



BIOLOGY

BOOKS - TRUEMAN'S BIOLOGY (ENGLISH)

MOLECULAR BASIS OF INHERITANCE

Mcqs

1. Which one is a nucleotide ?

A. Adenylic acid and guanosine
monophosphate

B. cytidylic acid and uridine

C. uridylic acid and cytosine

D. all of the above

Answer: A



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2. Adenylic acid is

A. Adenine+ribose+phosphate

B. adenine+deoxyribose+phosphate

C. Adenosine+sugar

D. Adenine+sugar

Answer: A



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3. On cooling the two separated strands of DNA again recoil. It is called

A. chain reaction

B. annealing

C. both 1 and 2

D. palindrome

Answer: B



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4. If DNA has 10 spirals, the length of DNA will be

A. 34\AA

B. 340\AA

C. 640\AA

D. 64\AA

Answer: B



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5. What would be the length of DNA containing 10000 base pairs?

A. 68000Å

B. 34000Å

C. 10000Å

D. 1 m

Answer: B



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6. How many nucleotides are found in one spiral of B-DNA?

A. 5

B. 10

C. 20

D. 25

Answer: C



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7. Consider the following nucleic acids 1. DNA,
2. r-RNA, 3. t-RNA, 4. m-RNA choose the correct

sequence of their arrangement according to their participation in protein synthesis

A. 1,2,3,4

B. 2,3,4,1

C. 3,2,1,4

D. 1,4,2,3

Answer: D



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8. Ratio of DNA: Histone is roughly 1:1 in eukaryotic chromosome. In prokaryotes it is

A. 1 : 2

B. 2 : 1

C. 1 : 0

D. 2 : 0

Answer: C



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9. Adenosine is :

A. nucleoside

B. nucleotide

C. a purine

D. a pyrimidine

Answer: A



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10. Thymine differs from uracil in having

A. CH_3 group

B. $C = O$ group

C. CHO group

D. $COOH$ group

Answer: A



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11. In purines, N is at position ____ in its two rings.

A. 1,3,7,9

B. 1,5

C. 7,9

D. 1 & 9

Answer: A



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12. In pyrimidines, N is at ____position in its one ring.

A. 1,3

B. 7,9

C. 1

D. 1 & 9

Answer: A



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13. Plant viruses mostly contain

A. ssRNA

B. dsRNA

C. ssDNA

D. dsDNA

Answer: A



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14. Bacteriophages are viruses that eat away bacteria. They usually have

A. dsDNA

B. dsRNA

C. ssDNA

D. ssRNA

Answer: A



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15. DNA can be tested by

A. Iodine

B. Feulgen reaction

C. Rolish test

D. Millions reagent

Answer: B



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16. The smallest RNA is :-

A. tRNA

B. mRNA

C. rRNA

D. genetic RNA

Answer: A



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17. The distance between 2 strands of DNA is

A. 3.4\AA

B. 34\AA

C. $19.8\text{\AA}(20\text{\AA})$

D. 10\AA

Answer: C



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18. Which of the following RNAs have clover leaf structure?

A. transfer RNA

B. messenger RNA

C. ribosomal RNA

D. heterogenous RNA

Answer: A



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19. 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 strands

B. mRNA strands

C. tRNA strands

D. Data insufficient

Answer: D



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20. Which is correct sequence according to increasing molecular weight?

A. tRNA-DNA-rRNA

B. tRNA-rRNA-DNA

C. rRNA-DNA-tRNA

D. DNA-tRNA-rRNA

Answer: B



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21. The two strands/two polynucleotide chains of DNA are

A. similar in nature and antiparallel

B. discontinuous in nature

C. antiparallel and complementary

D. parallel and discontinuous

Answer: C



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22. ssDNA is genetic material is found in

A. $\phi \times 174$ coliphage

B. T_2 coliphage

C. influenza virus

D. wound Tumor virus

Answer: A



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23. Exact replication of DNA is possible due to

- A. genetic code
- B. double helical
- C. sequence of nucleotide
- D. base pairing rule

Answer: D



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24. if $A=120$ and $C=120$, then a piece of DNA will have _____ nucleotides.

A. 240

B. 280

C. 480

D. Data insufficient

Answer: C



25. In *E. coli* DNA has 18% of bases of cytosine.

What will be the fraction of adenine?

A. 0.18

B. 0.32

C. 0.36

D. Data insufficient

Answer: B



26. Which is inappropriate among the following in terms of the concept that $\frac{[A]}{[T]}$ and $\frac{[G]}{[C]}$ in DNA is equal to one?

A. coliphage $\phi \times 174$

B. polio virus

C. TMV

D. all of these

Answer: D



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27. Viruses with double stranded (ds) RNA are

A. reoviruses

B. deoxyriboviruses

C. retroviruses

D. prophage

Answer: A



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28. In 'B' model of DNA, the diameter is 20\AA . It is _____ in Z DNA.

A. 23\AA

B. 18\AA

C. 21\AA

D. 26\AA

Answer: B



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29. Which statement is wrong about DNA?

A. Some viruses have ssDNA

B. Some viruses have dsRNA

C. Z' DNA has 12 base pairs per helix

D. Length of one helix in 'B' DNA is 45Å and

'Z' DNA is 34Å.

Answer: D



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

A. 26\AA & 25\AA

B. 20\AA & 34\AA

C. 18\AA & 46\AA

D. 19\AA & 20\AA

Answer: A



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31. The enzyme which helps to cut one strand of DNA duplex to release tension of coiling of two strands is

A. DNA ligase

B. DNA polymerase 1

C. Topoisomerase

D. Helicases or unwindases

Answer: C



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32. DNA is genetic material was proved by

A. Watson and Crick

B. Hershey and Chase

C. Griffith

D. Sutton and Boveri

Answer: B



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

A. topoisomerases

B. unwindases (helicases)

C. polymerase 1

D. exonucleases and endocuclease

Answer: B



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34. By using proteins from TMV (Tobacco-mosaic virus) and RNA from HRV (Holmes ribgrass virus), a chimeric virus particle was synthesized by Fraenkel-conrat and singer. It was then used for infection of tobacco leaves. They found that

- A. no infection was there as tobacco plant infection by DNA viruses only
- B. leaves developed symptoms of TMV and HRV both
- C. leaves developed symptoms of TMV

D. leaves developed symptoms of HRV

Answer: D



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35. The experimental system used in studies on replication of DNA is

A. *Escherichia coli*

B. *Neurospora crassa*

C. *Drosophila melanogaster*

D. *Zea mays*

Answer: A



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36. Amount of DNA per diploid cell of man and its length is about

A. 100 g and $1.74m \times 10^{15}$

B. 5.6 pg and 1.74cm

C. 6.4 pg and 220 cm

D. 100g and 1.74 m

Answer: C



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37. Central Dogma of modern genetics is

A. *DNA* → *RNA* → protein

B. *DNA* → protein → *RNA* → protein

C. *RNA* → *DNA* → *RNA* → protein

D. *RNA* → *RNA* → *DNA* → protein

Answer: A



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

A. number of origins of replication

B. discontinuous rather than semi continuous replication

C. use of DNA primer rather than RNA primer

D. unidirectional rather than bidirectional replication

Answer: A



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39. DNA replication is:-

A. semiconservative, directional and continuous

B. semi conservative, bidirectional and continuous

C. semi conservative, bidirectional and semi discontinuous

D. semi conservative only

Answer: C



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40. Under the concept of triplet code, the segment of DNA specifying one full functional polypeptide chain is known as:-

A. transposon

B. operon

C. codon

D. cistron

Answer: D



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41. When DNA is transferred from a culture of capsulated pneumococcus to a culture of non capsulated pneumococcus converting the latter into the former type, the process is known as.

A. translocation

B. conjugation

C. transformation

D. transduction

Answer: C



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42. Sum of all the genes in a population is called

A. genotype

B. gene pool

C. gene factor

D. genome

Answer: B



43. If 50 heavy DNA (N^{15}) molecules are replicated 2 times in N^{14} medium, what is obtained?

- A. genotype
- B. gene pool
- C. gene factor
- D. none of the above

Answer: A



44. The experiment which proved conclusively that during infection only DNA of the bacteriophage enters the host cell and the protein coat stays behind was conducted by

A. F. Griffith

B. Aery, macleod and Mc carty

C. Sutton and Boveri

D. Hershey and Chase

Answer: D



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45. There is some permissible latitude in the pairing of the third base in the codon. This is

- A. wobble hypothesis
- B. Lyon's hypothesis
- C. Khorana's hypothesis
- D. Watson's hypothesis

Answer: A



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46. A DNA molecule in *E. coli* is heavy and labelled with N^{15} . It is allowed to replicate in a medium containing N^{14} . After one generation of replication, the two daughter molecules will

A. be similar in density but differ from that of parent of DNA

B. differ in density as well as from that of
the parent DNA

C. have same density as that of parent DNA

D. differ in density but resemble that
parent DNA

Answer: A



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47. Taylor experiment on *Vicia faba* (broad bean) root tips using autoradiography demonstrates that

A. DNA replication is continuous

B. DNA replicates in discontinuous manner

C. chromosomes show semiconservative replication

D. DNA replicates in conservative manner

Answer: C





48. If a labelled DNA (with a heavy isotope) replicates in conservative manner in a normal medium then in F₁.

A. both daughter DNA molecules will be heavy

B. one DNA molecule will be heavy and one light

C. both DNA molecules will be hybrid

D. all are possible

Answer: B



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49. If DNA replication is conservative, what would be expected distribution of labelled DNA molecule after two generations.

A. 1/4 of the molecules would be

N^{15} N^{15}

B. $\frac{3}{4}$ of the molecules would be



C. No $N^{14} N^{15}$ molecules would be

observed

D. All the above statements are correct

Answer: D



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50. 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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51. if one chain of a DNA molecule has the base order 5'ATTGACGT3' Then the base order of its complementary chain will be

A. 3'ATTGACGT 5'

B. 5'TGCAGTTA 3'

C. 5'TUUCTGCU 3'

D. 3' TAACTGCA 5'

Answer: D



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52. Codons that specify same amino acids are called

A. synonyms

B. autonyms

C. synergistic

D. antagonistic

Answer: A



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53. Semiconservative replication of DNA was given by

A. Watson and Crick

B. Bateson and Punnet

C. Messelson and stahls

D. Avery, McCarty and MacLeod

Answer: C



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54. In a polyribosome complex, the ribosome present towards 5'end of mRNA has

A. longest polypeptide chain

B. smallest chain of polypeptide

C. all ribosomes have polypeptide chains of equal size

D. a chain without 'met'

Answer: B



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55. At which end of mRNA translation always begins?

A. 3'end

B. 5'end

C. any where on mRNA

D. UUU end

Answer: B



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56. mRNA in prokaryotes is usually

A. monocistronic

B. polycistronic

C. monokaryotic

D. replicative

Answer: B



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57. A segment of DNA has base sequence GAC GAC CGC AAA ACA AGC. Due to deletion, the first base 'G' is deleted. The likely effect of this on the coding of DNA segment is that

- A. first amino acid is different and all others will be like the earlier polypeptide
- B. there will be no change in polypeptide chain
- C. whole sequence of amino acids is changed

D. the polypeptide chain will be two short
of amino acid.

Answer: C



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58. Which is related to Teminism?

A. $DNA \rightarrow RNA \rightarrow \text{protein}$

B. $RNA \rightarrow DNA \rightarrow mRNA \rightarrow \text{protein}$

C. $DNA \rightarrow RNA \rightarrow \text{protein} \rightarrow DNA$

D. None of the above

Answer: B



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59. There are 125 amino acids. We want to synthesize an mRNA. How many nitrogen bases are required to form sufficient codons to code all 125 amino acids?

A. 375

B. 125

C. 42

D. 3

Answer: A



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60. Amino acid is carried by tRNA at its

A. 5' end where OH is present

B. 3' end here OH is present

C. recognition site

D. loop I

Answer: B



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61. Which is recognition site of tRNA?

A. Anticodon

B. Loop I

C. loop IV

D. 5'-OH end

Answer: A



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62. tRNA is attached to mRNA by its

A. I D loop

B. II T loop

C. III anticodon loop

D. IV acceptor arm loop

Answer: B



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63. Clover leaf model of holley for tRNA is a 2D model giving secondary structure. A 3D model showing tertiary structure was

- A. L-form model of Klug
- B. Nucleosome model of Kornberg
- C. Du Praw uncineme model
- D. no such model exists

Answer: A



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64. In tRNA, CCA sequence is found at 3' end and G at 5' end. This CCA group is

A. present from the beginning of tRNA

formation

B. added after transcription

C. added after translation

D. added before transcription

Answer: B



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65. In the protein synthesis, tRNA carrying the amino acid enters from which site of ribosome?

A. A' site

B. P' site

C. anticodo site

D. recognition site

Answer: A



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66. During protein synthesis, a ribosome moves from 5' to 3' end of mRNA to recognise all condons. This movement of ribosome is called

A. transformation

B. translocation

C. transposition

D. transduction

Answer: B



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67. The ribosomal binding loop of tRNA is

A. DHU loop

B. anticodon loop

C. $T\Psi$, C loop III loop

D.

Answer: C



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68. RNA is synthesized on

A. Both strands of DNA

B. on sense strands of DNA

C. on anti sense strands of DNA

D. on cDNA

Answer: C



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69. The wrong base if added, is removed and proper base is usually added during DNA replication by

A. DNA polymerase I

B. Ligase

C. DNA polymerase III

D. RNA primer

Answer: A



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70. Short segments of DNA called Okazaki fragments are synthesized during DNA replication. This replication occurs in

A. 3' → 5' direction

B. 5' → 3' direction

C. it is not certain

D. only terminal part of sense strand

Answer: B



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71. Leading strand is

A. replicated strand of DNA which grows continuously and does not require DNA ligase

B. replicated strand of DNA which is formed in short segments and requires ligase

C. having its 5' end open for elongation

D. 1 and 3

Answer: A



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72. mRNA in eukaryotes is synthesized on 3' → 5' strand of DNA in 5' → 3' direction with the help of

- A. RNA polymerase I (Pol I)
- B. Pol (II)
- C. Pol III
- D. DNA polymerase

Answer: B



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73. The number of punctuation 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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74. In prokaryotes, first amino acid taking part in protein synthesis is

A. met

B. f^{met}

C. val

D. none of these

Answer: B



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75. The initiation codon in protein synthesis is

A. AUG

B. GUG

C. met

D. AUG or GUG

Answer: D



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76. Because most of the amino acids are represented by more than one codons, the genetic code is said to be

A. universal

B. degenerate

C. overlapping

D. commaless

Answer: B



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77. In codon in DNA is AAA, what will be the anticodon for it.

A. UUU

B. AAA

C. TTT

D. AUG

Answer: B



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78. Genetic code was cracked (deciphered) by

A. watson and crick

B. beadle and tatum

C. gamow

D. Nirenberg, mathaei and Khorana

Answer: D



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79. The first genetic material could be

A. ubiquitous

B. able to permit diversity

C. capable of replication

D. All the above

Answer: D



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80. Protein does not constitute genetic material because it

A. is not ubiquitous

B. is a small molecule

C. does not possess ability to replicate

D. does not possess diversity

Answer: C



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81. Backbone of DNA strand is built up of

- A. nitrogen base, phosphate and deoxyribose sugar
- B. alternate nitrogen base and phosphate
- C. alternate nitrogen base and deoxyribose sugar
- D. alternate phosphate and deoxyribose sugar

Answer: D



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82. The template for protein synthesis is

A. DNA

B. mRNA

C. rRNA

D. tRNA

Answer: B



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83. if a bacteriophage having S^{35} infects a bacterium growing on normal medium, the bacteriophages produced after the death of bacterium will

- A. incorporate S^{35} into their nucleic acid
- B. incorporate S^{35} into their particles
- C. not incorporate S^{35} into their particles
- D. incorporate S^{35} into their protein coat

as protein is genetic

Answer: C



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84. If a bacteriophage having P^{32} infects a bacterium growing on normal medium then

A. some of the bacteriophages produced

shall incorporate P^{32}

B. all the newly produced bacteriophages

shall incorporate P^{32}

C. none of the bacteriophages produced shall incorporate P^{32} .

D. none of these

Answer: A



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85. if it is wanted to have T_2 bacteriophages with protein cover labelled with $.^{35}S$, it is desirable to

- A. grow bacteriophages in medium containing ^{35}S labelled amino acids
- B. introduce T_2 in bacterium having ^{35}S labelled protein
- C. obtain a single phage with ^{35}S labelled protein and allow it to multiply
- D. all are correct

Answer: B



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86. RNA primer is required for

A. transcription or synthesis of RNA over

DNA

B. translation or polypeptide synthesis

with RNA help

C. DNA repair

D. DNA replication

Answer: D



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87. Okazaki segments are small pieces of DNA and are formed on

- A. lagging strand
- B. leading strand
- C. sense strand
- D. nonsense condons

Answer: A



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88. The triplet code is read from

A. $5' \rightarrow 3'$ direction

B. $3' \rightarrow 5'$ direction

C. At any point and in any direction

D. AUG

Answer: A



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89. The initiating codon AUG specifies for

A. valine

B. leucine

C. lysine

D. methionine

Answer: D



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90. Translocation involves

- A. Pulling of A-site tRNA to P-site
- B. pulling of P-site tRNA to A-site
- C. freeing of P-site tRNA
- D. freeing of A-site tRNA

Answer: A



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91. In an experiment done by Griffith, it was found that when virulent capsulated smooth 'S' bacteria were injected into healthy mice, the mice dies of pneumonia. When mice were injected with non virulent 'R' forms of same bacteria, they survived and did not die to pneumonia. In another case when S-forms were killed by heating at above 60 and injected, rats did not get pneumonia, but when killed, s-forms and R-forms of bacteria were mixed and injected, the rats suffered from pneumonia and died. which one of the

following conclusions can be drawn from the above experiment?

A. Heat killed virulent and heat killed a virulent at times can cause disease

B. virulent bacteria alone can cause disease

C. Whole body of virulent bacteria is nearest to cause disease

D. Heat resistant component of virulent bacterial cells in combination with avirulent strain can produce the disease

Answer: D



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

- A. amino acid attachment site
- B. amino acid recognition site
- C. codon recognition site
- D. Ribosome recognition site.

Answer: C



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93. Which one of the followings is the proper sequence in protein synthesis?

A. mRNA synthesis, mRNA amino acid

complex, peptide chain

B. tRNA amino acid complex, mRNA

synthesis, peptide chain

C. tRNA amino acid complex, peptide chain,
mRNA synthesis

D. mRNA synthesis, tRNA amino acid
complex, peptide chain

Answer: D



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94. If in a test tube, mRNA of bacillus, tRNAs from the pancreas of rats and rRNA from salmonella are taken and sufficient number of

amino acids are put, then the polypeptide synthesized will be of the nature of

A. Bacillus

B. rat body cells

C. both bacillus and rat body cells

D. salmonella

Answer: A



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95. Which one of the following has minimum life span?

A. mRNA

B. rRNA

C. tRNA

D. DNA

Answer: A



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96. One strand of the given segment of DNA codes for mRNA having the sequence AUC, GCG, UCA needed for the synthesis of proteins. The strand by which DNA molecule will be responsible for the above mRNA sequence is

A. 

B. 

C. 

D. 

Answer: B





97. If a certain group of cells utilises the amino acid glycine exclusively for synthesis, and if a growing culture of these cells is fed radioactive glycine, radioactivity will be found first in the

- A. rRNA
- B. mitochondrial RNA
- C. messenger RNA
- D. transfer RNA

Answer: D



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98. 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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99. The transfer of genetic material from one bacterial cell to another bacterial cell with the help of a bacteriophage was discovered by laderberg and Zinder. It is known as

- A. Mutation
- B. transformation
- C. transduction
- D. gene flow

Answer: C



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100. In general, which one of the following statements is wrong?

A. One codon for one amino acid

B. Many codons can code for one amino acid

C. One codon can code for many amino acids

D. Codons are subject to point mutations

Answer: C



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101. which of the following two codons have double functions?

A. AUG,GUG

B. UAA,UGA

C. UGA,GUG

D. UAA,AUG

Answer: A



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102. In protein synthesis, a polypeptide of five amino acids is synthesized. Which one of the followings can be the correct polypeptide?

A. Lysine-methionine-valine-glycine-

histidine

B. methionine-lysine-glycine-valine-histidine

C. valine-methionine-glycine-histidine-lysine

D. Glycine-valine-methionine-histidine-

lysine

Answer: B



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103. Suppose evolution on earth has occurred in such a way that there are 96 amino acids instead of 20. DNA has 12 different types of bases and DNA synthesis occur in the same

way as today. The minimum number of bases per DNA codon would be :

A. 12

B. 8

C. 2

D. 3

Answer: C



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104. The first event in translation is the binding of mRNA to the

- A. smaller unit of ribosome
- B. larger unit of ribosome
- C. amino acid
- D. polysome

Answer: A



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105. Template refers to

A. The physical basis of heredity

B. unit of DNA having coded information

and act as a model from which

information is collected by mRNA

C. a genetic element which may or may not

be present in a cell associated with the

chromosomes

D. a complete set of chromosomes which is

transferred to the gametes

Answer: B



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106. One gene one polypeptide theory can be explained by:-

- A. alkaptonuria
- B. phenylketonuria
- C. sickle cell anaemia
- D. all of these

Answer: D



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107. Value (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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108. The reverse transcriptase is also called

A. RNA dependent DNA polymerase

B. DNA dependent RNA polymerase

C. DNA primase

D. None of these

Answer: A



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109. Protein for virus protein coat is synthesized in

A. Ribosome of virus

B. Ribosome of host

C. Mitochondria of host

D. Nucleus of host

Answer: B



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110. The single stranded DNA of phage $\phi \times 174$ has 5400 nucleotides. If average protein contains 200 amino acids, how many different proteins could this phage DNA code?

A. 100

B. 90

C. 9

D. 27

Answer: C



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111. Prophage is

A. stage of meiosis

B. integrated viral genome with host chromosome

C. inactive virus outside the living cell

D. none of the above

Answer: B



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112. Oncogenic viruses are harmful and can cause tumor in

A. provirus state

B. lytic phase

C. virion state

D. hybrid state

Answer: A



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113. In lysogeny a virus is

A. temperate but is capable of virulence

B. virulent

C. completely harmless to host

D. multiplies rapidly

Answer: A



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114. Bacterial transduction is phage mediated genetic transfer and was discovered in salmonella by

A. zinder and Lederberg

B. Tatum and Lederberg

C. Beadle and Tatum

D. Avery, Macleod and Mccarty

Answer: A



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115. Regulated unit of genetic material is called

A. Operator gene

B. regulator gene

C. operon

D. promoter gene

Answer: C



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116. In tryptophan operon, the tryptophan acts as

A. repressible system

B. inducible system

C. controlled by inducer gene

D. three structural genes control it

Answer: A



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117. Lac operon is

A. repressible system

B. inducible system

C. five structural genes control it

D. controlled by regular gene

Answer: B



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118. Which of the following viruses is capable of synthesising RNA over RNA?

A. Coliphage lambda

B. HIV

C. $\phi \times 174$

D. TMV

Answer: D



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119. Repressor of operon model binds itself to

A. regulator gene

B. promoter gene

C. structural gene

D. operator gene

Answer: D



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120. In tryptophan operon, the tryptophan acts as

A. corepressor

B. promoter

C. apo-repressor

D. operator

Answer: A



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121. In E.coli, lac operon is induced by

A. promoter gene

B. operator gene

C. regulator gene

D. allolactose

Answer: D



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122. In *E. coli*, an operator gene combines with

A. inducer gene to switch on structural gene action

B. inducer gene to switch off structural gene action

C. regulator protein (repressor) to switch off structural gene action

D. regulator protein to switch on gene action

Answer: C



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123. 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



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124. Genes that trigger normal cells to cause cancer are called

A. house keeping constitutive genes

B. silent genes

C. oncogenes

D. recessive genes

Answer: C



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125. Episomes were discovered by Jacob and Wollman (1960). These represent

A. extrachromosomal segment that is

temporarily attached with main nucleoid

B. extrachromosomal genetic material

independent of main nucleoid

C. viruses

D. archaebacteria

Answer: A



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126. Exon is

A. regulatory gene

B. coding part of cistron that forms mRNA

C. non-coding part of mRNA

D. full cistron

Answer: B



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127. Which one of following pairs is correctly matched?

A. RNA polymerase-RNA primer

B. Okazaki fragments-Splicing

C. Restriction enzymes-Genetic Engineering

D. Central Dogma-codon

Answer: A



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128. Which of the following pairs is correctly matched?

A. AIDS virus-reverse transcriptase

B. Oncogenes-ageing

C. Replication fork-mRNA

D. initiation codon-amino acid activation

Answer: A



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129. Reverse transcription was first shown by

A. Temin and Baltimore

B. Delbruck and Luria

C. Jacob and Monod

D. Hershey and Chase

Answer: A



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130. The term hybrid vigour given by schull is technically called

- A. heterosis
- B. autoecious
- C. heteroecious
- D. heterogamy

Answer: A



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131. Operon unit consists of

- A. regulator, operator and repressive gene
- B. regulator, structural and operator gene
- C. regulator, structural, operator and promotor gene
- D. regulator, structural and promoter gene

Answer: C



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132. House keeping genes are

- A. constitutive genes
- B. always in action
- C. required constantly
- D. all of these

Answer: D



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133. Best method to determine paternity is

A. Protein analysis

B. chromosomes counting

C. gene counting

D. DNA finger printing

Answer: D



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134. RNA polymerase I catalyses synthesis of

A. rRNA

B. t RNA

C. mRNA

D. Sn RNA

Answer: A



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135. In *Escherichia coli*, the product of *i* gene combines with

A. operator gene to switch off structural

genes

B. inducer gene to switch off structural

genes

C. operator gene to switch on structural

genes

D. regulator gene to switch off structural genes

Answer: A



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136. Lactose operon produces enzymes

A. β -galactosidase, permease and glycogen synthetase

B. β -galactosidase, permease and
transacetylase

C. permease, glycogen synthetase and
transacetylase

D. β -galactosidase, phosphoglucose,
isomerase and permease

Answer: B



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137. Transfer of DNA from one bacteria to another by contact is known as

- A. conjugation
- B. transformation
- C. transduction
- D. transcription

Answer: A



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138. Genetic material fo reovirus is

A. ds DNA

B. ss DNA

C. ds RNA

D. ss RNA

Answer: C



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139. The technique of DNA fingerprinting was initially developed by

- A. Wyman and white
- B. Jeffery
- C. Khorana's phyothesis
- D. Lal ji singh

Answer: B



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140. Which is true for viruses

- A. they are living organisms
- B. they are larger than bacteria
- C. they have DNA or RNA
- D. they replicate in animal cells only

Answer: C



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141. Circular DNA is present in

A. E.R. and ribosomes

B. ribosomes and chloroplasts

C. ribosomes and mitochondria

D. mitochondria and chloroplasts

Answer: D



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142. The okazaki fragments on the lag strand are joined together by the enzyme

A. DNA polymerase I

B. DNA polymerase III

C. Ligase

D. Topoisomerase

Answer: C



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143. DNA polymerases I and II are generally used in DNA replication

A. to cut the helix at certain places

B. for proof reading & repair

C. adding carbonyl compound

D. breaking and joining pieces of one DNA
strand

Answer: B



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144. A heavy DNA ($N^{15}N^{15}$) of E. coli is allowed to replicate in N^{14} medium for 80 minutes. What would be the proportions of light ($N^{14} - N^{14}$) and hybrid densities of DNA ($N^{14} - N^{15}$) molecules?

A. 50:50

B. 75:25 %

C. 87.5:12.5 %

D. all hybrid

Answer: C



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145. A ds DNA is 100 kbp long. The number of nucleotides, number of complete turns in the molecule and the length of the DNA molecule will be:-

A. 1.2×10^5 , 20000, $3.4 \times 10^4 nm$

B. 2×10^5 , 10000, $3.4 \times 10^4 nm$

C. 2×10^5 , 10000, $0.34 \times 10^4 nm$

D. 2×10^5 , 100000, $3.4 \times 10^4 nm$

Answer: B



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146. Choose the correct pair having same meaning

A. DNA fingerprinting-DNA frofiling

B. Gene pool-genome

C. Codon-gene

D. Cistron-triplet

Answer: A



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147. Which DNA molecule has lower melting temperature?

A. 

B. 

C. 

D. 

Answer: B



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148. VNTR is used in :

- A. Protoplast culture
- B. DNA finger printing
- C. regulation of hormones
- D. enhancing photosynthetic genes

Answer: B



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149. Change from purine to pyrimidine or pyrimidine to purine is called :

- A. translation
- B. transcription
- C. transition
- D. mangleisum sulphate

Answer: C



150. A mutational event which changes the codon UGG to UAG is known as

- A. gross mutation
- B. mis-sense mutation
- C. nonsense mutation
- D. frame shift utation

Answer: C



151. In a given RNA segment-AUG ACC UGG ACC CCA UCA if the first base gets mutated, the effect of this on coding by this RNA segment will result in

A. a change of the first amino acid only

B. a complete change in the types as well as the sequence of almost all amino acids

C. no change in sequence of any amino acid

D. one amino acid will be less in the protein chain

Answer: A



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152. The conversion of mutant type into wild type is called

A. backward mutation

B. forward mutation

C. inversion

D. both (2) and (3) correct

Answer: A



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153. The point mutation A to G,C to T,C to G,T to A in DNA are

A. transversion, transition, translocation,
frame shift respectively

B. transition, transition, transversion,
transversion respectively

C. transition only

D. frame shift (gibbersish) mutations only

Answer: B



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154. 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,UAU

B. UUC,UUA,UAC

C. UAG,UGA,UAA

D. UUG,UCA,UCG

Answer: C



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

- A. Translocation
- B. tRNA activation
- C. Amino acid activation
- D. Peptidyl transferase reaction

Answer: D



156. During transcription, RNA polymerase holoenzyme binds to a gene promoter and assumes a saddle-like structure. What is its DNA-binding sequence?

A. CACC

B. TATA

C. TTAA

D. AATT

Answer: B



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157. Eukaryotic genes may not function properly when cloned into bacterial cell because of

- A. inability to excise introns
- B. destruction by native endonucleases
- C. destruction by native endonucleases

D. failure of promoter to be recognised by
bacterial RNA polymerase

Answer: D



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158. After the addition of the last amino acid to a growing polypeptide chain during the process of protein synthesis, one of the termination codons reaches the appropriate site on the ribosomal surface and then the

following events take place

(i) Release of t-RNA molecule from the ribosome.

(ii) Dislodging of polypeptide chain from the t-RNA

(iii) Dissociation of ribosomes into large and small subunits. ItBrgt The correct sequence of these events:

A. (i),(ii),(iii)

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

C. (ii),(i),(iii)

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

Answer: B



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159. Which of the following amino acids has single codon?

A. Isoleucine

B. Tryptophan

C. valine-methionine-glycine-histidine-lysine

D. Arginine

Answer: B



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160. Where is the enzyme that catalyzes peptide bonding located?

- A. Larger sub-unit of the ribosome
- B. smaller sub-unit of the ribosome
- C. leader region of the m-RNA

D. t-RNA

Answer: A



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161. A sequence of nucleotides on DNA 'CATCATCATCAT' is changed through mutation to 'CAATCATCATCAT'. What is this type of mutation called?

A. Nonsense

B. transition, transition, transversion,
transversion respectively

C. Transversion

D. Frame shift

Answer: D



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162. Which one of the following human genes has the longest stretch of DNA ($\sim 24Mb$)?

A. Globin gene

B. Histone gene

C. Dytrophin gene

D. Insulin gene

Answer: C



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163. A polypeptide has the following amino acid sequence

Met-Ser-Pro-Arg-Leu-Glu-Gly

In a mutant the amino acid sequence of this polypeptide was found to be

Met-Ser-Ser-Arg-Leu-Glu-Gly

What is the type of mutation that occurred in the reading frame of its DNA?

- A. Silent mutation
- B. Nonsense mutation
- C. Mis-sense mutation
- D. Frame-shift mutation

Answer: C



164. A DNA molecule having $A + G / C + T = 0.71$ shows that the molecule is:

- A. Linear
- B. Circular
- C. Single-stranded
- D. Double-stranded

Answer: C



165. On a planet from a distant galaxy, the pilot vehicle collected a sample of bacteria-like material. On analysis, it showed proteins having 30 types of amino acids while the DNA has 6 types of bases. In the genetic code, a sequence of how many bases should be serving as a codon?

A. 2

B. 3

C. 4

D. 5

Answer: A



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166. Would an oligopeptide result from m-RNA sequence given below? How many amino acids would be in it?

5'UGGCCCAUGCACAGGUAGACCTAG3'

A. No

B. Yes, 8 amino acids

C. yes, 4 amino acids

D. yes, 3 amino acids

Answer: D



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167. During electrophoresis, DNA fragment would migrate

- A. From anode to cathode
- B. From cathode to anode
- C. In both directions
- D. Smaller ones to anode and larger ones to cathode

Answer: B



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168. A base pair change:

- A. 1 always causes amino acid replacement
- B. 2. always alters protein function
- C. 3. results in new species
- D. 4. does not necessarily change the phenotype

Answer: D



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169. Which of the following is true about a viriod

- A. Single stranded DNA particle with a non-protein capsid.
- B. a non-infectious single stranded RNA particle without a coat.
- C. Double stranded DNA particle without a coat.

D. An infectious RNA particle without a coat

Answer: D



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170. Read the description given below:-

1. They are nucleic acids
2. They are not associated with proteins
3. They do not exist outside the cell

The description applies to:-

A. DNA virus

B. Plasmid

C. retroviruses

D. All of these

Answer: B



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171. In a charged transfer RNA, the nucleotide bound to the amino acid is adenosine (A) and the next two nucleotides are cytosines (C).

What can you tell about the DNA codon to which this transfer RNA corresponds?

A. The codon is TGG

B. The codon is ACC

C. The first position is A, but you can't tell about the other from the information given

D. You can't tell anything about the codon from the information given.

Answer: D



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172. The technique used for analysis of RNA is called

A. Northern Blotting

B. western blotting

C. Southern blotting

D. ELISA

Answer: A



173. Which of the following statements is not true for retroviruses?

A. The genetic material in mature retroviruses is RNA

B. Retroviruses are causative agents for certain kinds of cancer in man

C. DNA is not present at any stage in the life cycle of retroviruses

D. Retroviruses carry gene for RNA-dependent DNA polymerase

Answer: C



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174. E. coli cells with a mutated z gene of the lac operon cannot grow in medium containing only lactose as the source of energy because

- A. they cannot synthesize functional beta-galactosidase
- B. They cannot transport lactose from the medium into the cell
- C. The lac operon is constitutively active in these cells
- D. In the presence of glucose, E. coli cells do not utilize lactose

Answer: A



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175. Telomerase is an enzyme which is a

A. RNA

B. Ribonucleoprotein

C. Repetitive DNA

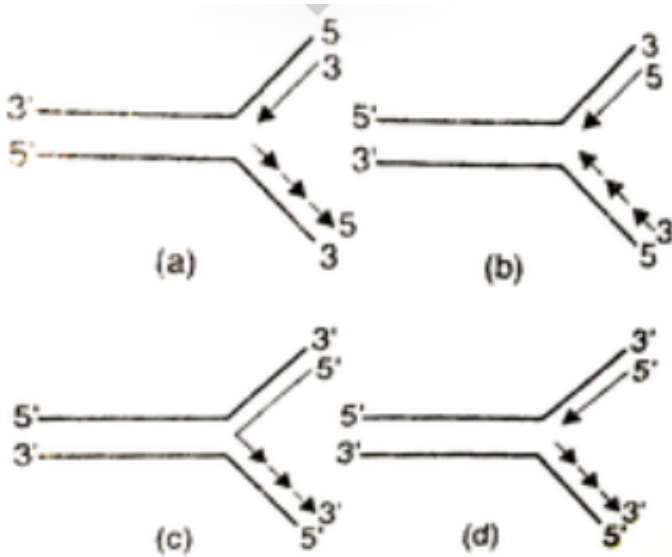
D. Simple protein

Answer: B



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176. Which one of the following correctly represents the manner of replication of DNA?



A. a

B. b

C. c

D. d

Answer: D



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177. Which of the following is not true for operon concept of jacob and monade

A. structural genes, operator genes and promoter genes together constitute an operon

B. All structural genes of one operon must be present in contiguity

C. the function of promoter gene is to produce a promoter factor for transcription

D. Operator gene is present upstream to structural gene, i.e., towards 3' end of template strand

Answer: C



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178. A regularity gene produces some kind of protein through its m-RNA that controls the activity of the operator gene which signals the formation of specific enzyme required for the metabolic breakdown of the food. How does that protein regulate the activity of the operator gene?

A. The mutated repressor protein produces
activates the operator gene

B. The catabolic activator protein (CAP)

produces activates the operator gene

C. The repressor protein produced, after

combining with an inducer leads to

activation of the operator gene

D.

Answer: D



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179. How many high-energy phosphate bond equivalents are utilized in the process of activation of amino acids for protein synthesis?

A. Four

B. Two

C. One

D. Three

Answer: B



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180. Given a hypothetical segment of functional DNA strand 3'-GGC AAC CTT GGC 5', the corresponding polypeptide segment could be:-

A. H_2N – gly-ala-leu-pro-COOH

B. HOOC-asp-val-ile-gly- NH_2

C. H_2N -pro-leu-glu-pro-COOH

D. H_2N -met-thr-phe-cys-COOH

Answer: C



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181. Consider the following events in DNA replication

1. Formation of RNA primers by RNA polymerase.

2. Removal of RNA primers and formation of Okazaki fragments.

Formation of DNA strands on RNA primers by DNA polymerase III complex.

4. Recognition of initiation point by initiator protein.

5. Dissociation of hydrogen bonds and opening of a 'bubble' in the duplex by unwinding proteins.

6. Filling up of the gaps between Okazaki fragments and formation of DNA strand. The correct sequence of these events is:-

A. 4,5,1,3,2,6

B. 4,1,5,,2,6,3

C. 5,4,2,1,3,6

D. 4,2,1,5,3,6

Answer: A



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182. Which of the following statements are true of all t-RNAs?

1. The 5'end has guanine residue
2. They are single chains.
3. The anticodon loop is identical.
4. The 3'-end base sequence is CCA.

Select the correct answer using the codes given below:-

Codes:-

A. 1,2 and 3

B. 1,3 and 4

C. 1,2 and 4

D. 2,3 and 4

Answer: C



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183. Consider the following processes

1. Synthesis of t-RNA

2. Attachment of an amino acid to ATP.

3. Acetylation of amino acid attached to t-RNA.

4. Charging of t-RNA

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

A. 1,2 and 3

B. 1 and 3

C. 2 and 4

D. 4 only

Answer: C



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184. Match list-I (factors/enzyme) with list-II (activities) and select the correct answer using

the codes given below the lists.

List-I (Factors/Enzyme)	List-II (Activities)
A. Sigma factor	1. Termination of transcription
B. Rho factor	2. Removal of RNA primer from newly synthesized DNA strand.
C. DNA polymerase-I	3. Correct initiation of transcription.
D. Amino-acyl synthetase	4. Correct initiation of DNA replication.
	5. Attachment of amino acid to t-RNA.

A. A-2,B-5,C-4,D-1

B. A-3,B-1,C-2,D-5

C. A-1,B-4,C-2,D-3

D. A-3,B-5,C-2,D-1

Answer: B



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185. Which one of the following sub processes does not take place during protein synthesis in eukaryotes?

- A. Translocation of m-RNA relative to t-RNA
- B. Activation of ribosomes
- C. Methionine deformylation
- D. Termination

Answer: C



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186. Satellite DNA is important because it

A. codes for proteins needed in cell cycle

B. shows high degree of polymorphism in

population and also the same degree of

polymorphism in an individual, which is

heritable from parents to children.

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

D. codes for enzymes needed for DNA
replication.

Answer: B



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187. Which of the following components is required for the proper function fo DNA-dependent-DNA polymerase?

I. 4 different nucleotides

II. DNA template

III. An RNA primer

A. (a) I only

B. (b) II and III only

C. (c) I and III only

D. (d) I,II, and III

Answer: D



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188. Which of the following blotting methods involves the transferring of proteins from a gel to membranes, then probing them using antibodies to specific protein?

A. northern blotting

B. southern blotting

C. western blotting

D. eastern blotting

Answer: C



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189. Protein translation proceeds as an ordered process and involves all of the following steps EXCEPT

A. ribosomes reads the mRNA in the 5' to 3' direction

B. peptide synthesis proceeds from the amino-terminus to the carboxyl-terminus

C. if present within the coding region, AUG represents valine and GUG represents

methionine

D. chain elongation requires the activity of multiple tRNA molecules

Answer: C



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190. Many antibiotics inhibit prokaryotic translation 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 at similar sites and with similar efficacies

D. Antibiotics bind free ribosomes in the cytoplasm

Answer: B



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191. Replication and transcription are similar processes in mechanistic terms because both:

- A. Use RNA primers for initiation
- B. Use deoxyribonucleotides as precursors
- C. Are semiconserved events

D. Involve phosphodiester bond formation with elongation occurring in the 5'-3' direction.

Answer: D



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192. The m-RNA molecule is synthesized from the DNA by the RNA-polymerase by reading the

- A. Coding strand in the 3'-5' direction
- B. coding strand in the 5'-3' direction
- C. Anticoding strand in the 3'-5' direction
- D. Anticoding strand in the 5'-3' direction

Answer: C



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193. Select the correct statement regarding the human genome project

- A. Y-chromosome has maximum number of genes
- B. There are 3164.7 million genes in human body
- C. The average gene consists of 3000 bases.
- D. Repeated sequence make up very small portion of human genome.

Answer: C



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194. Find out the incorrect match

A. E.coli – 4.6×10^6 bp

B. Bacteriophage lambda-48502 base pairs

C. haploid content of human DNA

– 3.3×10^9 bp

D. $\phi \times 174$ -5386 base pairs

Answer: D



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195. Go through the features of human genome

(i) Largest human gene is dystrophin with 2.4 million bases

(ii) Chromosome 1 has maximum number of genes, i.e., 2968 and y-chromosome has minimum number, i.e., 231

(iii) the human genome contains 3164.7 billion nucleotide bases

(iv) The total number of genes is estimated at

30,000

Which of these are correct?

A. (i), (ii) & (iii)

B. (ii),(iv)

C. (i), (ii) & (iv)

D. All are correct

Answer: C



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196. Go through the following statements

(i) 2'-OH group present at every nucleotide in RNA makes RNA labile and easily degradable.

(ii) The transcription and translation can be coupled in bacteria

(iii) the promoter is located towards the 5'-end while terminator is located towards the 3'end of the template strand.

(iv). In lac operon, the z gene codes for beta galactosidase, y gene codes for permease while i gene codes for the inducer.

Which of these are correct statement:

A. (ii),(iii) & (iv)

B. (i) & (ii)

C. (i),(ii) & (iii)

D. All are correct

Answer: B



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197. Go through the following statements

(i) Meselson & Stahl used cesium chloride density gradient to distinguish heavy DNA

molecules from the normal DNA molecules.

(ii) In meselson & Stahl experiment the DNA that was extracted from the culture one generation after the transfer from ^{15}N to ^{14}N , was composed of equal amount of hybrid (intermediate) DNA and of light DNA.

(iii) In prokaryotes, control the rate of transcriptional initiation is the predominant site for control of gene expression.

(iv) In lac operon, the repressor is synthesised only at the time when the level of metabolite is in excess.

Find out the correct statements?

A. (i) & (iii)

B. (ii) & (iv)

C. (i), (iii) & (iv)

D. (ii), (iii) & (iv)

Answer: A



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198. Go through the following statements:

(i) Viruses are obligate parasites

(ii) Viruses that infect plants in general have

single stranded DNA

(iii) Bacteriophages are double stranded DNA viruses.

(iv) The coat is made of protein subunits called nucleomeres.

Find the correct statements

A. (i), (ii), (iv)

B. (i),(iii),(iv)

C. (i),(iii)

D. (i),(iv)

Answer: C



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199. Go through the following statements:

(i) In RNA the uracil is found in place of 5-methyl uracil

(ii) A nitrogenous base is linked to the pentose sugar through an N-glycosidic linkage to form a nucleoside

(iii) Two nucleotides are linked through 3'-5' phosphodiester linkage to form a dinucleotide.

(iv). The length of double DNA helix in a typical

mammalian cell is approximately 3.2 metres.

find out the correct statement

- A. (i), (ii), & (iii)
- B. All are correct
- C. (ii) & (iii)
- D. (ii), (iii) & (iv)

Answer: A



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200. Given below are the steps of DNA fingerprinting in random sequence:-

(i) Isolation of DNA.

(ii) Separation of DNA fragments by electrophoresis,

(iii) Hybridisation using labelled VNTR probe.

(iv). Transferring of separated DNA fragments to synthetic membranes, such as nitrocellulose or nylon.

(v) digestion of DNA by restriction endonucleases,

(vi). Detection of hybridised DNA fragments by

auto radio-graphy.

which of the following is the correct sequence:-

A. (i),(v),(ii),(iv),(iii),(vi)

B. (i),(ii),(v),(iv),(iii),(vi)

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

D. (i),(ii),(iii).(v),(iv),(vi)

Answer: A



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201. 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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202. The length of DNA molecule greatly exceeds the dimensions of the nucleus in eukaryotic cell. How is this DNA accommodated

A. Super coiling in nucleosomes

B. DNase digestion

C. Through elimination of repetitive DNA.

D. Deletion of non-essential genes

Answer: A



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203. 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. AATT

B. CACC

C. TATA

D. TTAA

Answer: C



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

A. salmonella typhimurium

B. *Escherichia coli*

C. *Diplococcus pneumoniae*

D. *Neurospora crassa*

Answer: D



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

A. ribosome

B. transcription factor

C. anticodn

D. RNA polymerase

Answer: B



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206. What is not true for genetic code :-

A. It is degerate

B. It is unambiguous

C. A codon in mRNA is read in a non-continuous fashion

D. it is nearly universal

Answer: C



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207. Point (Gene mutation) mutation involves

A. Duplication

B. Deletion

C. Insertion

D. Change in single base pair

Answer: D



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208. Semiconservative replication of DNA was first demonstrated in

A. *Streptococcus pneumoniae*

B. *Salmonella typhimurium*

C. *Drosophila melanogaster*

D. *Escherichia coli*

Answer: C



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209. T.O. Diener discovered a

A. Infectious protein

B. Bacteriophage

C. Free infectious RNA

D. Free infectious DNA

Answer: C



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210. Removal of introns and joining the exons in a defined order in a transcription unit is

A. Transformation

B. Capping

C. Splicing

D. Tailing

Answer: C



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

A. Morgan and Sturtevant

B. Beadly and Tatum

C. Nirenberg and Mathaei

D. Hershey and Chase

Answer: C



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212. In eukaryotic cell transcription, RNA splicing and RNA capping take place inside the

OR

Messenger RNA is produced in

A. Ribosomes

B. Nucleus

C. Dictyosomes

D. ER

Answer: B



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213. 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

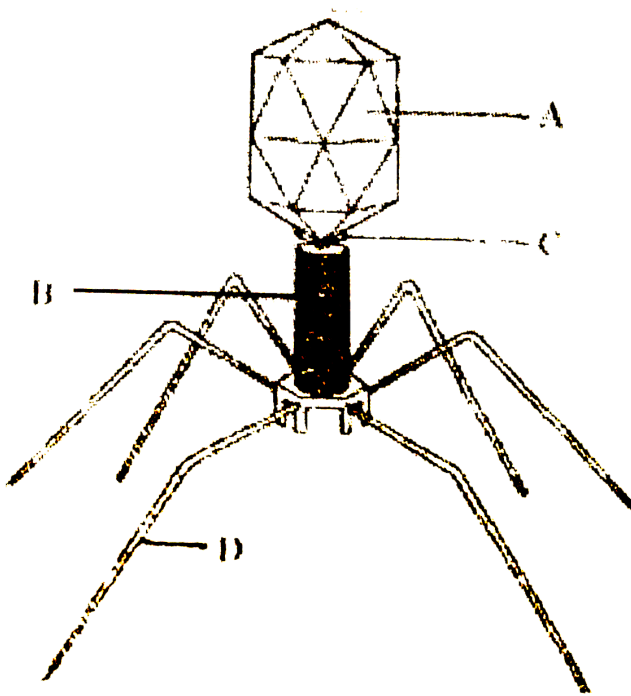
D. Three regulatory genes and three structural genes

Answer: B



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214. Given below is the diagram of bacteriophage. In which one of the options all the four parts A,B,C and D are correct?



A. A-Tail fibres, B-Head, C-Sheath, D-collar

B. A-Sheath, B-Collar, C-Head, D-Tail fibres

C. A-Head, B-Sheat, C-Collar, D-Tail fibres

D. A-Collar, B-Tail fibres, C-Head, D-Sheath

Answer: C



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

A. One DNA strand with the other 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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216. Virus envelope is known as

A. Core

B. Capsid

C. virion state

D. Nucleoprotein

Answer: B



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217. Infectious proteins are presents in

A. Satellite viruses

B. Gemini viruses

C. Prions

D. Viroids

Answer: C



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218. The one aspect which is not a salient feature of genetic code, is its being

A. Specific

B. Degenerate

C. Ambiguous

D. Universal

Answer: C



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219. Satellite DNA is useful tool in ;

A. 1. Genetic engineering

B. 2. Organ transplantation

C. 3. Sex determination

D. 4. Forensic science

Answer: D



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220. Which one of the following does not follow the central dogma of molecular biology;

A. HIV

B. Pea

C. Mucor

D. Chlamydomonas

Answer: A



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221. 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 (ii)

B. (ii) and (iii)

C. (i) and (iii)

D. (ii) and (iv)

Answer: D



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222. DNA or RNA segment tagged with a radioactive molecule is called :

A. Plasmid

B. Vector

C. Probe

D. Clone

Answer: C



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223. The Lac operon "Inducer Lactose" serves as an enzyme substrate for

- A. Transacetylase
- B. Endonuclease
- C. Permease
- D. Beta-galactosidase

Answer: D



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224. DNA finger printing has application in the field of

- A. Forensic science
- B. Genetic Biodiversity
- C. Evolutionary biology
- D.

Answer: D



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225. 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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226. 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: D



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227. Automated - DNA sequencers are based on method developed by

- A. Erwin chargaff
- B. Maurice wilkins
- C. Frederick sanger
- D. Francis crick

Answer: C



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228. Which one of the following represents a palindromic sequence in DNA ?

A. 5'-CATTAG-3', 3'-GATAAC-5'

B. 5'-GATACC-3', 3'-CCTAAG-5'

C. 5'-GAATTC-3', 3'-CTTAAG-5'

D. 5'-CCAATG-3', 3'-GAATCC-5'

Answer: C



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229. Read statements *a* – *d*.

(a) In transcription, adenosine pairs with uracil

(b) Regulation of lac operon by repressor is positive regulation

(c) Human genome has approximate 50,000 genes

(d) Haemophilia is sex-linked recessive disease

How many of above statement are correct ?

A. Four

B. One

C. Two

D. Three

Answer: C



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230. Which one of the following is a wrong statement regarding mutations

A. UV and gamma rays are mutagens

B. Change in a single base pair of DNA does not cause mutation

C. Deletion and insertion of base pairs

cause frame-shift mutation

D. cancer cells commonly show

chromosomal aberrations

Answer: B



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231. 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

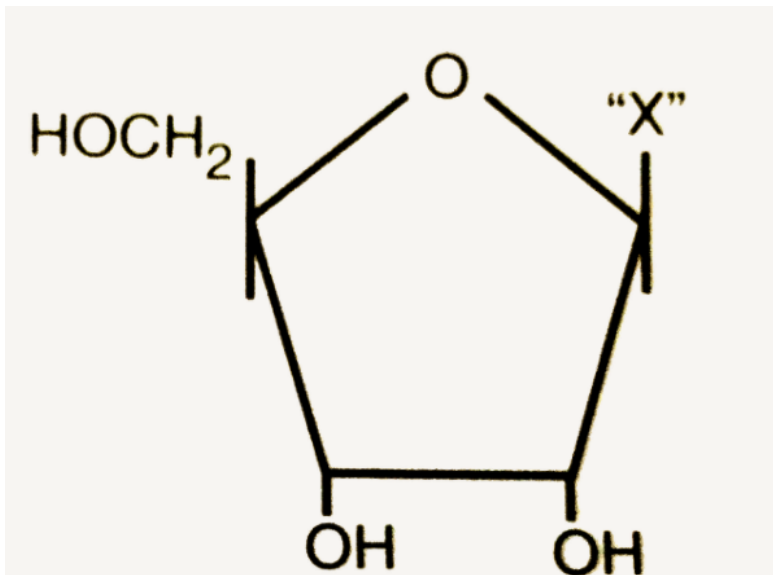
Answer: A



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232. Given below is the diagrammatic representation of one of the categories of small molecular weight organic compounds in

the living tissues. Identify the category shown and the one blank component "X" in it.



- A. Category- Amino acid, Component- NH_2
- B. Category-nucleotide, Component-
Adenine
- C. Category- Nucleoside, Component-Uracil

D. Category- Cholesterol, Component-

Guanin

Answer: C



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233. 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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234. 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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235. Which one of the following is not a part of transcription unit in DNA

A. A terminator

B. A promoter

C. The structural gene

D. The inducer

Answer: D



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236. Which statement is wrong for viruses

A. All of them have helical symmetry

B. They have ability to synthesize nucleic acids and proteins

C. Antibiotics have no effect on them

D. All are parasites

Answer: A



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

A. It includes 61 codons for amino acids
and 3 stop codons

B. Is universal and has 3 bases per codon

C. Some amino acids are coded by multiple
codons

D. All of the above

Answer: D



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238. 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

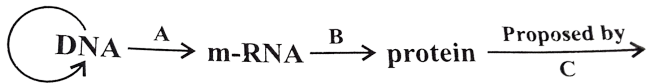
Answer: C



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239. The diagram shows an important concept in the genetic implication of DNA. Fill in the

blanks A to C.



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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240. Which of the following shows coiled RNA strand and capsomeres

- A. Retrovirus
- B. Polio virus
- C. Tobacco mosaic virus
- D. Measles virus

Answer: C



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241. An analysis of chromosomal DNA using the southern hybridization technique does not use

- A. PCR
- B. Electrophoresis
- C. Blotting
- D. Autoradiography

Answer: A



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242. Transformation was discovered by

- A. Watson and crick
- B. Meselson and stahl
- C. Hershey and chase
- D. Griffith

Answer: D



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243. Viruses have

- A. Both DNA and RNA
- B. DNA enclosed in a protein coat
- C. Prokaryotic nucleus
- D. Single chromosome

Answer: A::B



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244. In sea urchin DNA, which is double stranded, 17% of the bases were show to be cytosine. The percentages of the other three bases expected to be present in this DNA are

A. G17%,A 16.%, T 32.5%

B. G 17%, A33, T33%

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

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

Answer: B



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245. Gene regulation governing lactose operon of *E. coli* that involves the *lac I* 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 -galactosidase can switch off transcription

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

Answer:



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246. Which of the following is not application of RNA :

- A. Complementary base pairing
- B. 5' phosphoryl and 3' hydroxyl ends
- C. Heterocyclic nitrogenous bases
- D. Chargaff's rule

Answer: D



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247. 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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248. Balbiani rings are sites of

- A. Lipid synthesis
- B. Nucleotide synthesis
- C. Polysaccharide synthesis
- D. RNA and protein synthesis

Answer: D



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249. Which of the following statements is wrong for viroids

- A. They are smaller than viruses
- B. they cause infections
- C. their RNA is of high molecular weight
- D. they lack a protein coat

Answer: C



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

A. UGA

B. UAA

C. UAG

D. AUG

Answer: D



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

A. Galactose

B. Lactose permease and transacetylase

C. Lactose and galactose

D. Glucose

Answer: B



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252. 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 hybridization
- D. Polymerase chain reaction

Answer: A



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253. A non-proteinaceous enzyme is

A. lysozyme

B. ribozyme

C. ligase

D. deoxyribonuclease

Answer: B



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254. Taylor conducted the experiments to provide semiconservative mode of chromosome replication on

A. *Vinca rosea*

B. *vicia faba*

C. *Drosophila melanogaster*

D. *E. coli*

Answer: B



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255. The mechanism that causes a gene to move from one linkage group to another is called :

- A. inversion
- B. duplication
- C. translocation
- D. crossing over

Answer: C



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256. The equivalent of a structural gene is

A. muton

B. cistron

C. operon

D. recon

Answer: B



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

- A. (a) 5 S rRNA
- B. (b) 18 S rRNA
- C. (c) 23 S rRNA
- D. (d) 5.8 S rRNA

Answer: C



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258. In Hardy-Weinberg equation , the frequency of heterozygous individual is represented by

A. (a) p^2

B. (b) $2pq$

C. (c) pq

D. (d) q^2

Answer: B



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

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

B. it should be able to generate its replica

C. it should be unstable structurally and chemically

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

Answer: C



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

- A. template strand
- B. coding strand in the 5'-3' direction
- C. alpha strand
- D. antistrand

Answer: A



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261. 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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262. DNA fragments are

A. positively charged

B. negatively charged

C. neutral

D. either positively or negatively charged
depending on their size

Answer: B



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263. Viroids differ from viruses in having

- A. DNA molecules with protein coat
- B. DNA molecules without protein coat
- C. RNA molecules with protein coat

D. RNA molecules without protein coat

Answer: D



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264. During DNA replication, Okazaki fragments are used to elongate

A. the leading strand towards replication fork

B. the lagging strand towards replication fork.

C. the leading strand away from replication fork.

D. the lagging strand away from the replication fork.

Answer: D



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265. Spliceosomes are not found in cells of

A. Plants

B. Fungi

C. Animals

D. Bacteria

Answer: D



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266. The unequivocal proof of DNA as the genetic material came from the studies on a

A. griffith

B. Hershey and chase

C. avery, mncleod and Mccarty

D. Hargobind Khorana

Answer: B



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

A. (a) UCCAUAGCGUA

B. (b) ACCUAUGCGAU

C. (c) UGGTUTCGCAT

D. (d) AGGUAUCGCAU

Answer: D



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268. Select the correct match:

A. (a) Francis Jacob and Jacques Monod: lac operon

B. (b) Mathew Meselson and F. Stahl :
Pisum sativum

C. (c) Alfred Hershey and Martha Chase :
TMV

D. (d) Alec Jeffrey : Streptococcus
pneumoniae

Answer: A



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269. Select the correct statement:

A. Transduction was discovered by S.

Altman.

B. Splicesomes take part in translation.

C. Punnett square was developed by a

British scientist.

D. Franklin stahl coined the term 'linkeg'.

Answer: C



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270. Select the correct match:-

A. G.Mendel-Transformation

B. T.H. Morgan-Transduction

C. $F_2 \times$ Recessive parent-Dihybrid cross

D. Ribozyme-Nucleic acid

Answer: D



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