BIOLOGY

BOOKS - NEET PREVIOUS YEAR (YEARWISE + CHAPTERWISE)

MOLECULAR BASIS OF INHERITANCE

Exercise

1. If there are 999 bases in RNA that codes for a protein with 333 amino acids, and the base

at position 901 is deleted such that the length of the RNA becomes 998 bases, how many codons will be altered

A. 1

B. 11

C. 33

D. 333

Answer: C

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

A. Griffith

B. Hershey and Chase

C. Avery, MacLeod and Mc Carty

D. Hargobind Khorana

Answer: B

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3. The association of histone H1 with a nucleosome indicates

A. transcription is occurring

B. DNA replication is occurring

C. the DNA is condensed into chromatin fibre

D. the DNA double helix is exposed

Answer: C

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4. Spliceosomes are not found in cell of

A. plants

B. fungi

C. animals

D. bacteria

Answer: D

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5. DNA replication in bacteria occurs

A. during S- phase

B. within nucleolus

C. prior to fission

D. just before transcription

Answer: C

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6. Which of the following RNAs should be most abundant in animal cell

A. rRNA

B. tRNA

C. mRNA

D. miRNA

Answer: A

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

A. UGA

B. UAA

C. UAG

D. AUG

Answer: D

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8. A complex of attached to a single of RNA is known as

A. Polymer

B. polypeptide

C. okazaki fragment

D. polysome

Answer: D

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

A. Zinc finger analysis

B. Restriction enzymes

C. DNA - DNA hybrisation

D. Polymerase chain reaction

Answer: A

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

A. galactose

B. lactose

C. lactose and galactose

D. glucose

Answer: B

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11. DNA-dependent RNA polymerase catalyzes transcription on one strand of the DNA which is called the :

A. template strand

B. coding strand

C. alpha strand

D. anti strand

Answer: A

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12. A molecule that can act as a genetic material must fulfill the traits give below, except :

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

B. it should be able to genetate its replica

C. it should be unstable structurally and chemically

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

Answer: C

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13. Which of the following r-RNAs acts as structural RNA as well as ribosome in bacteria ?

A. 5srRNA

B. 18srRNA

C. 23srRNA

D. 58srRNA

Answer: C

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14. One functional unit of gene which specifies synthesis of one polypeptide is known as

Or

The equivalent of a structural gene

A. muton

B. cistron

C. operon

D. recon

Answer: B

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15. Taylor conducted the experiment to prove semiconservative mode of chromosomereplication on :

A. Vinca rosea

B. Vicia faba

C. Drosophila melanogaster

D. E. coil

Answer: B

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16. which one of the following is not applicable to RNA

A. Complementary base pairing

B. 5' phosphory and 3' hydroxy ends

C. Heterocyclic nitrogenous bases

D. Chargaff' s rule

Answer: D

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

A. Chromosome , gene , genome , nucleotide

B. Genome , chromosome , nucleotide gene

C. Genome , chromosome , gene , nucleotide

D. Chromosome , genome , nucleotide , gene

Answer: C

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18. Satellite DNA is important because it

A. codes for proteins needed in cell cycle

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

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

D. codes for enzymes needed for DNA replication

Answer: B

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19. Which one of the following is wrongly matched ?

A. Transcription - Writing information from DNA to tRNA

B. Translation - Using information in mRNA to make protein

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

D. Operon - Structural genes, operator and promoter

Answer: A

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20. Transformation was discovered by

A. Meselson and Stahl

B. Hershey and Chase

C. Griffith

D. Wastson and Crick

Answer: C

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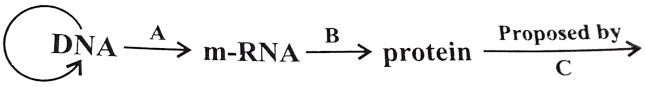
21. The diagram shows an important concept in the genetic implicatio of DNA. Fill in the blanks A to C.



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

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

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

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

Answer: C

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22. Which enzyme/s will be produced in a cell in which there is a nonsese mutation in the lac Y gene

A. β - galactosidase

B. Lactose permease

C. Transacetylase

D. Lactose permease and transacetylase

Answer: A

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

Or Eukaryotic RNA Polymerase III catalyse the synthesis of

A. tRNA

B. hnRNA

C. mRNA

D. rRNA

Answer: A

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24. Which one of the following is not a part of trasncription unit in DNA

A. The inducer

B. A terminator

C. A promoter

D. The structural gene

Answer: A

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25. Ribosomal RNA is synthesised in

A. lysosmes

B. nucleolus

C. nucleoplasm

D. ribosomes

Answer: B

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

A. TTAGU

B. UAGAC

C. AACTG

D. ATCGU

Answer: B

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

A. looping

B. inducing

C. slicing

D. splicing

Answer: D

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28. The structure in chromatin seen as 'beads-on' string' when viewed under electron microscope are called

A. Genes

B. Nucleotides

C. Nucleosomes

D. Base pairs

Answer: C

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29. Select the two correct statements out of the four (1-4) given below about lac operon.

1. Glucose or galactose may bind with the repressor and inactivate it

2. In the absence of lactose the repressor binds with the operator region

3. The z-gene codes for permease

4. This was elucidated Francois Jacob and Jacque Monod

The correct statements are :

A. I and III

B. I and III

C. II and IV

D. I and II

Answer: C

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30. What is not true for genetic code ?

A. A codon in m RNA is read in a non - contiguous fashion

B. It is nealry universal

C. It is degenerate

D. It is unambiguous

Answer: A

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31. Whose experiments cracked the DNA and discovered unequivocally that a genetic code is a triplet ?

A. Nirenberg and Mattaei

B. Hershey and Chase

C. Morgan and Sturtevant

D. Beadle and Tatum

Answer: A

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32. Polysome is formed by

A. several ribosomes attached to a single mRNA

B. many ribosomes attached to a strand of endoplasmic reticulum

C. a ribosome with several subunits

D. ribosomes attached to each other in a liner arrangement

Answer: A

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

A. GUU , GCU - Alanine

B. UAG , UGA - Stop

C. AUG , ACG - Start/ methionine

D. UUA, UCA - Leucine

Answer: B

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34. A sequential expression of a set of human genes occurs when a steroid molecule binds to the

A. transfer RNA

B. messenger RNA

C. DNA sequense

D. ribosome

Answer: C

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35. One gene - one enzyme relationship was established for the first time on

A. Neurospora crassa

B. Salmonella typhimurium

C. Escherichia coil

D. Diplococcus pneumoniae

Answer: A

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36. The Okazaki fragments in DNA chain growth

A. result in transcription

B. polymerise in the 3 ' to 5' direction and form replication fork

C. prove semi - coservative nature of DNA replication

D. polymerase in the 5 ' to 3 ' direction and explain 3' to 5' DNA replication

Answer: A

37. Differentiation of organs and tissues in a develping organism, is assoiated with

A. developmental mutations

B. differential expression of genes

C. lethal mulations

D. deletion of gene

Answer: B

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38. The length of DNA molecile greatly exceeds the dimensions of the nucleus in eukaryotic cell. How is this DNA accommodated

A. Deletion of non - essential gene

B. Super - coiling in nucleosomes

C. DNAse digestion

D. Through elimination of repetitive DNA

Answer: B

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

A. RNA polymerase

B. ribosome

C. transcription factor

D. anticodon

Answer: C

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40. Telemere repetitive DNA sequences control the function of eukarote chromosomes because they

A. act as replicons

B. are RNA transcription initiator

C. help chromosome pairing

D. prevent chromosomes loss

Answer: D

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41. "One gene one enzyme" theory was proposed by

A. R Franklin

B. Harshey and Chase

C. A Garrod

D. Beadle and Tatum

Answer: D

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

A. tRNA

B. mRNA

C. cRNA

D. rRNA

Answer: B

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43. Which one of the following makes use of RNA as a template to synthesize DNA ?

A. Reverse transcriptase

B. DNA dependant RNA polymerase

C. DNA polymerase

D. RNA polymerase

Answer: A

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44. Which one of the following hydrolyses internal phosphodiester, bonds in a polynucleotide chain

A. Lipase

B. Exonuclease

C. Endonclease

D. Protease

Answer: C

45. During transcription holoenzyme RNA polymerase binds to a DNA sequence and the

DNA assumes a saddle like structure at that point. What is that sequence called ?

A. CAAT box

B. GGTT box

C. AAAT box

D. TATA box

Answer: D

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46. Telomerase is an enzyme which is a

A. repetitive DNA

B. RNA

C. simple protein

D. ribonucleoprotein

Answer: D

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47. During replication of a bacterial chromosome DNA syntnthesis stars from a replication origin site and

A. RNA primer are involved

B. is facilitated by telomerase

C. moves in one direction of the site

D. moves in bi- directional way

Answer: A

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48. After a mutation at a genetic locus the character of an organism changes due to the change in :

A. protein structure

B. DNA replication

C. protein synthesis pattern

D. RNA transcription pattern

Answer: A

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49. The telomeres of eukaryotic chromosomes consist of short sequences of

A. thymine rich repeats

B. cytosine rich repeats

C. adenine rich repeats

D. guanine rich repeats

Answer: D

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50. The following ratio is generally constant for a given species

A. A+G/C+T

B. T+C/G+A

C. G+C/A+T

D. A+C/T+G

Answer: C

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

A. TATGC

B. TCTGG

C. UAUGC

D. UATGG

Answer: C

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52. DNA fingerprinting refers to

A. molecular analysis or profiles of DNA samples

B. analysis of DNA samples using imprinting device

C. techniques used for mlecular analysis of different specimens of DNA

D. techniques used for identification of finger - prints of individuals

Answer: A

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53. What does "lac" refer to in what we call the lac operon ?

A. Lac insect

B. The number , 1,00,000

C. Lactose

D. Lactase

Answer: C

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54. During transcription, the site of DNA molecule at which RNA polymerase binds is called

A. receptor

B. enhancer

C. promoter

D. regulator

Answer: C

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55. chromosomes in a bacterial cell can be 1-3 in number and :

A. can be either circular or linear, but never both within the same cell

B. can be circular as well as linear within the same cell

C. are always circular

D. are always linear

Answer: C

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56. In the genetic code dictionary, how many codons are used to code for all the 20 essential amino acids ?

A. 61

B. 60

C. 20

D. 64

Answer: A

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57. What would happen if in a gene encoding a polypeptide of 50 amino acids, 25^{th} codon (UAU) is mutated to UA A?

A. A polypeptide of 49 amino acids will be formed

B. A polypeptide of 25 amino acids will be formed

C. A polypeptide of 24 amino acids will be formed

D. Two polypeptides of 24 and 25 amino acids will be formed

Answer: C

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58. Degeneration of a genetic code is attributed to the :

A. entrire codon

B. third member of a codon

C. first member of a codon

D. seconds member of a codon

Answer: B

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

A. association of 30S , mRNA with formly met tRNA0

B. association of 50S subunit of ribosome with initiation complex

C. formation of formaly met tRNA

D. binding of 30S subunit of ribosome with mRNA

Answer: A

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60. Which one of the following triplet codes, is correctly matched with its specificity for an amino acid in protein synthesis or as 'start' or 'stop' codon ?

A. UGU - Leucine

B. UAC- Tyrosine

C. UCG- Start

D. UUU - Stop

Answer: B

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61. Exon part of m- RNA code for

A. protein

B. lipid

C. carbohydrate

D. phospholipid

Answer: A

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62. Which of the following reunites the exon segments after RNA splicing ?

A. RNA polymerase

B. RNA primase

C. RNA ligase

D. RNA protease

Answer: C

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63. Nucleus of a donor embryonal cell/ somatic cell is transferred to a an enucleated egg cell. Then after the formation of organim , what shall be true ?

A. Organism will have extra - nuclear genes of the donor cell

B. Organism will have extra - nuclear genes of recipient cell

C. Organism will have extra - nuclear genes of both donor and recipient cell

D. Organism will have nuclear genes of recipient cell

Answer: B

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64. Which statements is correct for bacterial transduction ?

A. Transfer of some genes from one bacteria to another bacteria through

virus

B. Transfer of genes from one bacteria to another bacteria by conjugation

C. Bacteria obtained its DNA directly

D. Bacteria obtained DNA from other external source

Answer: A

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65. In DNA percentage of thymine is 20, then what is the percentage of guanine ?

A. $20\ \%$

B. $40\ \%$

C. $30\ \%$

D. $60\ \%$

Answer: C

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66. Jacob and Monod studied lactose metabolism in E. coli and proposed operon concept which is applicable for all :

A. all prokaryotes

B. all prokaryotes and some eukaryotes

C. all prokaryotes and all eukaryotes

D. all prokaryotes and some protozoans

Answer: B

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67. In E.coli during lactose metabolism, repressor binds to :

A. regulator gene

B. operator gene

C. structural gene

D. promoter gene

Answer: B

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68. Sequence of which of the following is used to know the phylogeny ?

A. mRNA

B. rRNA

C. tRNA

D. DNA

Answer: B

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69. In negative operon

A. co -repressor binds with repressor

B. co- repressor does not bind with repressor

C. co- repressor binds with inducer

D. cAMP has negative effect on lac operon

Answer: A

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70. In which direction mRNA is synthesises on DNA template ?

A. $5' \rightarrow 3'$

B. $3' \rightarrow 5'$

C. Both (a) and (b)

D. Any of above

Answer: A

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71. Gene and cistron words are sometimes used synonymously because

A. one cistron contains many genes

B. one gene contains many cistrons

C. one gene contains one cistron

D. one gene contains no cistron

Answer: C

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72. E. coli about to replicate was placed in a medium containing radioactive thymidine for five minutes . Then it was made to replicate in a noemal medium . Which of the following obervation 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: B

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73. Due to discovery of which of the following in 1980 ' s the evolution was termed as RNA world ?

A. mRNA , tRNA , rRNA synthesise proteins

B. In some viruses , RNA is genetic material

C. Some RNAs have enzymatic property

D. RNA is not found in all cells

Answer: C

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74. Who proposed the 'Signal hyothesis' meant for the biosynthesis of secretory type of proteins

A. Camillo Golgi

B. Blobel and Sabatini

C. Baltimore

D. Sheeler and Bianchi

Answer: B

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75. During replication of DNA , its two strands separate. Each of these serves as a template for the formation of new strands . Such type of replication is called

A. non - conservative

B. semi - conservative

C. flexible

D. conservative

Answer: B

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76. The Pneumococcus experiment proves that

A. DNA is the genetic material

B. RNA sometime controls the production of DNA and proteins

C. bacteria undergo binary fission

D. bacteria do not reproduce sexually

Answer: A

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77. In DNA when AGCT occurs , their association is as per which of the following pairs ?

A. ACGT

B. AGCT

C. ATGC

D. All of these

Answer:

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78. DNA parts which can switch their position are

A. exons

B. introns

C. cistrons

D. transposons

Answer: D

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79. Genes that are involved in turning on or off the transcription of set of structural genes are called Or Functioning of structural genes is controlled by

A. polymorphic genes

B. operator genes

C. reductant genes

D. regulatory genes

Answer: D

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80. Protein synthesis in an animal cell, takes place

A. only in the cytoplasm

B. in the nucleolus as well as in the mitochondria

C. in the cytoplasm as well as in mitochondria

D. only only on ribosomes attached to a nucleus

Answer: C

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81. Which of the following RNAs up specific amino acid (from amino acid pool) in the cytoplasm to ribosome during protein synthesis

Or Which form of RNA has a structure resebling clover leaf

A. mRNA

B. tRNA

C. rRNA

D. RNA

Answer: B

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82. The three codons which result in the termination of polypeptide chain synthesis are

A. TAG , TAA , TGA

B. GAT, AAT , AGT

C. AGT , TAG , UGA

D. UAA , UAG , UGA

Answer: D

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83. Genes are packed in bacterial chromosome by

A. histones

B. basic protein

C. acidic protein

D. actin

Answer: B

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84. An enzyme that joins the ends of two strands of nucleic acids is a

A. polymerase

B. synthetase

C. helicase

D. ligase

Answer: D

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85. Okazaki fragments are seen during

A. transcription

B. translation

C. replication

D. transduction

Answer: C

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86. Triplet for inhibitting process of translation is

A. UAU

B. UAA

C. UAC

D. UGC

Answer: B

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87. The basis of DNA fingerprinting is :

A. occurrence of Restriction Fragment Length Polymorphism (RFLP)

B. phenotypic differences between individuals

C. availability of cloned DNA

D. knowledge of human karyotype

Answer: A

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88. In eukaryotic genes, coding sequences are called :

A. introns

B. operons

C. exons

D. cistrons

Answer: C

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89. If the sequences of bases in DNA is ATTCGATG, then the sequence of bases in its transcript will be

A. CAUCGAAU

B. UAAGCUAC

C. GUAGCUUA

D. AUUCGAUG

Answer: B

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90. Anticodon is an unpaired triplet of bases in an exposed position of

A. mRNA

B. rRNA

C. tRNA

D. sRNA

Answer: C

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91. The wild type E. coli cells are growing in normal medium with glucose. They are transferred to a medium containing only lactose as sugar. Which of the following changes take place ?

A. The lac operon is repressed

B. All operons are induced

C. The lac operon is induced

D. E. coli cells stop dividing

Answer: C

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92. Which is not directly involved in protein synthesis ?

A. Transcription

B. Initiation

C. Elongation

D. Termination

Answer: A

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93. There are special proteins that help to open up DNA double helix in front of the replication frok . These protein are

A. DNA gyrase

B. DNA polymerase -I

C. DNA ligase

D. topoisomeras

Answer: A

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94. DNA template sequence of CTGATAGC is transcribed over mRNA as

A. GUCTUTCG

B. GACUAUCG

C. GAUTATUG

D. UACTATCU

Answer: B

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95. In Escherichia coli, lac operon is induced by

:

A. lactose

B. promoter gene

C. β - galactosidase

D. I- gene

Answer: A

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96. Reverse transcriptase is :

A. RNA dependent RNA polymerase

B. DNA dependant RNA polymerase

C. DNA dependent RNA polymerase

D. RNA dependent DNA polymerase

Answer: D

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97. The number of base substitution possible in amino acid codons is

A. 261

B. 264

C. 535

D. 549

Answer: D

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98. The codon for the initiation of protein synthesis in eukaryotes is :

A. GUA

B. GCA

C. C CA

D. AUG

Answer: D

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99. Nucleosome core is made of :

A. H1 , H2A , H2B and H3

B. H1 , H2A , H2B and H4

C.

D. H1 , H2A, H2B, H3 and H4

Answer: D

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100. A DNA with unequal nitrogen bases would most probably be

A. single stranded

B. double stranded

C. triple stranded

D. four stranded

Answer: A

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101. The process of translation is :

A. ribosome synthesis

B. protein synthesis

C. DNA synthesis

D. RNA synthesis

Answer: B

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102. Durning DNA replication, the strands separate by

A. DNA polymerase

B. topoisomerase

C. unwindase/ helicase

D. gyrase

Answer: C

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103. Who proved that DNA is the basic genetic material ?

A. Griffith

B. Waston

C. Boveri and Sutton

D. Hershey and Chase

Answer: D

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104. some amino acids are coded by more than one codon, hence the genetic code is

A. overlapping

B. wobbling

C. degenerate

D. generate

Answer: C

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105. Nucleotide arrangement in DNA can be seen by

A. X - ray crystallography

B. electron microsecope

C. ultracentrifuge

D. light microscope

Answer: A

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106. The transforming principle of Griffith's experiment was DNA. A very, MacLeod and McCarty was :

A. mRNA

B. DNA

C. protein

D. polysacharide

Answer: B

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107. Experimental material in the study of DNA replication has been

A. Escherichia coli

B. Neurospora crassa

C. Pneumococcus

D. Drosophila melanogaster

Answer: A

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108. Khorana first deciphered the triplet codons of

A. serine and isoleucine

B. threonine and histidine

C. tyrosine and tryptophan

D. phenylalanine and methionine

Answer: B

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109. Escherichia coli fully labelled with $.^{15}N$ is allowed to grow in $.^{14}N$ medium. The two strands of DNA molecule of the first generation of bacteria have :

A. different denesity and do not resermble parent DNA

B. different density but resemble parent DNA

C. same density and resemble parent DNA

D. same density but do not resmble parent DNA

Answer: B

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110. In RNA, the thymine is replaced by :

A. adenine

B. guanine

C. cytosine

D. Uracil

Answer: D

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111. A nucleotide is formed of

A. purine , pyrimidine and phosphate

B. purine , sugar and phosphate

C. nitrogen base , sugar and phosphate

D. pyrimidine , sugar and phosphate

Answer: C

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112. The process of DNA formation from RNA is called :

A. transversion

B. transcription

C. translation

D. translocation

Answer: B

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113. In the coding dictionary, there are 64 codons as :

A. 64 amino acids are to be coded

B. 64 types of tRNAs are present

C. there are 44 non - sense codons and 20 sense codons

D. genetic code is triplet

Answer: D

114. DNA replication is :

A. conservative and discontinuous

B. semi - conservative and semidiscontinuos

C. semi - conservative and discontinuous

D. conservative

Answer: B

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115. Genetic code consists of

A. adenine and guanine

B. cytosine and uracil

C. cyosine and guanine

D. All of the above

Answer: D

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