer: C



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25. Meselson and Stahl experiment proved

A. DNA is genetic material

B. Central dogma

C. transformation

D. Semi conservation DNA replication

Answer: D



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26. The length of DNA having 23 base pairs is :

A. 78\AA

B. 78.4\AA

C. 74.8Å

D. 78.2Å

Answer: D



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27. During replication of DNA , Okazaki fragments are formed in the direction of :

A. 3' → 5'

B. 5' → 3'

C. 5' → 5'

D. 3' → 3'

Answer: B



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28. RNA directs the building of proteins through a sequence of :

A. exons

B. introns

C. codons

D. anticodons

Answer: C



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29. The place where RNA - polymerase attaches with the DNA is called :

A. promotor

B. Regulator

C. receptor

D. enhancer

Answer: A



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30. Which one is not a non-sense codon ?

A. UAA

B. UGA

C. UCA

D. UAG

Answer: C



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31. Which of the following codons has no t - RNA ?

A. UAA

B. UAU

C. UGU

D. UGC

Answer: A



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32. Removal of introns and joining the exons in a definite order in a transcription unit is called :

A. tailing

B. transformation

C. capping

D. Splicing

Answer: D



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33. Molecule of ATP is structurally similar to the molecule of :

A. DNA

B. RNA

C. Protein

D. AMP

Answer: B



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34. True replication of DNA is possible due to :

A. Hydrogen bonding

B. Phosphate backbone

C. Complementary base pairing rule

D. None of the above

Answer: C



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35. A polypeptide is assembled on :

A. Ribosomes

B. DNA

C. RNA

D. Nucleolus

Answer: A



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36. Semiconservative mode on replication of DNA was proved by :

A. Hershey and chase

B. Griffth

C. Watson and crick

D. Meselson and stahl

Answer: D



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37. Which of the following is a plasmid ?

A. pBR 322

B. Bam HI

C. Sal I

D. Eco R I

Answer: A



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38. To meet the demands of the society in vitro production of a large number of plantlets in a short duration is practised in floriculture and horticulture industry today. This is called ,

- A. Hybridoma technology
- B. Somacinal variation
- C. Somatic hybridization
- D. Micropropagation

Answer: D



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39. Which one of the following has dual functions ? It codes for methionine and also acts as initiator codon ?

A. AUG

B. AUC

C. ACU

D. ACA

Answer: A



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40. In transcription in eukaryotes heterogeneous nuclear RNA (hnRNA) is transcribed by

- A. RNA polymerase I
- B. RNA polymerase II
- C. RNA polymerase III
- D. All of these

Answer: B



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41. RNA polymerase II is responsible for transcription of

A. rRNA

B. hnRNA

C. tRNA

D. snRNA

Answer: B



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42. What will be the correct gene expression pathway ?

A. gene-mRNA-transcription-translation-

protein

B. Transcription-gene-translation-mRNA-

protein

C. gene-transcription-mRNA-translation-
protein

D. gene-translation-mRNA-transcription-
protein

Answer: C



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43. In eukaryotic cell transcription RNA splicing and RNA capping take place inside the :

A. ribosomes

B. nucleus

C. dictyosomes

D. ER

Answer: B



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44. The $3' - 5'$ phosphodiester linkages inside a polynucleotide chain serve to join

- A. one DNA strand with another DNA strand
- B. One nucleoside with another nucleoside
- C. One nucleotide with another nucleotide
- D. one nitrogenous base with pentose sugar

Answer: C



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45. Mobile genetic sequence are called :

A. exons

B. introns

C. cistrons

D. transposons

Answer: D



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46. How many effective codons are there for the synthesis of twenty amino acids ?

A. 64

B. 32

C. 60

D. 61

Answer: D



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47. The lac operon consists of :

A. Four regulatory genes only

B. One regulatory gene and three structural genes

C. two regulatory genes and two structural genes

D. Three regulatory genes and three structural genes

Answer: D



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48. Out of 64 codons , 61 codons code for 20 types of amino acids , it is called :

- A. Colinearity
- B. Commaless
- C. degeneracy
- D. nonamiguity

Answer: C



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49. In Hershey and chase experiments, radioactive P was used to culture bacteriophages which resulted in radioactive:

- A. viral DNA
- B. bacterial capsule
- C. viral proteins
- D. plasma membrane of bacteria

Answer: A



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50. Which one of the following triplet codons is a chain termination codon ?

A. UGU

B. AAU

C. UUG

D. UAG

Answer: D



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51. The unequivocal proof of DNA as the genetic material came from the studies on :

A. Bacterium

B. fungus

C. Viroid

D. Bacterial virus

Answer: D



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52. The central dogma of protein synthesis is :

A. DNA \rightarrow RNA \rightarrow DNA

B. Protein \rightarrow DNA \rightarrow RNA

C. RNA \rightarrow DNA \rightarrow protein

D. $DNA \leftrightarrow rRNA \rightarrow prote \in$

Answer: D



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53. Restriction enzyme Eco RI cuts the DNA between bases G and A only when the sequence in DNA is:

A. GATATC

B. GAATTC

C. GATTCC

D. GAACTT

Answer: B



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54. The lac operon is turned on when all lactose molecules bind to

- A. promoter site
- B. operator site
- C. m-RNA
- D. repressor protein

Answer: D



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

A. unambiguous

B. degenerate

C. universal

D. initiator

Answer: D



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56. The codon which has dual function is :

A. UGA

B. UUU

C. AUG

D. AAA

Answer: C



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57. Removal of RNA polymerase III from nucleoplasm will affect the synthesis of

A. tRNA

B. hnRNA

C. mRNA

D. rRNA

Answer: A



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58. Which strain of diplococcus pneumoniae is/are virulent ?

A. Smooth

B. Rough

C. Mutant

D. Wild

Answer: A



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59. The phenomenon discovered by griffith that proves DNA as genetic material is :

- A. Transcription
- B. Translation
- C. Transformation
- D. Transduction

Answer: C



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60. Which is not associated with DNA ?

A. Nucleosome

B. Spliceosome

C. Replosome

D. Chromosome

Answer: B



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61. Proteins are synthesized in the process:

A. Translocation

B. Transcription

C. Translation

D. Transformation

Answer: C



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62. Which one is codes for amino acids ?

A. Cistron

B. Exon

C. Intron

D. Codon

Answer: D



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63. Lactose in lac operon acts as :

A. Repressor

B. Inducer

C. Co-repressor

D. Co-inducer

Answer: B



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64. Termination codon is :

A. AUG

B. UGA

C. AAU

D. AUA

Answer: A



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65. 61 codons code for 20 amino acids because of the property :

A. Non-overlapping

B. Comaless

C. degeneracy

D. Wobbling

Answer: C



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66. How many ribosomes are required for translation of one molecule of protein ?

A. One

B. Two

C. As many codons

D. Many

Answer: A



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67. Intron part of DNA codes for :

A. Carbohydrate

B. Lipid

C. Polypeptide

D. None

Answer: D



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68. A nonsense codon is :

A. UAG

B. UAA

C. BOTH (A) AND (B)

D. UUU

Answer: C



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69. Fill in the blank: The gene which synthesizes a repressor protein is _____.

A. Regulator gene

B. Operator gene

C. Promotor gene

D. Structural gene

Answer: A



70. Which RNA carries the genetic message from nucleus to ribosome ?

A. tRNA

B. mRNA

C. rRNA

D. sRNA

Answer: B



71. Transcription is the formation of

A. mRNA

B. tRNA

C. rRNA

D. protein

Answer: A



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72. Genetic code is :

A. Singlet

B. Doublet

C. Triplet

D. None of the above

Answer: C



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73. In DNA molecule ,the sugars

- A. Bond to both phosphate groups and nitrogenous bases by covalent bonds.
- B. Bond to nitrogenous bases by hydrogen bond
- C. Bond covalently to nitrogenous bases
- D. Bond covalently to phosphate groups

Answer: A



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74. The peptide bonds are present between :

A. Nucleic acid

B. Organic acid

C. Fatty acid

D. Amino acid

Answer: D



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75. UAA , UAC and UGA are:

- A. Starting codons
- B. Non-overlapping codons
- C. Non-sense codons
- D. Degenerate codons

Answer: C



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76. Which of the RNA is smallest and used in feeding of amino acid to a ribosome ?

A. hnRNA

B. tRNA

C. mRNA

D. rRNA

Answer: B



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77. After reaching the cytoplasm the mRNA attaches itself to :

A. 40 S particle of ribosome

B. 60 S particle of ribosome

C. 70 S ribosome

D. Endoplasmic reticulum

Answer: A



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

A. Translocation

B. Transcription

C. Translation

D. Transduction

Answer: B



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79. Gene was synthesized in vitro by :

A. Khorana

B. Ochoa

C. Hollay

D. Nirenberg

Answer: A



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80. DR. Hargobind Khurana has been awarded Nobel prize for research on :

A. Oral contraceptives

B. Hormone

C. Genetic code

D. Immunology

Answer: C



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81. The minimum length of cistron in base pairs which synthesises a polypeptide of 50 amino acids is :

A. 50 bp

B. 100 bp

C. 150 bp

D. 200 bp

Answer: C



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82. Genes that are involved in turning on or off the transcription of structural genes are called :

- A. Polymorphic gene
- B. Operator genes
- C. Reduntant genes
- D. Regulatory gens

Answer: B



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83. The lac operon is turned on when all lactose molecules bind to

- A. Operator gene
- B. Repressor protein
- C. Promotor gene
- D. m-RNA

Answer: B



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84. Tryptophan operon is :

A. Repressible system

B. Inducible system

C. Controlled by regulatory gene

D. Made up of three structural genes

Answer: A



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85. Regulated unit of genetic material is called

:

A. Operator gene

B. Regulatory gene

C. Operon

D. Promotor gene

Answer: C



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86. Initiation codon is :

A. AUG

B. AGU

C. AAU

D. AUA

Answer: A



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87. The sequence of genes in lac operon in E. coli are :

- A. Promotor-operator-structural genes
- B. Operator- promotor -structural genes
- C. Structural gene - Operator -promotor
- D. Structural gene -Promotor -Operator

Answer: A



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88. Which of the following statements about genetic code is correct ?

A. It is triplet universal non-ambiguous
generate

B. It is triplet universal non-ambiguous
degenerate

C. It is triplet universal non-ambiguous
non-degenerate

D. It is triplet universal non-ambiguous and
non-degenerate

Answer: B



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89. The binding sites tRNA and amino acid respectively are :

A. mRNA with DHU loop and amino acid with CCA end

B. mRNA with CCA end and amino acid with anti-codon

C. mRNA with anti-codon loop and amino acid with CCA end

D. mRNA with anti-codon loop and amino acid with DHU loop

Answer: C



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90. A bacteriophage with radioactive DNA and protein when infects a bacterium the

radioactivity inside the bacterium will be located :

A. In DNA

B. In protein

C. Both DNA protein

D. In all parts of bacterial cell

Answer: A



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91. The triplet UUU codes for :

A. Leucine

B. Methionine

C. Phenylalanine

D. Glycine

Answer: C



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

A. Hershey and chase

B. Khorana and ochoa

C. Watson and crick

D. Jacob and monod

Answer: D



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93. The term gene was coined by _____

A. Mendel

B. Johannsen

C. Morgan

D. Bateson

Answer: B



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94. Recipient of Nobel prize for DNA double helical :

- A. Watson and crick
- B. Khorana and nirenberg
- C. Kornberg and Ochoa
- D. Beadle and tatum

Answer: A



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95. mRNA is synthesized over DNA double in the direction

A. $5' \rightarrow 3'$

B. $3' \rightarrow 5'$

C. BOTH(A) AND (B)

D. Depend on DNA strand

Answer: A



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96. Okazaki fragments are :

A. RNA primers

B. Short DNA fragments on lagging strand

C. Short DNA fragments on leading strand

D. DNA fragment from radiation

Answer: B



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97. Which one is codes for amino acids ?

A. Cistron

B. Exon

C. Intron

D. Codon

Answer: D



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98. Wobble hypothesis was given by :

A. Holly

B. Nirenberg

C. Khorana

D. Crick

Answer: D



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99. In genetic code dictionary codons used to code for all the 20 essential amino acids are :

A. 20

B. 60

C. 61

D. 64

Answer: C



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100. Which of the following inhibits protein synthesis by binding to 50S ribosomes ?

- A. Tetracyclin
- B. Streptomycin
- C. Erythromycin
- D. Penicilin

Answer: C



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101. Initiating codon in prokaryote is :

A. AGU

B. AAU

C. AUG

D. AUA

Answer: C



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

A. AAU

B. GUG

C. AUG

D. UAG

Answer: D



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

- A. Operator gene
- B. Regulatoy gene
- C. Promotor gene
- D. Structural gene

Answer: D



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104. In the operon system , the repressor protein can bind only with the :

A. Structural genes

B. Regulatory gene

C. Operator gene

D. Promotor gene

Answer: C



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105. All the termination codons begin with the nucleotide of :

A. Adenine

B. Uracil

C. Guanine

D. Cytosine

Answer: B



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106. Nitrogenous bases do not contain :

A. Hydrogen

B. Nitrogen

C. Carbon

D. Phosphorus

Answer: D



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107. Mechanism of DNA duplication is mainly :

A. Conservative

B. flexible

C. Semi-conservative

D. Non-conservative

Answer: C



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108. DNA replicates during:

A. M phase

B. S phase

C. G_1 phase

D. G_2 phase

Answer: B



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109. One bacterium which has extensively used in genetic engineering work in plant is ,

A. *Agrobacterium tumefaciens*

B. *Bacillus coagulans*

C. *Xanthomonas citri*

D. *Clostridium spectrum*

Answer: A



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110. One of the similarities between DNA and RNA is that both :

A. are polymers of nucleotide

B. are capable of replicating

C. have similar sugar

D. have similar pyrimidine bases

Answer: A



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111. Protein synthesis occurs:

A. on ribosomes present in cytosol as well

as in mitochondria

B. only on ribosomes attached to the nuclear envelop and endoplasmic reticulum

C. Only on the ribosome present in cystol

D. on ribosomes present in nucleolus as well as cytoplasm

Answer: A



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112. The transfer RNA molecule in 3D appears:

A. L-shaped

B. E-shaped

C. Y-shaped

D. S-shaped

Answer: A



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113. Maximum number of bases in plasmids discovered so far:

- A. 50 kilobase
- B. 500 kilobase
- C. 5000 kilobase
- D. 5 kilobase

Answer: B



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114. E.coil about to replicate was placed in a medium containing radioactive thymidine for five minutes. Then its was made to replicate in a normal medium. Which of following observation shall be correct ?

A. Both the strands of DNA will be radioactive

B. One strand radioactive

C. Each strand half radioactive

D. None is radioactive

Answer: A



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115. Read the following statements and choose the correct option.

(a) Nitrogenous base is linked to the pentose sugar through a N-glycosidic linkage.

(b) phosphate group is linked to 5' -OH of a nucleoside through phosphoester linkage.

(c) Two nucleoside are linked through 3' – 5' N-glycosidic linkage. (d) Negatively charged

DNA is wrapped around positively charged histone octamer to form nucleosome. (e) The chromatin that is more densely packed and stains dark is called euchromatin.

A. Nitrogenous base is linked to the pentose sugar through a N-glycosidic linkage

B. Phosphate group is linked to $5'$ -OH of a nucleoside through phosphoester linkage.

C. Two nucleoside are linked through

3' – 5' N glycosidic linkage

D. Negatively charged DNA wrapped

around positively charged histone

octamer to form nucleosome.

Answer: C



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116. A mutant strain to T_4 -Bacteriophage, R-II, fails to lyse the E.coli but when two strains R- II^x and R- II^y are mixed then they lye the E.coli. What may be the possible reason :

- A. Bacteriophage transformed in wild
- B. It is not mutated
- C. Both strains have similar cistrons
- D. Both strains have different cistrons

Answer: D



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117. m-RNA is synthesised on DNA in template in which direction :

A. $5' \rightarrow 3'$

B. $3' \rightarrow 5'$

C. Both

D. any

Answer: C



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118. Type of RNA polymerase required in nucleus for RNA synthesis in eukaryotes:

A. 1

B. 2

C. 3

D. 4

Answer: C



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119. Gene and cistron words are sometimes used synonymously because:

- A. One cistrons contains many genes
- B. One gene contains many cistrons
- C. One gene contain one cistrons
- D. One gene contain no cistrons

Answer: C



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120. HIV has a protein coat and a genetic material which is:

- A. Single stranded DNA
- B. Single stranded RNA
- C. Double stranded DNA
- D. Double stranded DNA

Answer: B



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121. Largest bacterial plasmid has _____

kilobases:

A. 5

B. 1000

C. 5000

D. 2000

Answer: A



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122. Cauliflower mosaic virus has :

A. ss RNA

B. ss DNA

C. ds DNA

D. ds RNA

Answer: C



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123. DNA polymerase that helps in DNA replication is of :

- A. Two types
- B. Three types
- C. Four types
- D. Only one type

Answer: D



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124. In recent years , DNA sequence (nucleotide sequence) of mt-DNA and Y chromosomes were considered for the study of human evolution because :

- A. They can be studied from the samples of fossil remains
- B. They are small and therefore easy to study
- C. They are uniparental in origin and do not take part in recombination

D. Their structure is known in greater detail

Answer: D



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125. Genetic Map is one that :

A. Shows the distribution of various species in a region

B. Establishes sites of the genes on a chromosome

C. Establishes the various stages in gene evolution

D. Shows the stage during the cell division

Answer: B



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126. The linkage map of X- chromosomes of fruitfly has 66 units with yellow body gene (y) at one end and bobbed hair (b) gene at the

other end. The recombination frequency between these two genes (y and b) should be :

A. 100 %

B. 66 %

C. $> 50\%$

D. $\leq 50\%$

Answer: B



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127. In lac operon the genes a , y and z code respectively for

A. transacetylase ,permease , β -galactosidase

B. transacetylase , β -galactosidase , permease

C. Permease ,transacetylase β -galactoside

D. , permease , β -galactoside , transacetylase

Answer: A



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128. Down's syndrome is caused by an extra copy of chromosome number 21. what percentage of offspring produced by an affected mother and a normal father would be affected by this disorder ?

A. 25 %

B. 100 %

C. 75 %

D. 50 %

Answer: D



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129. During translation initiation in prokaryotes a GTP molecule is needed in :

A. Association of 50S subunit of ribosome with initiation complex

B. Formation of formyl-met-tRNA

C. binding of 30 S subunit of ribosome with
mRNA

D. Association of 30 S m RNA with formyl-
met-tRNA

Answer: D



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130. The place where RNA - polymerase attaches with the DNA is called :

A. Enhancer

B. promotor

C. Regulator

D. Receptor

Answer: B



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131. The total number of nitrogenous bases in human genome is estimated to be about :

- A. 3.5 million
- B. 35 thousand
- C. 35 million
- D. 3.1 billion

Answer: D



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132. Which of the following pairs is correctly matched with regard to the codon and the amino acid coded by it ?

- A. UUU-valine
- B. AAA-lysine
- C. AUG cysteine
- D. CCC-alanine

Answer: B



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133. DNA repairing is done by :

A. Ligase

B. DNA polymerase I

C. DNA polymerase II

D. BOTH (A) AND (B)

Answer: C



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134. The function of promotor of lac- operon is to :

- A. Bind to gyrase
- B. Bind to RNA polymerase
- C. Code for RNA polymerase
- D. Process m RNA

Answer: B



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135. Oncogenes were discovered by :

A. Fleming

B. Rowland

C. Pruessiner

D. Bishop and Vermus

Answer: D



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136. Choose the wrong statement :

A. VNTR belong to a class of mini-satellite

DNA

B. DNA sequences work on the principle

developed by Frederick Sanger

C. HGP was coordinated by US Department

of Energy and the National Institute of

Health

D. DNA fingerprinting involves identifying

similarities in repetitive DNA

Answer: D



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137. When a mutation is limited to the substitution of one nucleotide for another , it is called :

- A. translocation
- B. point mutation
- C. base inversion
- D. sugar phosphate deletion

Answer: D



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138. During transcription if nucleotide sequence of DNA strand that is being coded is ATACG then the nucleotide sequence in m-RNA would be :

A. UATGC

B. AUTCG

C. AUACG

D. UAUGC

Answer: C



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139. During the replication of a bacterial chromosome, DNA synthesis starts from the replication origin site and :

- A. Moves to bidirectional way
- B. RNA primers are involved
- C. is facilitated by telosome
- D. Moves in one direction of site

Answer: D



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140. In genetic code dictionary codons used to code for all the 20 essential amino acids are :

A. 64

B. 61

C. 60

D. 20

Answer: B



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141. Which one of the following triplet codes is correctly matched with its specificity or as start or stop signal ?

- A. UUU-STOP
- B. AUG-Methionine
- C. AAA-Tyrosine
- D. CCC-Start

Answer: B



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142. Find the correct match :

A. UUU-valine

B. AUG-cystcine

C. AAA-Lysine

D. CCC-Alanine

Answer: C



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143. The codon for anticodon $3' - UUA - 5'$

is :

A. $5' - AAU - 3'$

B. $3' - AAU - 5'$

C. $5' - AAT - 3'$

D. $3' - AAG - 5'$

Answer: A



144. Splicing of RNA depends on :

- A. hnRNA
- B. exon
- C. Intron
- D. β -galactosidase

Answer: A



145. In Lac operon , i gene codes for :

A. inducer

B. repressor

C. Promotor

D. β -galactosidase

Answer: D



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146. Which of the following is important for transcription ?

A. DNA methylase

B. CAAT box

C. Promotor

D. DNA polymerase

Answer: C



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147. Production of a human protein in bacteria by genetic engineering is possible because :

A. bacterial cell can carry out the RNA splicing reaction

B. the human chromosome can replicate in bacterial cell

C. the mechanism of gene regulation is identical in human and bacteria

D. the genetic code is universal

Answer: D



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148. In humans most number of genes are located on chromosome:

A. 21

B. 6

C. X

D. 1

Answer: D



149. The enzyme required to catalyze the polymerisation of deoxynucleotides is :

- A. DNA ligase
- B. trasacetylase
- C. β -galactosidase
- D. DNA polymerase

Answer: D



150. To which of the following factors RNA polymerase binds transiently to initiate transcription ?

A. sigma

B. beta

C. gamma

D. rho

Answer: A



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151. In the synthesis of which of the following the DNA molecule is not directly involved

- A. mRNA molecule
- B. another DNA molecule
- C. tRNA molecule
- D. protein molecule

Answer: D



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152. Which one of the following hydrolyses internal phosphodiester bonds in a polynucleotide chain ?

A. Lipase

B. Exonuclease

C. Endonuclease

D. Protease

Answer: C



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153. The enzymes responsible for the transcription of SnRNAs in eukaryotes is/are :

- A. RNA polymerase I
- B. RNA polymerase I and II
- C. RNA polymerase II
- D. RNA polymerase III

Answer: C



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154. Match List I with List II and select the correct option.

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- | | | |
|-------------------------------|----|-----------------------------|
| (B) <i>Rhizobium meliloti</i> | 2. | Scavenging of oil spills |
| (C) <i>Escherichia coli</i> | 3. | Incorporate of 'nif' gene |
| (D) <i>Pseudomonas putida</i> | 4. | Production of Bt toxin |
| (E) <i>Trichoderma</i> | 5. | Production of human insulin |

A. a=1,b=2,c=4,d=3

B. a=4,b=1,c=3,d=2

C. a=4,b=1,c=2,d=3

D. $a=3, b=2, c=1, d=4$

Answer: C



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155. DNA replication starts in the $5' \rightarrow 3'$ direction because :

A. DNA polymerase I performs editing function

B. DNA polymerase I is responsible for polymerization

C. DNA polymerase II can link up only in $5' \rightarrow 3'$ direction

D. DNA polymerase III can polymerize the nucleotides in the $5' \rightarrow 3'$

Answer: D



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156. Transcription requires which of these enzyme ?

A. RNA based RNA polymerase

B. RNA based DNA polymerase

C. DNA based RNA polymerase

D. DNA based DNA polymerase

Answer: C



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157. Genes that are continuously functional and whose regulations are at tissue level as in Kidney , liver are known as :

- A. luxury gene
- B. house keeping gene
- C. gene battery model
- D. functional genes

Answer: B



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158. DNA duplication takes place during :

- A. only in S phase
- B. entire interphase
- C. only in G_1 phase
- D. Only in G_2 phase

Answer: A



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159. Dr. Khorana and his colleagues synthesized a RNA molecule with repeating sequence of UG nitrogen bases (UG UG UG UG UG UG). It produced a tetrapeptide with alternating sequence of cysteine and valine. It proves that codons for cysteine and valine are :

A. UGU and GUU

B. UGU and GUG

C. UUG and GGU

D. GUG and UGU

Answer: B



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160. Which one of the following is correctly matched?

A. Frederick Griffith- discovered the phenomenon of transformation

B. Linus Pauling-isolated DNA for the first time

C. Francis Crick-Proposed one gene one polypeptide hypothesis

D. George Beadle-Proposed the concept of inborn errors

Answer: A



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161. One gene - One enzyme hypothesis was postulated by :

A. A.garrod

B. Beadle and tatum

C. R.Franklin

D. Hershey and chase

Answer: B



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

A. Streptomycin

B. Tetracycline

C. Erythromycin

D. Neomycin

Answer: D



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163. Amino acid sequence in protein synthesis is decided by the sequence of

A. rRNA

B. cDNA

C. tRNA

D. mRNA

Answer: D



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164. During protein synthesis in an organism at one point the process comes to a halt. Select the group of the three codons from the

following from which any one of the three could bring about this halt

A. UUU, UCC, UAC

B. UUC, UUA, UAC

C. UAG, UGA, UAA

D. UUG, UCA, UCG

Answer: C



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165. The okazaki fragments in DNA chain growth :

- A. Polymerize in the 3' to 5' direction and forms replication fork
- B. Prove semi-conservative nature of DNA replication
- C. Polymerize in the 5' to 3' direction and explain 3' to 5' DNA replication
- D. result in transcription

Answer: C



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

A. Super cooling in nucleosomes

B. Dnase digestion

C. Through elimination of repetitive DNA

D. Deletion of non-essential genes

Answer: A



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167. The presence and position of which one of the following defines the template and coding strands in a transcription unit?

A. Represent

B. operator

C. Structure gene

D. Promotor

Answer: D



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168. Telomere repetitive DNA sequence control the function of eukaryote chromosomes because they :

A. are RNA transcription initiator

B. help chromosome pairing

C. prevent chromosome loss

D. Act as replicons

Answer: C



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169. Molecular basis of organ differentiation depends on the modulation in transcription by :

A. Ribosome

B. Transcription factor

C. Anticodon

D. Rna polymerase

Answer: B



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170. The two polynucleotide chains in DNA are:

A. Discontinuous

B. Antiparallel

C. Semiconservative parallel

D. Parallel

Answer: B



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171. Choose the wrong statement :

A. The time lag between the infection and appearance of AIDS symptom may vary

from few hours to a week

B. HIV virus replicates in T_H lymphocytes

C. Anti-retroviral drugs are only partially effective for AIDS treatment

D. HIV spreads by sexual contact or sharing needle with the infected person and not by mere touch or physical contact.

Answer: A



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172. In the DNA molecule:

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

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

- C. The proportion of adenine in relation to thymine varies with the organism

D. there are two strands which run parallel

in the $5' \rightarrow 3'$

Answer: C



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173. Which one of the following pairs of codons is correctly matched with their function or the signal for the particular amino acids ?

A. UUA, UCA-leucine

B. GUU, GCU-alanine

C. UAG ,UGA -stop

D. AUG , ACG -start/Methionine

Answer: C



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174. Polysome is formed by:

- A. Many ribosomes attached to a strand of endoplasmic reticulum
- B. Ribosomes attached to each other in a linear arrangement
- C. Several ribosome attached to a single m-RNA
- D. a ribosome with several subunit

Answer: A



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175. Which one of the following also acts as a catalyst in a bacterial cell ?

A. 5 sr RNA

B. sn RNA

C. hn RNA

D. 23 sr RNA

Answer: C



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176. In 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



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177. Removal of RNA polymerase III from nucleoplasm will affect the synthesis of

A. hn RNA

B. m RNA

C. r RNA

D. t RNA

Answer: D



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178. A single strand of nucleic acid tagged with a radioactive molecule is called :

A. selectable marker

B. plasmid

C. probe

D. Vector

Answer: C



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179. Which one of the following shows coiled RNA strand and capsomeres ?

A. Polio virus

B. Tobacco mosaic virus

C. Measles virus

D. Retrovirus

Answer: B



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180. Which one of the following is wrongly matched ?

A. Transcription- writing information from

DNA to t-RNA

B. Translation using information in m-RNA

to make protein

C. Repressor protein binds to operator to

stop enzyme synthesis

D. Operon Structural genes operator and
promotor

Answer: D



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181. Which of the following is required as
inducers for the expression of lac operon ?

A. Galactose

B. Glucose

C. Lactose and galactose

D. Lactose

Answer: A



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182. The complex of several enzymes and other protein factors which act in a co-ordinate way for DNA replication.



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183. Short discontinuous segment of DNA formed during replication.



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184. Process of formation of RNA on DNA strand.



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185. The coding sequence of eukaryotic gene.



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186. Structural genes and their operator.



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187. A set of three nucleotides that codes for an amino acids.



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188. A set of three nucleotides on tRNA responsible for attachment of the tRNA with mRNA at specific codon.



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189. RNA molecules formed inside the nucleus of eukaryotes (i.e. prior or modification.)



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190. Removal of introns and joining the exons in a definite order in a transcription unit is called :



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191. The process of formation of proteins on mRNA.



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192. Unidirectional flow of information from DNA to RNA to protein .

A. True

B. False

C.

D.

Answer: central dogma



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193. A compound formed by the linking of a molecule of nitrogenous base with a pentose sugar with the help of glycosidic bond.



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194. Frederick Griffith discovered the phenomenon called _____.



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195. Okazaki fragments are formed on _____ strand of replicating DNA.



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196. Flow of information from DNA to protein is called _____.



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197. Clover leaf structure is shown by _____.

A. tRNA

B. rRNA

C. DNA

D. mRNA

Answer: tRNA



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198. The gene whose expression is regulated is
_____ gene.



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



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200. Determination of hereditary characters by the DNA is due to the arrangements of its _____.



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201. Split geen is seen in _____.



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202. The DNA molecule takes a complete turn after every _____ base pairs.



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203. A nucleotide consists of a _____ a _____ and a nitrogen base.



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204. The experiment on DNA using ^{15}N isotope prove that its replication is_____.



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205. _____ are the enzymes which unwind DNA.



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206. New strands of DNA are formed only in the ____ direction.



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207. The unidirectional flow of genetic information from `DNA to RNA to Protein is referred to as the ____ molecular biology.



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



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209. A set of three nucleotides that codes for an amino acids.



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210. _____ is a segment of DNA strand on which a new strand is produced.



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211. One gene - one enzyme concept is now more accurately referred to as one _____ one _____ concept.



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212. DNA differs from RNA in having thymine in place of _____



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213. _____ has the shape of clover-leaf.



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214. Griffith discovered bacterial transduction in *S.pneumoniae*.

A. True

B. False

C.

D.

Answer: transformation



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215. Restriction fragments are formed on lagging strand.



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216. The two chains of DNA strand are parallel.

- A. True
- B. False
- C.
- D.

Answer: Antiparallel



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217. The first evidence regarding semiconservative replication of DNA was provided by Watson and crick.

A. True

B. False

C.

D.

Answer: Meselson and stahl



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218. Supercoils formed during DNA replication are released by the enzyme helicase.

A. True

B. False

C.

D.

Answer: Topoisomerase/gyrase



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219. Excision of introns and joining of exons is called RNA processing.

A. True

B. False

C.

D.

Answer: splicing



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220. The flow of information from DNA to RNA to protein in biological system is called translation.

A. True

B. False

C.

D.

Answer: central dogma



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221. The enzyme catalyses the synthesis of DNA from RNA in retroviruses is reverse polymerase.

A. True

B. False

C.

D.

Answer: Reverse transcriptase



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

A. True

B. False

C.

D.

Answer: Degenerate



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223. Lac operon is repressible system.

A. True

B. False

C.

D.

Answer: Inducible



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224. What is DNA fingerprint ? Mention its application.



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225. Explain transcription ?



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226. Explain polymorphism ?



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227. Explain Translation ?



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228. Explain bioinformatics



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229. The central dogma of protein synthesis is

:



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230. What are the functions of histones ?



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231. What is nucleosome ?



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232. Explain transcription ?



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233. What is an operon ?



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234. Define cistron and differentiate monocistronic and polycistronic unit.



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235. What is DNA fingerprint ? Mention its application.



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236. What is human genome project ? What are the findings of the project ?



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237. Explain the function of the following :
promoter



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238. Explain the function of the following :
tRNA



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239. Explain the function of the following :

Exons



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



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241. List two essential roles of ribosome during translation.



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242. Why is the human genome project called a mega project ?



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243. What is genetic material ? Describe griffth and avery's experiments to prove that DNA is the genetic material.



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244. Discuss the structure and function of DNA.



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245. Discuss the structure and function of different types of RNAs.



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246. Describe the process replication of DNA with suitable diagram.



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247. Describe initiation step of translation in prokaryotes.



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248. Describe the transiation of prokaryotes.



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

?



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