



BIOLOGY

BOOKS - ARIHANT NEET BIOLOGY (HINGLISH)

GENE, ITS EXPRESSION AND REGULATION

Check Point 8 1

1. The substance that controls the formation and expression of traits in organisms is called as

A. Protein

B. Genetic material

C. Nucleus

D. Ribosomes

Answer: B



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2. The properties of genetic material is

A. It should express in parent but not in offspring

B. It should replicate itself

C. It should not change at all

D. All of the above

Answer: C



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3. The transformation experiment on *Diplococcus pneumoniae* was performed by

A. Colin Macleod

B. T Avery

C. Frederick Griffith

D. Hershey and chase

Answer: C



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4. The genetic transformation experiments on *Diplococcus pneumoniae* gave first undoubted evidence that :

- A. DNA is the genetic material
- B. DNA is made up of nucleotides
- C. Chromosomes are made of DNA
- D. RNA is synthesised on a DNA template

Answer: A



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5. During Griffith's experiment following observations were done. Choose the correct one.

- A. S-strain injected into the mice-mice live
- B. R-strain injected into the mice-mice dies
- C. Heat killed S-strains injected into the mice- mice live
- D. Both (a) and (b)

Answer: C





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6. The transformation substance in Griffith's experiment is

A. protein

B. DNA

C. mRNA

D. polysaccharide

Answer: B



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7. The scientist Avery , MacLeod and McCarty are famous for

A. identifying RNA as genetic material

B. giving chemical nature of RNA

C. revealing chemical nature of transforming principle

D. giving double helical structure of DNA

Answer: C



8. Avery et al. used :

A. DNase

B. RNase

C. Protease

D. All of these

Answer: A



9. Transformation efficiency of bacteria (as in the experiment of Avery et al.) would be drastically reduced if the tranforming material is treated with :

A. lipase

B. ribonuclease

C. Protease

D. DNase

Answer: D



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10. The first every experiment evidence showing DNA as genetic material in bacteriophages came from the studies of :

A. Wesimann

B. Beadle and Tatum

C. Hershey and Chase

D. Schleiden and Schwann

Answer: C





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11. The isotopes used by Hershey and Chase

A. ^{59}Fe and ^{45}N

B. ^{131}I and ^{45}Ca

C. ^{15}N and ^{14}C

D. ^{35}S and ^{32}P

Answer: D



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12. If a virus is grown with radioactive S it will show in radioactivity in

A. DNA

B. RNA

C. protein

D. All of these

Answer: C



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13. A bacteriophage with radioactive DNA and protein when infects a bacterium the radioactivity inside the bacterium will be located in :

A. DNA

B. protein

C. Both (a) and (b)

D. All parts of bacterial cell

Answer: C



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14. Which was the first genetic material to be originated

A. DNA

B. protein

C. RNA

D. DNA + RNA

Answer: A



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15. What is the difference between RNA and DNA?

A. Base

B. Sugar

C. Phosphate

D. Both (a) and (b)

Answer: D



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Check Point 8 2

1. Which of the following are purines?

A. A and G

B. A and T

C. G and C

D. G and T

Answer: A



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2. The four nitrogen base sequence which form the code words for DNA language are :

A. UTAC

B. ACTU

C. AGGU

D. ATCG

Answer: D



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3. Nucleoside is the combination of

A. sugar molecule and phosphate group

B. sugar molecule and nitrogenous base

C. phosphate group and nitrogenous bases

D. None of the above

Answer: B



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4. Examples of right handed helix is/are

A. A and B

B. B and Z

C. Both (a) and (b)

D. None of these

Answer: A



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5. If the percentage of A and G is 30% the percentage of T and C is

A. 0.4

B. 0.7

C. 0.3

D. 0.5

Answer: C



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6. The DNA coiled in prokaryotes are maintained by

A. histone

B. non-histone protein

C. polyamines

D. Both (b) and (c)

Answer: D



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7. The most accepted model for the DNA packaging is

A. nucleosome model

B. chromatin model

C. beads model

D. chromosome model

Answer: A



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8. Who was/were suggests the semiconservative nature of DNA replication?

A. Khorana

B. Watson

C. Crick

D. Meselson and Stahl

Answer: D



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9. In prokaryotes the origin is also called

A. ori C

B. ori D

C. ori B

D. ori A

Answer: A



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10. DNA double helix unwinded by enzyme

A. gyrase

B. topoisomerase

C. helicase

D. primase

Answer: C



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11. DNA replication occur in leading strand template in the direction

A. $3' \rightarrow 5'$

B. $5' \rightarrow 3'$

C. Both (a) and (b)

D. None of these

Answer: B



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12. c-DNA can be formed by

A. transaminase

B. DNA ligase

C. RNA dependent DNA polymerase

D. DNA dependent DNA polymerase

Answer: C



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13. DNA polymerase possess exonuclease activity in direction

A. $3' \rightarrow 5'$

B. $5' \rightarrow 3'$

C. Both (a) and (b)

D. b only

Answer: A



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14. Which polymerase erases primer and fills gap?

A. DNA Pol-II

B. DNA Pol-III

C. DNA Pol-I

D. Both (a) and (b)

Answer: C



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15. Functions of single-stranded binding protein

A. synthesises DNA

B. joins DNA segments

C. relieves strain

D. stabilises single-stranded regions

Answer: D



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Check Point 8 3

1. Structure components of mRNA include

A. cap

B. poly-A sequence

C. non-coding region

D. both A and B

Answer: D



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2. Poly-A tail region occur at

A. 3' end

B. 5'end

C. Both (a) and (b)

D. All of these

Answer: A



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3. Prokaryotic ribosomes have rRHA is

A. 23S

B. 16S

C. 5S

D. All of these

Answer: D



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4. Anticodon arm has

A. 7 base

B. 6 base

C. 8 base

D. 9 base

Answer: A



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5. Jumping genes are also known as

- A. inducible genes
- B. repressible genes
- C. transposons genes
- D. split genes

Answer: C



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6. Gene and cistron show which of the following relationship?

- A. A gene is a cistron with particular
- B. One cistron compares many genes
- C. Gene is physical moiety, while cistron is physiological one
- D. One gene can have many cistron

Answer: D



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7. A genetic code is a

A. sequence of nitrogenous bases on mRNA

B. sequence of nitrogenous bases on tRNA

C. sequence of nitrogenous bases on rRNA

D. sequence of nitrogenous bases on DNA

Answer: D



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8. Which is related to teminism ?

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

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

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

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

Answer: B



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

- A. first member of a codon
- B. second member of a codon
- C. entire codon
- D. third member of a codon

Answer: D



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10. Which of the following sequence is found in Rous sarcoma virus

- A. DNA-DNA-Protein
- B. RNA-DNA-RNA-Protein
- C. RNA-RNA-Protein
- D. DNA-RNA-Protein

Answer: D



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11. Which one of the following makes use of RNA as a template to synthesize DNA-

A. Reverse transcriptase

B. DNA dependent RNA polymerase

C. DNA polymerase

D. RNA polymerase

Answer: A



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12. Which amino acids can be used for synthesis of haemoglobin

A. Glutamic acid

B. Valine

C. Serine

D. All of these

Answer: D



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13. In a genetic code, the process of degeneracy is that

A. one codon has many meanings

B. many codons have same meaning

C. two codons only share many amino acids

D. third base is not stable

Answer: B



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14. During transfer of genetic information in the the form of Protein , codon and anticodan belong to

- A. DNA, mRNA and tRNA respectively
- B. mRNA, DNA and tRNA respectively
- C. DNA, tRNA and mRNA respectively
- D. tRNA, mRNA and DNA respectively

Answer: A



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15. In a double-stranded DNA, the sequence of base pairs in one strand are AGCTAAGC. What is the complementary sequence on the other strand?

A. TCGATTTCG

B. UCGAUUCG

C. AGCTAAGC

D. CAUTAUCG

Answer: A



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Check Point 8 4

1. Transcription is initiated by

- A. RNA polymerase
- B. DNA polymerase
- C. Kornberg's enzyme
- D. ligase

Answer: A



2. RNA polymerase which is on the promoter, moves to the structural genes to transcribe them. However, it happens when:

- A. RNA polymerase shifts first to regulator gene
- B. inducer binds to structural genes
- C. there is repressor on the operator
- D. there is no repressor on the operator

Answer: D



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3. RNA polymerase I catalyses :

A. elongation in transcription

B. rRNA synthesis

C. mRNA synthesis

D. tRNA synthesis

Answer: B



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4. Which of the following is the Pribnow box ?

A. 5'-TAATTA-3'

B. 5'-TATAAT-3'

C. 5'-ATATTA-3'

D. 5'-AATAAT-3'

Answer: B



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5. Which of the followings is not important for transcription

A. Enhancers

B. CAAT box

C. Promoter

D. DNA polymerase

Answer: D



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

A. promoter

B. regulator

C. receptor

D. enhancer

Answer: A



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7. Types of RNA polymerase required in nucleus for RNA synthesis : -

A. 2

B. 3

C. 4

D. only one type

Answer: B



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8. Synthesis of RNA molecule is terminated by a signal recognised by

A. α (alpha) factor

B. β -(beta) factor

C. ρ (rho) factor

D. δ (delta) factor

Answer: C



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9. Exons helps in the synthesis of

A. protein

B. fatty acids

C. fats

D. glycogen

Answer: A



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10. Number of RNA molecules present in the spliceosome are

A. 4

B. 5

C. 6

D. 7

Answer: B



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11. A split gene consist of

A. Exons

B. Introns

C. Both (a) and (b)

D. None of these

Answer: C



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12. Splicing of RNA depends on

A. hnRNA

B. exon

C. intron

D. self-splicing of intron

Answer: A



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13. Protein synthesis occurs in

A. nucleus

B. ribosome

C. cytoplasm

D. mitochondria

Answer: B



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14. Which of the following is terminated codon?

A. AUG

B. AUU

C. UAG

D. UGG

Answer: C



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15. Amino acid sequence in protein synthesis is decided by

A. rRNA

B. tRNA

C. mRNA

D. DNA

Answer: C



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16. The codon for anticodon 3'-UUA-5' is

A. 5'-AAU-3'

B. 3'-AUU-5'

C. 5'-AAT-3'

D. 3'-AAG-5'

Answer: A



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17. This is not produced by E.coli in the lactose medium :

A. Lactose dehydrogenase

B. Thicogalactoside transacetylase

C. B-galactosidase

D. Lactose permease

Answer: A



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18. In lac operon system, lac gene-Z codes for

A. permease

B. repressor

C. transacetylase

D. B-galactosides

Answer: D



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

A. Lactose

B. Lactase

C. Lac insect

D. The number 100000

Answer: A



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20. Operon system consists of

A. operator and structure genes

B. operator, regulator, repressor

C. promoter and all of the above

D. None of the above

Answer: C



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Chapter Exercise A Taking It Together Assorted Questions Of The Chapter For Advanced Level Practice

1. Gene is

A. a segment of DNA

B. a segment of DNA and histone

C. a segment of DNA, RNA and histone

D. All of above

Answer: A



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2. The amino acid attaches to the tRNA at its

A. 5' end

B. 3' end

C. anti codon site

D. DHU loop

Answer: B



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3. Methionine carrying tRNA has anticodan

A. AUG

B. UAG

C. UAA

D. UAC

Answer: D



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

A. recon

B. muton

C. nucleic acid

D. cistron

Answer: B



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5. Initiation of polypeptide chain in eukaryotic protein synthesis is induced by

A. methionine

B. leucine

C. lysine

D. glycine

Answer: A



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6. The smallest RNA is :-

A. mRNA

B. tRNA

C. Chromosomal RNA

D. Ribosomal RNA

Answer: B



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7. The net electric charge on DNA and histones is

- A. both positive
- B. both negative
- C. negative and positive, respectively
- D. zero

Answer: C



8. Genes that are involved in turning off or on the transcription of a set of structural genes are called

- A. polymorphic genes
- B. operator genes, regulator, repressor
- C. reductant genes
- D. regulatory genes

Answer: D



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9. Control of gene experssion takes place at the level of

A. DNA-replication

B. transcription

C. translation

D. None of these

Answer: B



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

A. Initiation

B. Elongation

C. Termination

D. All of these

Answer: B



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

A. base

B. sugar

C. phosphate group

D. hydroxyl group

Answer: C



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

A. trioses

B. hexoses

C. pentoses polysaccharides

D.

Answer: C



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

- A. glycosidic bonds
- B. phosphodiester bonds
- C. peptide bonds
- D. hydrogen bonds

Answer: B



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

A. 3'-UAC-5'

B. 5'-UAC-3'

C. 3'-UAU-5'

D. 5'-CAU-3'

Answer: A



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

A. 100

B. 200

C. 300

D. 600

Answer: B



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16. All of the following are transcribed from DNA except

A. exons

B. introns

C. rRNA

D. mRNA

Answer: A



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17. All of the following would be found in a eukaryotic cell except

A. mRNA

B. rRNA synthesis

C. simultaneous transcription and translation

D. snRNA

Answer: C



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18. Which of the following is transcribed and then translated to form a protein product?

A. Gene for tRNA

B. Introns

C. Gene for a transcription factor

D. Leader and trailer

Answer: C



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19. How many spirals (twins or helices) a DNA of 2000 base pairs will have?

A. 2000

B. 4000

C. 200

D. 45.5

Answer: C



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20. An prokaryotic gene typically has all of the followings features except

- A. a promoter
- B. an operator
- C. enhancers
- D. structural gene

Answer: C



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

A. A-DNA

B. B-DNA

C. cDNA

D. rDNA

Answer: C



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22. Who suggested that an intermediate RNA molecule would be needed to read the codons on messenger RNA?

A. M Nirenberg

B. HG Khorana

C. F Crick

D. kornberg

Answer: A



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23. One-gene-one enzyme hypothesis was proposed by :-

A. Linus Pauling

B. V Ingram

C. Brenner

D. Beadle and Tatum

Answer: D



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24. Experiments using N15 (heavy nitrogen) to confirm the semiconservative replication of DNA were carried out by

A. Meselson and Stahl

B. Hershey and Chase

C. Beadle and Tatum

D. Watson and Crick

Answer: A



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25. The minimum length of cistron in base pair, which synthesis a polypeptide of 50 amino acide is

A. 50bp

B. 100bp

C. 150bp

D. 200bp

Answer: C



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26. The transcription of cluster of genes coding for protein is controlled by

A. regulator

B. promoter

C. operator

D. All of these

Answer: D



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27. The example of inducible operon is

- A. trp operon
- B. lac operon
- C. Both (a) and (b)
- D. None of these

Answer: B



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28. In trp operon, the corepressor is

A. tryptophan

B. lactose

C. B-galactoside

D. glucose

Answer: A



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29. 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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30. When mRNA is synthesised on DNA, the unwanted DNA regions are removed and

regions coding for amino acids are joined together, this process is

- A. lysogeny
- B. replication
- C. central dogen
- D. splicing

Answer: D



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

A. deaminated

B. commales

C. degenerate

D. overlapping

Answer: C



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32. Gene controls

- A. protein synthesis but not heredity
- B. protein synthesis and heredity
- C. biochemical reaction of some enzymes
- D. heredity but not protein synthesis

Answer: B



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33. The sequences of nucleotides in yeast, a little away from the starting point, which are responsible for transcription are

A. TGTG AAA

B. TAT GGG

C. TATAAAA

D. GAGAAAA

Answer: C



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

- A. protein
- B. a substrate
- C. a metabolite
- D. may be protein

Answer: A



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

A. transposition

B. transduction

C. translocation

D. transformation

Answer: C



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36. The operator gene of lac operon is ' turned on ' when lactose molecules bind to

- A. operator gene
- B. repressor protein
- C. mMRA
- D. promoter site

Answer: B



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37. During transcriptions, the RNA that forms from DNA is

A. rRNA

B. tRNA

C. mRNA

D. All of these

Answer: C



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38. Name the RNA type which helps in the processing of rRNA in the nucleus

A. RNA polymerase -II

B. hnRNA

C. snRNA

D. scRNA

Answer: C



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39. The DNA strand that has the polarity 3'-5' and acts as a template, is also referred to as

- A. coding strand
- B. template strand
- C. Both (a) and (b)
- D.

Answer: B



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40. Process of codon recognition occur during

A. initiation

B. elongation

C. termination

D. All of these

Answer: B



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41. The ribosome acts as a catalyst for the formation of

- A. amino acid
- B. polypeptide
- C. peptide bond
- D. All of these

Answer: B



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42. For initiation of translation, the ribosome first binds to

A. mRNA

B. rRNA

C. hnRNA

D. None of these

Answer: A



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43. Regulation of lac operon by repressor is referred to as -

- A. positive regulation
- B. negative regulation
- C. feedback regulation
- D. None of these

Answer: B



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44. mRNA is also known as

A. informational RNA

B. template RNA

C. messenger RNA

D. All of these

Answer: D



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45. The bond present between the sugar and phosphate group of DNA is

- A. hydrogen bonds
- B. ionic bonds
- C. phosphodiester bonds
- D. glycosidic bonds

Answer: C



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46. The pyrimidines found in RNA are

A. cytosine

B. uracil

C. Both (a) and (b)

D. thymine

Answer: C



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47. The RNA which carries hereditary information in riboviruses and viroids is known as

- A. genomic RNA
- B. genetic RNA
- C. antisense RNA
- D. All of these

Answer: D



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48. The genomic RNA is double stranded in

A. reovirus

B. wound tumour virus

C. Both (a) and (b)

D. TMV

Answer: B



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49. RNA which constitutes 5% of the total RNA

A. mRNA

B. tRNA

C. rRNA

D. Non of these

Answer: A



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50. DNA acts as a template for the synthesis of

A. DNA

B. RNA

C. Both (a) and (b)

D. protein

Answer: C



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51. tRNA attaches amino acids at its

A. 3' end

B. 5' end

C. anticodon

D. loop

Answer: A



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52. Segments of mRNA removed during splicing are

A. introns

B. exons

C. promoter regions

D. integrator regions

Answer: A



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53. Which one is soluble?

A. tRNA

B. mRNA, DNA and tRNA respectively

C. rRNA

D. snRNA

Answer: A



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

A. UGC

B. UGA

C. UAG

D. UGG

Answer: A



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55. Protein cannot be a genetic material because it is not

A. large molecule

B. ubiquitous

C. having diversity and specificity

D. able to replicate

Answer: D



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56. Exon segments rejoined after splicing by

A. DNA primase

B. RNA protease

C. RNA polymerase

D. RNA ligase

Answer: D



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57. Sequence of three bases of DNA constitutes

- A. genome
- B. gene pool
- C. genetic code
- D. genetic drift

Answer: C



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58. Codes of m-RNA and proteins are :

A. zig-zag

B. coplaner

C. colinear

D. None of these

Answer: C



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59. The enzyme that breaks H_2 bonds in DNA is

- A. primase
- B. topoisomerase
- C. DNA polymerase
- D. helicase

Answer: D



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60. Chargaff's rule is applicable to :

A. single- stranded RNA

B. single- stranded DNA and RNA

C. single- stranded DNA

D. double- stranded DNA

Answer: D



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61. Gene and cistron words are sometimes used synonymously because -

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

Answer: A



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62. In which direction mRNA is synthesised on DNA template ?

A. 5'-3'

B. 3'-5'

C. Both (a) and (b)

D. depends upon DNA strand

Answer: A



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

A. DNA helix

B. DNA ligase

C. DNA polymerase-II

D. DNA polymerase-II

Answer: B



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64. Flow of information during translation is

A. *mRNA* → protein

B. *DNA* → mRNA

C. *mRNA* → *DNA*

D. *DNA* → protein

Answer: A



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65. A nitrogenous base not present in RNA is

A. Adenine

B. Cytosine

C. Thymine

D. Guanine

Answer: C



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66. A nitrogenous base is linked to the pentose sugar through :

A. phosphodiester bond

B. hydrogen bond

C. glycosidic bond

D. None of these

Answer: C



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67. Extracharomosomal DNA is present in

A. nucleus

B. glyoxysome

C. ribosome

D. chloroplast

Answer: D



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68. Nucleotide is

A. Nitrogen base+ phosphate

B. phosphate+sugar

C. nitrogen base+sugar

D. nitrogen base+sugar+phosphate

Answer: D



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69. A fragment formed at the lagging strand during DNA synthesis is

A. polymerase fragment

B. RNA fragment

C. Okazaki fragement

D. epimerase activity

Answer: C



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70. Length of mRNA/DNA that carries information for complete polypeptide synthesis is

A. muton

B. codon

C. operon

D. cistron

Answer: D



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71. Genetic code determines

A. morphological traits

B. variations

C. sequence of amino acids in polypeptides

D. structural pattern

Answer: C



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72. With four bases the number of possible triplet codons is

A. 24

B. 32

C. 48

D. 64

Answer: D



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73. Polyribosomes are formed when ribosomes are connected by

A. rRNA

B. mRNA, DNA and tRNA respectively

C. tRNA

D. All of these

Answer: B



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74. Gene controls growth and differentiation through

A. transformation

B. translocation

C. translation and transduction

D. transcription and translation

Answer: D



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75. RNA code for DNA codon ATG will be

A. ATG

B. AUG

C. UAC

D. TAC

Answer: C



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76. DNA is present in

A. nucleus

B. chloroplasts

C. mitochondria

D. All of these

Answer: D



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77. Which one is DNA nitrogen base with single ring structural

A. Uracil

B. Thymine

C. Adenine

D. Guanine

Answer: B



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78. A sequence of 3 bases on tRNA which binds to mRNA codon is

A. triplet

B. non sense codon

C. anticodon

D. termination codon

Answer: C



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79. How many nucleotides will be present in a DNA of 20000 base pairs

A. 4000

B. 40000

C. 20000

D. 2000

Answer: B



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80. Which of the following elements is not present in nitrogenous base?

A. N

B. H

C. P

D. C

Answer: C



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81. tRNA has the function of

A. transcription

B. adopter for attaching acids over mRNA
template

C. transfrring information to mRNA

D. carry genetic code to cytoplasm

Answer: B



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82. RNA differs from DNA in nature of

- A. sugar and puriness
- B. sugar and pyrimidines
- C. purines and phosphate
- D. sugar and phosphate

Answer: B



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83. During elongation of polypeptides chain, sigma factor is

A. function less

B. retained for specific function

C. released for reuse

D. required during closing of chain

Answer: A



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

- A. Rosalind Franklin
- B. Maurice wilkins
- C. Erwin Chargaff
- D. Meselson and Stahl

Answer: D



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85. Glycosidic bonds forms between

- A. 1'C of sugar and position 1-N in pyrimidine
- B. 1'C of sugar and position 9-N in purine
- C. 1'C of sugar and position 9-N pyrimiidine
- D. Both (A) and (B)

Answer: A



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86. Wobble position means

- A. base pairing
- B. altered base on code
- C. third altered base on code
- D. None of these

Answer: A



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87. Genetci code translate the language of :

- A. RNA into that of proteins
- B. proteins into that of RNA
- C. amino acids into that of RNA
- D. RNA into that of DNA

Answer: C



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88. Sigma factor factor is a component of

A. DNA ligase

B. DNA polymerase

C. RNA polymerase

D. Dissociation factor

Answer: C



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89. Teminism is

A. a reverse central dogma

B. a central dogma of molecular biology

C. a circular flow of hereditary material

D. an effect of cytoplasm on functioning of

DNA

Answer: A



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90. The translation step in the process of protein synthesis is made by a charged form of
of

A. mRNA

B. rRNA

C. tRNA

D. template DNA

Answer: C



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91. To initiate translation, the mRNA first binds to

- A. the smaller ribosomal subunit
- B. the larger ribosomal subunit
- C. the whole ribosome
- D. No such specificity exists

Answer: A



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92. If the base sequence of a codon in mRNA is $5' - AUG - 3'$, the sequence of tRNA pairing with it must be

A. 5'-UAC-3'

B. 5'-CAU-3'

C. 5'-AUG-3'

D. 5'-GUA3'

Answer: A



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93. If the sequence of nitrogen bases of the coding strand of DNA in a transcription unit is

5' – *ATGAATG* – 3', the sequence of bases in its RNA transcript would be

A. 5'-AUGAAUG-3'

B. 5'-UACUUAC3'

C. 5'-CAUUCAU-3'

D. 5'-GUAAGUA-3'

Answer: A



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94. Regulatory genes are genes that

A. code for repressor proteins

B. are transcribed continuously

C. are not contained in the operon they control

D. All of the above

Answer: D



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

A. Transcription factors

B. snRNA

C. RNA polymerase-II

D. promoter

Answer: B



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96. The function of a non-sense codon is to

A. release polypeptide chain from tRNA

B. form an unspecified amino acid

C. terminate the message of gene
controlled protein synthesis

D. convert a sense DNA into non-sense DNA

Answer: C



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97. Each codon present on mRNA and anticodon present on tRNA is composed of

- A. one N base only
- B. a set of two N base
- C. a set of three N bases
- D. a set of three out of U,C,A,G

Answer: D



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98. During protein synthesis, amino acid gets attached to tRNA with the help of

A. ribosome, sigma and rho (ρ) factors

B. mRNA, DNA and tRNA respectively

C. aminoacyl tRNA synthesis

D. tRNA

Answer: C



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99. Noble Prize to A Kornberg and S Ochoa was given for

- A. artifical synthesis of DNA and RNA
- B. theory of natural selection
- C. one gene- one enzyme theory
- D. mutation theory

Answer: A



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100. According to operon concept, the regulatory gene regulates gene regulates biochemical reactions in a cell by

- A. inhibiting transcription
- B. inactivating enzymes
- C. inactivating replication
- D. inhibiting migration of mRNA

Answer: A



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101. Which of the following will be translated into a protein?

A. UAA AUG CCC TCC ATT ATG

B. AUG CCC UGC UAG GUA GTC

C. UAA CCC UCC AUA GUA GUC

D. AUG CCC UCU AUG GUC UAG

Answer: D



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102. Expression of gene is controlled in eukaryotes

- A. at one place in the nucleus
- B. at many places in the nucleus
- C. at many places in the cell
- D. cannot be controlled at all

Answer: C



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103. The genetic material should be stable enough to not change with

A. age

B. different stages of life cycle

C. change in physiology of the organism

D. cannot be controlled at all

Answer: D



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104. In eukaryotes, the structural gene in a transcription unit could be said as

A. monocistronic

B. polycistronic

C. encoding only one polypeptide per RNA molecule

D. Both (b) and ©

Answer: D



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105. The salient feature of genetic code is

A. one codon codes for only one amino acid

B. some amino acids are coded by more than one codons

C. a codon is made of three nucleotides

D. All of the above

Answer: D



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106. In genetic code , the codon is read in mRNA in a contiguous fashion because

- A. the codon is triplet
- B. the code is degenerate
- C. there are no punctuation
- D. None of the above

Answer: C



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107. Which the amino acids activated in the presense of ATP and linked to their conginate tRNA, the process is called

- A. activation of tRNA
- B. aminoacylation of tRNA
- C. initiation of tRNA
- D. None of these

Answer: B



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108. In eukaryotes, during transcription

A. RNA polymerase-I transcribes rRNAs

B. RNA polymerase-II transcribes
precursor of mRNA

C. RNA polymerase-III is transcription of
tRNA, 5srRNA and snRNA

D. All of the above

Answer: D



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109. Ribosome contains two sites in the large subunit for

- A. amino acid to bind
- B. polypeptide chain to terminate
- C. mRNA to initiate gene regulation
- D. amino acid to stop the expression

Answer: A



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110. The expression of genes is regulated by

- A. metabolic conditions
- B. physiological conditions
- C. environment conditions
- D. All of the above

Answer: D



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111. In eukaryotes, the regulation could be exerted at

A. transcriptional and processing level

B. transport of mRNA from nucleus to the cytoplasm

C. processing and translational level

D. All of the above

Answer: D



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112. The fact that a purine base always paired through hydrogen bonds with a pyrimidine base leads to, in the DNA double helix

- A. the antiparallel nature
- B. the semiconservative nature
- C. uniform width throughout DNA
- D. uniform length in all DNA

Answer: C



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113. Which enzyme is responsible for the synthesis of tRNA

- A. RNA replicase
- B. RNA polymerase-III
- C. aminoacyl tRNA synthetase
- D. Ribosomal enzyme

Answer: B



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114. The replication of DNA in eukaryotes commences from

A. one end of chromatid extending to the other end

B. the centromeres to either of the ends of chromatids

C. several sites along the DNA of the chromatid simultaneously

D. both ends of the chromatid simultaneously

Answer: C



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115. If Meselson and Stahl's experiment is continued for four generations in bacteria, the

ratio of $\frac{N^{15}}{N^{15}} : \frac{N^{15}}{N^{14}} : \frac{N^{14}}{N^{14}}$ containing DNA in

the fourth generation would be

A. 0.0423611111111111

B. 0.0444444444444444

C. 0.0007291666666667

D. 0.00077546296296296

Answer: D



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

- A. Lactose is present and it binds to the repressor
- B. repressor binds to operator
- C. RNA polymerase binds to the operator
- D. Lactose is present and it binds to RNA polymerase

Answer: A



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117. Which of the following are the functions of RNA

- A. it carries of genetic information from DNA to ribosomes synthesising polypeptides
- B. it carries amino acids to ribosomes
- C. it is a constituent component of ribosomes
- D. All of the above

Answer: D



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118. The RNA polymerase holoenzyme transcribes

A. the promoter , structural gene and the terminator regions

B. the promoter and the terminator regions

C. the structural gene and the terminator
regions

D. the structural gene

Answer: D



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119. Discontinuous synthesis of DNA occurs in one strand, because

A. DNA molecule being synthesised is very long

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

C. It is a more efficient process

D. DNA ligase has to have a role

Answer: B



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120. With regard to mature mRNA in eukaryotes

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

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

C. both exons and introns appear in the mature

D. introns appear, but exons do not appear in the mature RNA

Answer: B



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121. When TMV-RNA is used for infection, the amino acid sequence of the coat protein of the progeny is the same whether the host is Zinnia or tobacco. This proves that the genetic code is

A. degenerate

B. universal

C. unidirectional

D. non-overlapping

Answer: B



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

A. It consists of three nucleotides

B. It is the basic unit of the genetic code

C. It extends from one end of a tRNA molecule

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

Answer: B



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

A. inactivating the repressor

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

C. binding to the repressor and increasing the latter's affinity for the operator

D. binding to the operator

Answer: C



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124. A bacterium with completely radioactive DNA was allowed to replicate in a non-radioactive medium for two generation what % of the bacteria should contain radioactive DNA:-

A. 1

B. 0.5

C. 0.25

D. 0.125

Answer: B



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125. RNA and DNA were artificially synthesised
in vitro by

A. Ochoa and Nirenberg

B. Ochoa and Kornberg

C.

D. Kornberg and Nirenberg

Answer: D



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126. There are 64 codons in genetic code dictionary because

A. there are 64 types of tRNAs found in the cell

B. there are 44 meaningless and 20 codons

for amino acids

C. there are 64 amino acids to be coded

D. genetic code is triplet

Answer: D



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127. A single anticodon can recognize more than one codon of m-RNA. This phenomenon is termed as

A. Richmond and Lang effect

B. gene flow hypothesis

C. wobble hypothesis

D. template hypothesis

Answer: C



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128. What becomes established from the wobble hypothesis

A. Process of peptide chain elongation

B. Economy of the number of of tRNA
molecules

C. Process of peptide chain initiation

D. Process of peptide chain termination

Answer: B



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129. In order to enable a chemical to serve as a genetic material , it is essential that the chemical should be

A. able to duplicate itself

B. able to form itself into long spiral molecules

C. a compound of pyrimidines and purines

D. easily changed

Answer: A





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130. In the absence of β - galactosides, transcription of

A. lac-A is not possible

B. lac-Y is not possible

C. lac-Z is not possible

D. All of these

Answer: C



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131. The complex CAP-c-AMP, which increases the affinity of RNA polymerase for lac operon promoter so that the lac-genes are transcribed, is formed in

- A. cytoplasm
- B. low glucose concentration
- C. high lactose concentration
- D. high glucose concentration

Answer: B



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132. If following is the sequence of nucleotides in mRNA, predict the sequence of amino acids coded by it AUG UUU UUC UUC UUU UUU UUC

- A. Met-Phe-Phe-Phe-Phe-Phe
- B. Met-Phe-Leu-Leu-Phe-Phe-Leu
- C. Ser-Leu-Phe-Leu-Phe-Leu-Phe
- D. Arg-Leu-Leu-Leu-Leu-Leu

Answer: A



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133. In a transcription unit, the activity of RNA polymerase at a given promoter is in turn regulated by interaction with accessory proteins, which affect its ability to

- A. recognise start sites
- B. bind to initiator
- C. terminate the polypeptide chain
- D. release the polypeptide chain

Answer: A



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134. Which of the following statements is correct?

- A. Glucose acts as inducer for lac operon
- B. Galactose acts as inducer for lac operon
- C. Glucose or galactose acts as inducer for lac operon

D. Glucose or galactose cannot acts as inducer for lac operon

Answer: D



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135. The gene, which produces mRNA has specific start and stop signals, which have the same structure whether they are read from left to right to left. This is because

A. the base sequence is the same either way

B. they have the same base repeated many times

C. they have only one base

D. they have only one codon

Answer: A



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136. RNA polymerase

A. is the protein responsible for the production of ribonucleotides

B. is the enzyme that creates hydrogen bonds between nucleotides on the DNA template strand and their complementary RNA nucleotides

C. is the enzyme that transcribes exons, but does not transcribe introns

D. begins transcription at a promoter sequence and moves along the template strand of DNA, elongating the RNA molecule in a 5' → 3' direction

Answer: D



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137. UAA, UAG and UGA are known as non-sense codons because they

A. code for amino acids, which are not essential amino acids

B. code for the initiator amino acid (methionine), which is later removed from the polypeptide chain

C. are never present on mRNA

D. do not code for any amino acid

Answer: D



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138. Genetic material is

A. any nucleic acid

B. a nucleic acid made from a nucleic acid

template that has been or is capable of

being used as a template in replication

C. a nucleic acid that is capable of being

used as a template in transcription

D. a nucleic acid that is capable of being

used as a template in replication and

transcription

Answer: D



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139. Transfer RNA

A. forms hydrogen bonds between its codon and the anticodon of mRNA in the A- site of an aminoacyl tRNA synthetase

B. binds to its specific amino acid in the active site of an aminoacyl tRNA synthetase

C. uses GTP as the energy source to bind its amino acid

D. is translated from mRNA

Answer: B



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140. Translocation involves

- A. the movement of the tRNA from the A-site to the P-site
- B. the movement of the mRNA strand one triplet length in A-site
- C. the release of the unattached tRNA from the E-site
- D. All of the above

Answer: A



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141. Changes in a polypeptide after translation may involve the

A. addition of sugar or lipids to certain amino acids

B. action of enzyme to add amino acids at the beginning of the chain

C. removal of poly (A) from the end of the chain

D. addition of a 5' cap of a method
guanosine residue

Answer: C



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142. Several proteins may be produced at the
same time

A. the action of several ribosomes in a
string called a polyribosome

B. several RNA polymerase molecules

working sequentially

C. single peptides that associate ribosomes

with rough ER

D. the involvement of multiple

spliceosomes

Answer: A



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143. A ribozyme is an

A. exception to the one gene - one RNA molecule axiom

B. enzyme that adds the 5'cap and poly (A) tail to mRNA

C. example of rearrangement of protein domains caused by RNA splicing

D. RNA molecule that functions as an enzyme

Answer: D



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144. Inducible enzyme are

A. usually involved in anabolic pathways

B. produced when a small molecule
inactivates the repressor protein

C. produced when an activator molecule
enhances the attachment of RNA

polymerase with the operator

D. regulated by inherently inactive repressor molecules

Answer: B



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

A. gene expression differentiates

specialised cells

B.

C. operons are activating molecules may not

help to regulate transcription

D.

Answer: A



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146. What are proteasomes

A. Complexes of snRNA and proteins that excise introns

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

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

D. complexes of transcription factors whose protein-protein interaction are

required for enhancing gene
transcription

Answer: B



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147. Regulatory proteins are the accessory proteins that interact with RNA polymerase and affect its role in transcription. Which of the following statements is correct about regulatory protein ?

- A. They only increase expression
- B. They only decrease expression
- C. They interact with RNA polymerase , but do not affect
- D. They can act both as activators and as repressors

Answer: D



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148. The first undoubted evidence about DNA being the genetic material came from

A. transformation of rough - costed strain of *Diplococcus pneumoniae* into smooth coated strain

B. the establishment of DNA as the chief chemical constituent of chromosomes

C. the establishment of DNA as a self-replicating substance

D. transduction of bacteria by action of
bacteriophage

Answer: A



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149. Dr. Khorana and his colleagues synthesized an RNA molecule with repeating sequence of UGN bases (UG UG UG UG UG UG). IT produced a tetrapeptide with alternating

sequence of cysteine and valine. It proves that codons for cysteine and valine are :

A. UGG and GUU

B. UUG and GGU

C. UGU and GUG

D. GUG and UGU

Answer: C



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

A. 3'(downstream) end and 5' (up stream)

end , respectively of the transcription

unit

B. 5'(up stream) end and 3' (downstream)

end, respectively end, respectively of the

transcription unit

C. the 5' (upstream) end

D. 3'(downstream) end

Answer: B



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151. 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 operon are induced

C. E . Coli cells stop dividing

D. The lacs operon is induced

Answer: D



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152. In an E coli cell according to the operon theory, an operator gene combines with

A. inducer gene to 'switch on' structural
gene transcription

B. regulator gene to 'switch off' structural
gene transcription

C. regulator protein to 'switch off'
structural gene transcription

D. regulator protein to 'switch off'
structural gene transcription

Answer: C



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153. The lac operon requires a ' helper' protein which, by binding to the promoter and by facilitating the attachment of RNA polymerase , accelerates the rate of transcription . The protein is

A. amino acid activating enzyme

B. essential metabolite

C. inactive repressor protein

D. catabolite activator

Answer: D



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154. Which one of the following pairs is correctly matched?

A. Frederick Griffith - Discovered the phenomenon of transformation

B. Linus Pauling - Isolated DNA for the first time

C. Francis Crick - Proposed one gene-one polypeptide hypothesis

D. George Bedle - Proposed the concept of inborn errors

Answer: A



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155. During protein synthesis , the correct amino acid is brought to the ribosome and

inserted in correct sequence in the growing polypeptide chain by

- A. base pairing between DNA and mRNA
- B. base pairing between mRNA codons and anticodon in tRNA
- C. interaction between two anticodons
- D. interaction between two triplet codons

Answer: B



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156. Addition of lactose in a culture of *E. coli* induces enzymes ----- to break down the lactose into glucose and galactose.

A. β - galactosidase and transacetylase

B. transacetylase and permease

C. β – galactosidase, permease ,
transacetylase

D. None of the above

Answer: C



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157. Practice using the dictionary of the genetic code determine the amino acid sequence for a polypeptide coded for by the following mRNA transcript (written 5'-3')

AUGCCUGACUUUAAGUAG

- A. Met Pro Lys Asp Phe Stop
- B. Met Pro Asp Phe Lys Stop
- C. Pro Lys Met Phe Asp Stop
- D. Pro Met Lys Asp Phe Stop

Answer: B



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158. During protein synthesis , the correct amino acid is brought to the ribosome and inserted in correct sequence in the growing polypeptide chain by

A. base pairing between DNA and mRNA

B. base pairing between mRNA codons and anticodon in tRNA

C. interaction between two anticodons

D. interaction between two triplet codons

Answer: B



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159. Which among the following codon do not codes for valine (val)?

A. GUC

B. GUA

C. GCA

D. GUG

Answer: C



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160. The process of translation requires

A. transfer of genetic information from a polymer of nucleotides to a polymer of amino acids

- B. splicing , where the exons are removed and introns are joined in a defined order
- C. a nucleic acid is copied to form amino acids
- D. DNA that undergoes capping and tailing

Answer: A



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161. Which of the following is true about the terminator

- A. The terminator is located towards 3' end (downstream) of the coding strand
- B. The terminator usually defines the end of the process of transcription
- C. Both (a) and (b)
- D. None of the above

Answer: B



162. Which of the following is true about the promoter gene?

A. The promoter is located towards 5' end

(up stream) of the structural gene

B. Promoter is a DNA sequence that

provides binding site for RNA

polymerase

C. The presence of promoter in a transcription unit defines the template and coding strands

D. All of the above

Answer: D



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

A. Glycine- Valine-Methionine-Histidine-
Lysine

B. Methionine-Lysine- Glycine- Valine-
Histidine

C. Valine- Methionine- Glycine - Histidine -
Lysine

D.

Answer: B



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164. In mRNA , AUG is the initiating codons and UAA, UAG and UGA are terminatinng codona . Therefore, the polypeptide cannot be synthesised beyond any of these triplets to the end of mRNA, then which one of the following mRNA can be translated completely?

A. AUG UUG UCC UGA UGG UAU

B. AUG UUC UCC UGG UAA UAU

C. AUG UAU UUC UGC CUG UGA

D. AUG AGG UAU UUG UGA CUC

Answer: C



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

A. It prevents transcription of the genes of the operon

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

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

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

Answer: C



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

were : Adenine = 29 % , Guanine = 17 % ,
Cytosine = 32 % , Thymine = 17 % Considering
the Chargaffs rule it can be concluded that :

- A. it is a double - stranded circular DNA
- B. it is single - stranded DNA
- C. it is a double - stranded linear DNA
- D. No conclusion can be drawn

Answer: B



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167. Which of the following is true for RNA processing?

A. Exons are excised before the mRNA is translated

B. Assemblies of protein and snRNPs, called spliceosomes, may catalyse splicing

C. The RNA transcript that leaves the nucleus may be much longer than the original transcript

D. Large quantities of rRNA are assembled
into ribosomes

Answer: B



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168. A DNA molecule in which both strands have radioactive thymidine is allowed to duplicate in an environment containing non-radioactive thymidine. What will be the exact

number of DNA molecules that contains the radio active thymidine after 3 duplications -

A. One

B. Two

C. Four

D. Eight

Answer: B



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169. A bacteria containing 100% N^{15} nitrogen bases is allowed to replicate in medium containing N^{14} bases. After one round of duplication , the result would be

A. all individuals would be identical to parents

B. all individual would be radioactive , but the percentage of radioactive in DNA would be 50%

C. only 50% individuals would be 50%

D. all individuals would be similar to parents , but different among themselves

Answer: B



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170. 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. same density , but do not resemble their parent DNA

B. different densities, but resemble their parent DNA

C. different densities and also do not resemble the parent DNA

D. both the strands same in density, but do not resemble to their parent DNA

Answer: B



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

A. Replace purine with pyrimidines

B. Remove/Replace 3' OH group in deoxyribose

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

D. Both (b) and (c)

Answer: B



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172. Which of the following pairs is correctly matched?

A. Ribosomal RNA - Carries amino acids to the site of protein synthesis

B. Transcription- Process by which protein is synthesised

C. Translaction- Process by which mRNA carries the informstion from the nucleus to ribosomes

D. Anticodon- Site of a tRNA molecule that binds to the mRNA molecule

Answer: D



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173. Unlike the process of replication , which one set in the total DNA of an organism get duplicated , in transcription

- A. only a segment of DNA and only one of the strands is copied into RNA
- B. only a segment of DNA but both strands are copied into RNA
- C. the complete DNA , both the strands is copied into RNA
- D. None of the above

Answer: A



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174. Viruses grown in the presence of radioactive phosphorus contained radioactive DNA, but not radioactive protein because

A. DNA contains phosphorus , but protein does not

B. DNA contains deoxyribose sugar , but protein does not

C. protein contains radioactive sulphur, but DNA does not

D. protein contains radioactive carbon , but

DNA does not

Answer: A



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175. Select the correct statement about the structure gene in a transcription unit in bacteria .

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

B. In bacteria , the structural gene has mRNA that can encode more than one polypeptide separately with in could be said as monocistronic

C. All of the above

D.

Answer: C



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176. Which process occurs in the regulation of gene expression in prokaryotes , but does not occur in the regulation of gene expression in eukaryotes?

- A. RNA is formed from the transcription of base triplets on DNA
- B. Translaction of the mRNA starts as the 5' end of the mRNA strand separates from

the DNA template that transcribed it

C. RNA polymerase synthesises RNA

nucleotides in a 5' to 3' direction

D. Polyribosomes help to produce many

copies of polypeptides during

translation

Answer: B



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Chapter Exercise B Medical Entrance S Special Format Questions Statement Based Questions

1. Which of the following statements are correct?

I. Introns are present in mRNA and exons are present in tRNA

II. Codons are present in mRNA and anticodons in tRNA

III. Every intron is a set of three terminator codons

IV. Exons are present in eukaryotes, while introns are present in prokaryotes

A. I,II and III

B. Only II

C. III and IV

D. II and IV

Answer: B



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2. Select the incorrect statement

- (a) Six codons do not code for any amino acid
- (b) Codon reading of mRNA is contiguous
- (c) Three codons function as stop codons
- (d) Initiator codon AUG codes for methionine

A. I,II and IV

B. I, II and III

C. II, III and IV

D. Only I

Answer: D



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3. Which one of the following statements are incorrect about the properties of DNA?

I. DNA is denatured when heated up to 70°

II. DNA shows high absorption of UV radiation at $260m\mu$

III. DNA directly participates in protein synthesis

IV. Pyrimidines of DNA are cytosine and thymine

A. I and II

B. II and III

C. III and IV

D. Only III

Answer: D



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4. In regulation of gene expression in prokaryotes :

A. Lactose acts as an the suppressor for gene

expression

B. Tryptophan acts as the inducer for gene expression

C. Regulator gene is the one that produces the repressor molecule

A. Only I

B. Only II

C. Only III

D. II and III

Answer: C



5. The strand of DNA acting as template for mRNA transcription is :

- A. Sense strand" "B. Coding strand
- C. Anti - sense " "D. Non-coding strand

The correct answer is :

- A. I and III
- B. I and IV
- C. II and IV
- D. II and III

Answer: C



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6. Which of the following statements are related to the structure of double helical DNA ?

I. The helix makes one complete spiral turn every 34 Å.

II. The diameter of the helix is 20 Å

III. The distance between adjacent nucleotide is 3.4 Å.

IV. Each strand of helix has a backbone made up of alternating ribose sugar and phosphate

.

V. The two adjacent sugar molecules joined with phosphate by phosphodiester bond.

A. I and II

B. I,II,III and V

C. II and IV

D. III, IV and V

Answer: B



7. The genetic code is

I. Universal

II. Commaless

III. Degenerate

IV. Ambiguous

A. I and II

B. III and IV

C. I, II and III

D. II, III and III

Answer: C



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8. During translation, the activation of amino acids

I. Takes place through their carboxyl groups

II. Continues until a termination codon reaches the ribosome

III. Is catalysed by its own activating enzyme called aminoacyl tRNA synthetase

IV. Involves movement of second amino acid
tRNA complex from A-site to P-site

A. I and II

B. II and III

C. I and III

D. II and IV

Answer: C



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9. The main steps involved in the process of translation are

I. Activation of amino acid

II. Initiation of polypeptide chain synthesis

III. Termination of polypeptide chain formation

IV. Transfer of polypeptide chain to tRNA

A. I and II

B. III and IV

C. I, II and III

D. II, III and IV

Answer: C



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10. Which of the following statements are correct ?

I. The structural gene is the segment of DNA, which exercises a central over transcription

II. The regulator gene is responsible for the synthesis of repressor.

III. The operator gene is the segment of DNA, which carries code for the synthesis of protein

IV. The promoter gene is the DNA segment at which RNA polymerase binds

- A. I and II
- B. II and III
- C. III and IV
- D. II and IV

Answer: D



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11. Transcription

I. IS the copying of a complementary mRNA on a DNA strand

II. Requires a template, activated precursors, a divalent metal ion and RNA polymerase

III. Is the first step in activation of amino acid

IV. Directs the order of specific amino acids to form a polypeptide or protein

A. I and II

B. III and IV

C. I and III

D. II and IV

Answer: A



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12. Which of the following statements are correct ?

I. Peptidyl transferase helps in the process of peptide bond formation

II. The regulator, promoter and operator together called the control genes

III. Polypeptide chain elongation continues until a termination codon reaches the ribosomes

IV. Gene regulation in eukaryotes can be explained by lac operon model

A. I, II and III

B. II and IV

C. III and IV

D. I and III

Answer: A



13. Consider the following statements. The genetic codes said to be degenerate and universal, which means that,

I. Amino acids may have more than one codon

II. All amino acids have more than one codon.

III. Codons are common for higher and lower organism

IV. Codons are not found in bacteria

A. I, II and III

B. I and II

C. I, II and IV

D. I and III

Answer: A



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**Chapter Exercise B Medical Entrance S Special
Format Questions Assertion Reason**

1. Assertion : The tRNA molecules possess anticodons.

Reason It needs the message in form of codon.

A. Both Assertion and Reason are true and the Reason is a correct explanation of the Assertion

B. Both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion

C. Assertion is true, but the Reason is false

D. Assertion is false, but the Reason are false

Answer: B



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2. Assertion : mRNA attaches to ribosome through its 3 end.

Reason The mRNA has 5' capsular nucleotide and bases of lagging sequence.

A. Both Assertion and Reason are true and the Reason is a correct explanation of the Assertion

B. Both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion

C. Assertion is true, but the Reason is false

D. Both Assertion and Reason are false

Answer: D



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3. Assertion (A) : DNA code is copied in the synthesis of m-RNA.

Reason (R) : t-RNA moves out of nucleus and after attaching on ribosomes form the template.

A. Both Assertion and Reason are true and the Reason is a correct explanation of the Assertion

B. Both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion

C. Assertion is true, but the Reason is false

D. Assertion is false, but the Reason are false

Answer: C



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4. Assertion A non-overlapping code means that a base in mRNA is not used for different codons

Reason In translating mRNA molecules, the codons do not overlap but are read sequentially

A. Both Assertion and Reason are true and the Reason is a correct explanation of the Assertion

B. Both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion

C. Assertion is true, but the Reason is false

D. Assertion is false, but the Reason are false

Answer: B



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5. Assertion Proteins are polymers of amino acids

Reason Nucleic acids are polymers of nucleotides

A. Both Assertion and Reason are true and the Reason is a correct explanation of the Assertion

B. Both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion

C. Assertion is true, but the Reason is false

D. Assertion is false, but the Reason are
false

Answer: B



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6. Assertion A single-strand of mRNA is capable of forming different polypeptide chains

Reason Termination codons occur in mRNA

A. Both Assertion and Reason are true and the Reason is a correct explanation of the Assertion

B. Both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion

C. Assertion is true, but the Reason is false

D. Assertion is false, but the Reason are false

Answer: B



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7. Assertion Reading codons and consequent translation into protein are functions of tRNA

Reason Anticodon can recognise the codon

A. Both Assertion and Reason are true and the Reason is a correct explanation of the Assertion

B. Both Assertion and Reason are true and the Reason is not the correct

explanation of the Assertion

C. Assertion is true, but the Reason is false

D. Assertion is false, but the Reason are
false

Answer: A



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8. Assertion Non-sense codons are responsible
for terminating peptide chain

Reason Non-sense codons are not recognised
by tRNA

A. Both Assertion and Reason are true and
the Reason is a correct explanation of
the Assertion

B. Both Assertion and Reason are true and
the Reason is not the correct
explanation of the Assertion

C. Assertion is true, but the Reason is false

D. Assertion is false, but the Reason are
false

Answer: A



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Chapter Exercise C Medical Entrance S Gallery

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

A. 5 srRNA

B. 18 srRNA

C. 23srRNA

D. 5.8 srRNA

Answer: C



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

A. *Vinaca rosea*

B. *Vicia faba*

C. *Drosophila melanagaster*

D. *E. coli*

Answer: B



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3. The equivalent of a structural gene is

A. Muton

B. Cistron

C. Operon

D. Recon

Answer: B



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4. 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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5. 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 be provide the scope for slow changes that are required for evolution

Answer: C



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

A. Polymer

B. Polypeptide

C. Okazaki fragment

D. Polysome

Answer: D



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7. Which of the following statement is incorrect ?

A. Cellulose is a polysaccharide

B. Uracil is a pyrimidin

C. Glycine is a sulphur containing amino acid

D. Sucrose is a disaccharide

Answer: C



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

A. UGA

B. UAA

C. UAG

D. AUG

Answer: D



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9. *Escherichia coli*, in which both the strands of DNA are labelled with ^{15}N , is transferred to ^{14}N medium and allowed to replicate for two generations. Find out the number of hybrid DNA molecules in the second generation

- A. One
- B. Two
- C. Four
- D. Eight

Answer: B



10. What is the amino acid sequence in the polypeptide segment translated from mRNA strand with base sequence of UCU-UGG-UGC-UGU-GGU?

- A. Arg-Phe-Tyr-Gly-Gly
- B. Trp-Ser-Tyr-Cys-Gly
- C. Tyr-Cys-Ser-Gly-Cys
- D. Ser-Trp-Cys-Cys-Gly

Answer: D



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

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

Answer: D



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12. 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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13. Gene regulation governing lactose operon of E. coli that involves the lac I gene product is

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

B. Negative and inducible because repressor protein prevents transcription

C. Negative and repressible because repressor protein prevents transcription

D. Feedback inhibition because excess of β -galactosidase can switch off transcription

Answer: B



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14. 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. G/34%, A/24.5%, T/24.5%

B. G/17%, A/16.5%, 5/32%

C. G/17%, A/33%,T/33%

D. G/8.5%, A/50%, T/24.5%

Answer: C



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15. Semiconservative replication of DNA was first demonstrated in

- A. *Escherichia coli*
- B. *Streptococcus pneumoniae*
- C. *Drosophila melanogaster*
- D. *Salmonella typhimurium*

Answer: A



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16. The enzyme used to join the fragment of DNA during the process of replication is

A. DNA polymerase

B. DNA ligase

C. Endonuclease

D. Helicase

Answer: B



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17. 6-(4-Hydroxy-3 Methyl-trans-2-butenylamine) purine is also called

A. Methyl jasmonate

B. Zeatin

C. Brassinoide

D. Triacontanol

Answer: B



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18. Which of the following is correct regarding RNA processing?

A. In capping, methyl guanosine triphosphate is added to 3' end of hnRNA

B. RNA polymerase-I transcribes tRNA in eukaryotes

C. In tailing adenylate residues are added at 3' end of hnRNA

D. Three types of RNA polymerase catalyse the transcription of these different types of RNAs in most bacteria

Answer: C



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19. Splicing is the process where

A. Exons are removed from growing tRNA strand

B. Introns are removed from growing polypeptide chain

C. Introns are removed from heterogenous nuclear RNA

D. Exons are removed from mRNA

Answer: C



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20. RNA polymerase -1 transcribes eukaryotic ribosome which does not consists of :

A. 5.8 S rRNA

B. 28 S rRNA

C. 18 S tRNA

D. 5 S rRNA

Answer: D



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21. In 125 amino acid sequence if the codon of 25th amino acid is mutated to UAA, then

A. A polypeptide of 24 amino acids is formed

B. A polypeptide of 124 amino acids is formed

C. No polypeptide are formed

D. A polypeptide of 25 amino acids is formed

Answer: A



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22. The codon AUG has dual function. It is an initiation codon and also codes for :

A. Phenylalanine

B. Formaldehyde

C. Serine

D. Methionine

Answer: D



23. The nitrogen base found only in DNA is also called

- A. Uracil
- B. 5-methyl uracil
- C. Guanine
- D. $\text{NH}_4^+ \text{Cl}^-$

Answer: B



24. In a 3.2 Kbp long piece of DNA , 820 adenine bases were found. What would be number of cyosine bases

A. 780

B. 1560

C. 740

D. 1480

Answer: A



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25. A beads on a string like chromatin with 200 beads or nucleosomes containsbp of DNA.

A. 80000

B. 40000

C. 20000

D. 10000

Answer: C



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26. Assertion (*A*) Transcription unit is often monocistronic in eukaryotes and polycistronic in prokaryotes

Reason (*R*) Exons do not appear in mature RNA, introns appear in mature RNA.

A. *A* and *R* are true and *R* is correct explanation of *A*

B. *A* and *R* are true, but *R* is not correct explanation of *A*

C. *A* is true, but *R* is false

D. A is false, but R is true

Answer: C



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27. Which is A and B is given digram?



A. A-Lagging strand, B-Movement of
hellicase

B. A-RNA primer, B-DNA helicase

C. A-Single strand binding protein, B-DNA
helicase

D. A-RNA primer, B-RNA helicase

Answer: B



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28. In translation, amino acyle tRNA synthetase recognises the correct amino acid on the basis of
of

A. COO group

B. NH₃ group

C. H-atom

D. R-group

Answer: D



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29. Which RNA is synthesised by transcription done through the RNA polymerase-II enzymes?

A. rRNA

B. mRNA

C. tRNA

D. All of these

Answer: B



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30. The t-RNA anticodon 3' - UAC-5' will pair with the m-RNA codon :

A. 5'-AUU-3'

B. 5'-UAC-3'

C. 5'-AUG-3'

D. 3'-GUA-5'

Answer: C



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31. What will be the percentage of guanine in a DNA molecule having 20% adenine ?

A. 0.2

B. 0.3

C. 0.4

D. 0.6

Answer: B



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32. 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 - Binds to operator to stop
enzyme protein synthesis
- D. Operon - Structural genes, operator and
promoter

Answer: A



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33. Transformation was discovered by

A. Meselson and Stahl

B. Hershey and Chase

C. F Griffith

D. Watson and Crick

Answer: C



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34. What will be the number of histone molecules in a chromatin fibre having 50 nucleosomes ?

A. 400

B. 459

C. 500

D. 1000

Answer: A



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35. The sequence of nucleotides AUG CUU CUC indicates that it is a segment of

- A. Sense strand of DNA
- B. Anti-sense strand of DNA
- C. RNA
- D. Polypeptide chain

Answer: C



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36. In eukaryotic genes, coding sequences are called :

A. Introns

B. Exons

C. Regulatory sequence

D. Histones

Answer: B



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37. Which site of the tRNA pairs through hydrogen bonding with the triplet codes on mRNA?

- A. Codon
- B. 5' end tRNA
- C. 3' end of tRNA
- D. Anticodon

Answer: D



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38. Find the wrongly matched pair .

A. Har govind khorana - Synthesised RNA molecules chemically

B. George gamow - Codon is triplet

C. Meselson and stahl - Regulation of gene expression

D. Alec jeffreys - DNA fingerprinting

Answer: C



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39. If an inheritable mutation is observed in a population at high frequency it is referred to as

- A. DNA polymorphism
- B. Expressed sequence tag
- C. Sequence annotation
- D. Linkage

Answer: A



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40. In eukaryotes, RNA polymerase II transcribes :

A. hnRNA

B. 18S rRNA

C. 28S rRNA

D. tRNA

Answer: A



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41. Identify the wrong statement about DNA.

A. The length of DNA is defined as the number of base pairs present in it

B. Cytosine is common to both DNA and RNA

C. In a nucleotide, the nitrogenous base is linked to a phosphate group

D. Thymine is chemically 5-methyl uracil

Answer: C



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42. Which property among these listed below is not a criteria for a molecule to act as a genetic material ?

- A. Generate its replica
- B. Chemically and structurally stable
- C. Mutate slowly to facilitate evolution

D. Express it self in the form of Mendelian characters

Answer: D



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43. Which triplet codon does not have t-RNA associated with it ?

A. UAA

B. UUA

C. UUU

D. AUU

Answer: A



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

I. RNA polymerase associates transiently with 'Rho' factor to initiate transcription.

II. In bacteria, transcription and translation

takes place in the same compartment.

III. RNA polymerase I is responsible for transcription of t-RNA.

IV. When hn-RNA undergoes capping process, adenylate residues are added at 3' end in a template independent manner.

V. h-RNA is the precursor of m-RNA.

A. only II

B. II, III and IV

C. III and IV

D. I and IV

Answer: D



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45. Choose the correct statement

A. Haploid content of human DNA is $4.6 \times$

$10^{(6)}$ bp

B. A nitrogenous base is linked to pentose

sugar through phosphodiester linkage

- C. X-ray diffraction data of Maurice Wilkins and Rosalind Franklin was the basis of Watson and Crick's DNA model
- D. DNA is an acidic substance was first identified by Watson and Crick

Answer: C



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46. Aminoacylation of tRNA is essential for

A. Replication of RNA

B. Formation of peptide bond

C. Splicing

D. Initiation of transcription

Answer: B



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47. Which codon is not an indicator of completion of protein synthesis ?

A. UAG

B. AUG

C. UAA

D. UGA

Answer: B



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48. If the sequence of bases in the coding strand of a double stranded NDA is 5' -

GTTCGAGTC-3' , the sequence of bases in its transcript will be :

A. 5'GACUCGAAC-3'

B. 5'-CAAGCUCAG-3'

C. 5'-GUUCGAGUC-3'

D. 5'-GUUCGAGUC-3'

Answer: C



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49. Which of the following processes was discovered by Lederberg and Tatum (1946) ?

A. Transduction

B. Transformation

C. Asexual reproduction

D. Conjugation

Answer: D



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50. Formation of polysome does not require :

A. rRNA

B. mRNA

C. tRNA

D. snRNA

Answer: D



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51. The region of DNA sequence that provides binding site for RNA polymerase is :

- A. Terminator
- B. Structural gene
- C. Origin sequence
- D. Promoter

Answer: D



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52. Who gave semiconservative mode of DNA replication for the first time in *E. coli* with the help of ^{15}N heavy nitrogen isotope ?

- A. Watson and crick
- B. Kornberg and ochoa
- C. Meselson and stahl
- D. Luria and Delbruck

Answer: C



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53. In lac operon if mutation occurs in the middle gene of the 'structural gene' then

- A. β -galactosidase will not be synthesised
- B. Permease will not be synthesised
- C. Transacetylase will not be synthesised
- D. Lactose digestion will be rapid

Answer: B



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54. Which option is correct for the amino acid and the total number of their genetic code

A. Val = 6, Pro = 6

B. Arg = 6, His = 6

C. Pro = 4, Thr = 4

D. Thr = 4, Arg = 4

Answer: C



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55. Which option shows correctly labelled region in the given diagram of DNA replication?



A. A and C

B. Only C

C. A and B

D. B and C

Answer: B



View Text Solution

56. If the codon GGU is reversed, the resulting codon will code for this amino acid

A. Tyr

B. Trp

C. Leu

D. Thr

Answer: B



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57. Identify the correct pair of combinations.

I. ^{14}C – Distinction between PSI and PS II

II. ^{14}N – Semiconservative replication of DNA

III. ^{35}S – Polypeptide synthesis

IV. ^{32}P – Identification of chemical nature of genetic material

A. II and III

B. II and IV

C. I and II

D. I and III

Answer: A



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58. Assume that the occurrence of nitrogen bases in adjacent positions in a DNA strand is random. Identify the minimum number of nucleotides in a DNA strand where GAAT can occur once on the basis of probability

A. 512

B. 256

C. 4096

D. 1024

Answer: B



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59. The result of the following reaction/experiment carried out by Avery et al. on streptococcus pneumooiae has proved conclusively that DNA is the genetic material

A. Live 'R' strain + DNA from 'S' strain +
DNAase

B. Heat killed 'R' stain +DNA from 'S' strain
+ DNAase

C. Live 'R' strain + DNA from 'S' strain +
RNAase

D. Live 'R' strain + Denatured DNA of 'S'
strain + prorease

Answer: A



View Text Solution

60. Which of the following events would occur in 'Lac' operon' of E. coli when the growth medium has high concentration of lactose ?

- A. The structural genes fail to produce polymerase and mRNA
- B. The repressor protein binds to RNA polymerase and prevents translation
- C. The repressor protein attaches to the promoter sequence and derepresses the

operator

D. The inducer molecule binds to repressor protein and RNA polymerase binds to promoter sequence

Answer: D



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61. Statement A : The primary transcript produced in eukaryotic is translated without undergoing any modification or processing.

Statement B: The hn-RNA in humans has exons and introns.

A. Both the statements A and B are correct

B. Both the statements A and B are incorrect

C. Statement B is correct, and Statement A is Incorrect

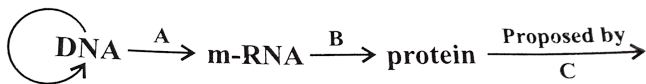
D. Statement A is correct, and statement B is incorrect

Answer: C



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



A. A-Translation, B-Transcription, C-Erevin

Chargaff

B. A-Transcription, B- Translation, C- Francis

Crick

C. A- Translation, B- Extension, C- Rosalind
Franklin

D. A- Translation, B- Replication, C- James
Watson

Answer: B



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

A. Lactose permease

B. Transacetylase

C. Lactose permease and transacetylase

D. $B\eta$ -galactosidase

Answer: D



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64. What would happen if in a gene encoding a polypeptide of 50 amino acids, 25th codon (UAU) is mutated to UAA ?

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 polypeptide of 24 and 25 amino acids will be formed

Answer: C



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65. The number of codons that code different amino acids is

A. 16

B. 31

C. 61

D. 64

Answer: C



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66. Some amino acids are coded by more than one codon

A. Unambiguous

B. Degenerate

C. Universal

D. Initiator

Answer: B



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67. What is correct gene expression pathway ?

A. Gene-mRNA-Transcription-Translation-
Protein

B. Transcription-Gene-Translation-mRNA-
Protein

C. Gene-Transcription-mRNA -Translation-
protein

D. Gene-Translation-mRNA-Transcription-
Protein

Answer: C



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68. What is not true for genetic code ?

- A. A codon in mRNA is read in a non-contiguous fashion
- B. It is nearly universal
- C. It is degenerate
- D. It is non-ambiguous

Answer: A



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69. Okazaki is known for his contribution to the understanding of

- A. Transcription
- B. Translation
- C. DNA replication
- D. Mutation

Answer: C



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

A. $5' \rightarrow 3'$

B. $3' \rightarrow 5'$

C. $3' \rightarrow 3'$

D. $5' \rightarrow 5'$

Answer: A



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71. which of the following amino acid codon was used by khorana?

A. Serine

B. Tryptophan

C. Alanine

D. Valine

Answer: A



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72. Which one of the following statements regarding lac operon is correct?

A. Lac operon is inducible system

B. Lac operon is repressible system

C. Lac operon of E.coli contain four structural genes

D. None of the above

Answer: A



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73. Select the true statement

A. mRNA acts as template of tRNA

synthesis

B. DNA acts as template for protein

synthesis

C. mRNA acts as template for cDNA synthesis

D. mRNA is inactive

Answer: C



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74. 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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75. Antibiotic inhibiting interaction between tRNA and mRNA during protein synthesis in bacteria

A. Neomycin

B. Streptomycin

C. Tetracycline

D. Erythromycin

Answer: C



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76. Out of 64 codons, the number of codons with GGG is

A. 1

B. 2

C. 4

D. 6

Answer: A



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

A. tRNA

B. hnRNA

C. mRNA

D. rRNA

Answer: A



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78. DNA has equal number of adenine and thymine residues ($A=T$) and equal number of

guanine and cytosine (G=C). These relationships are known as

- A. Chargall's rule
- B. Coulomb's law
- C. Le-Chatelier's principle
- D. Van Hoff plot

Answer: A



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79. Given below is a sample of a portion of DNA strand giving the base sequence on the opposite strands. What is so special shown in it ?

5' _ GAATTC _ 3'

3' _ CTTAAG _ 5'

- A. Deletion mutation
- B. Start codon at the 5' end
- C. Palindromic sequence of base pairs
- D. Replication completed

Answer: C



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80. Peptide synthesis inside a cell takes place
in

A. Mitochondria

B. Chromoplast

C. Ribosomes

D. Chloroplast

Answer: C



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81. The scientist who was awarded Nobel prize in 1959 for in vitro synthesis of polynucleotide :-

A. Tatum

B. Darwin

C. Kornberg

D. Khorana

Answer: C



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82. cDNA is formed by

- A. Transcription
- B. Replication
- C. Reverse transcription
- D. Translation

Answer: C



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83. The central dogma of protein synthesis is :

A. DNA to DNA to protein

B. $RNA \rightarrow DNA \rightarrow$ protein

C. protein $\rightarrow RNA \rightarrow DNA$

D. $DNA \rightarrow RNA \rightarrow$ protein

Answer: D



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84. Gene of bacteria and virus code for more than one polypeptide are called

- A. Overlapping gene
- B. Monocistronic gene
- C. Polycistronic gene
- D. Non-ambiguous gene

Answer: B



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85. Methyl guanosine triphosphate is associated with

- A. Point mutation
- B. Tautomerism
- C. Capping
- D. Okazaki fragments

Answer: C



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86. Which one the following statements are correct ?

(i) RNA polymerase I transcribes rRNAs

(ii) RNA polymerase II transcribes snRNAs

(iii) RNA polymerase III transcribes hnRNA

(iv) RNA polymerase II transcribes hnRNA

A. I and II

B. I and III

C. I, II and IV

D. II and III

Answer: D



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87. 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



88. 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. III and IV

D. IV and I

Answer: A



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89. The process of removal of introns and joining of exons is called :

A. Capping

B. Tailing

C. Termination

D. splicing

Answer: D



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90. The process of copying genetic information from one strand of DNA to RNA is termed as _____ .

A. Translation

B. Transamination

C. Replication

D. Transcription

Answer: D



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91. Consider the statements

(i) rRNA provides template for synthesis of proteins

(ii) tRNA brings amino acids and reads genetic code

(iii) RNA polymerase binds to promoter and initiates transcription

(iv) A segment of DNA coding for polypeptide is called intron

A. I and III

B. I and II

C. I, II and III

D. II and III

Answer: D



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92. In the lac operon system, beta-galactosidase is coded by

A. A-gene

B. I-gene

C. Z gene

D. Y-gene

Answer: C



93. In bacteria, the formation of peptide bond during translation is effected by

- A. Lysozyme
- B. Ribozyme
- C. Nucleosome
- D. Microsome

Answer: B



94. 5' end of a polynucleotide chain contains

- A. – OH group is attached
- B. Phosphate group is attached
- C. Pentose sugar is attached
- D. – H bond is present

Answer: B



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95. Reverse transcriptase is

- A. DNA dependent DNA polymerase
- B. RNA dependent DNA polymerase
- C. DNA dependent RNA polymerase
- D. RNA dependent RNA polymerase

Answer: D



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96. During chain elongation, peptide bond is formed between carboxyl group of first and amino group of second amino acid by

A. Peptidyl transferase

B. DNA ligase

C. Taq polymerase

D. Helicase

Answer: A



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

A. 64

B. 32

C. 60

D. 61

Answer: D



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

A. Nirenberg and Mathaei

B. Hershey and Chase

C. Morgan and Strulevant

D. Beadle and tatum

Answer: B



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

A. Cistron

B. Exon

C. Intron

D. Gene

Answer: A



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

- A. UUA- Valine
- B. AAA-lysine
- C. AUG- cysteine
- D. CCC-alanine

Answer: B





102. Assertion (A) : Replication and transcription occur in the nucleus but translation occurs in the cytoplasm.

Reason (R) : m-RNA is transferred from the nucleus into the cytoplasm where ribosomes and amino acids are available for protein synthesis.

A. Both Assertion and Reason are true and the Reason is a correct explanation of

the Assertion

B. Both Assertion and Reason are true and

the Reason is not the correct

explanation of the Assertion

C. Assertion is true, but the Reason is false

D. Assertion is false, but the Reason are

false

Answer: B



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103. All eukaryotic genes contain two kinds of base sequences. Which of these plays an important role in protein synthesis?

- A. Introns
- B. Exons
- C. Both (a) and (b)
- D. None of these

Answer: B



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104. Which of the following is an initiation codon in

A. UAG

B. UGA

C. UAA

D. AUG

Answer: D



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

A. TATGC

B. TCTGG

C. UAUGC

D. UATGG

Answer: C



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106. Process of reverse transcription was discovered by

A. Temin and Baltimore

B. Watson and Crick

C. Alfred Hershey

D. None of these

Answer: A



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107. The process of formation of amino acids is called

- A. Transcription
- B. Translation
- C. Conjugation
- D. None of these

Answer: B



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108. One of these is associated with terminator codon?

A. AGG

B. UAA

C. UUA

D. AUG

Answer: B



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109. Out of 64 codons, only 61 codes for the 20 different amino acids, this character of genetic code is called

- A. Degeneracy
- B. Non-ambiguos nature
- C. Redundancy nature
- D. Overlapping

Answer: A



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110. The sequence of events mentioned below are symbolised by alphabets. Chose the correct answer, where the alphabets are matched with the process



Polypeptide

A. A-replication, B-transformation, C-

Transcription, D-translation

B. A-Reverse transcription, B-replication, C-

transcription, D-translation

C. A-Replication, B-transcription, C-translation, D-transduction

D. A-reverse transcription, B-translation, Ctranscription, D-replication

Answer: B



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111. According to the lac operon concept, which functional unit of the bacterial genetic material is responsible for suppressing the

activity of the operator gene in the absence of lactose ?

- A. Regulator gene
- B. Structural gene
- C. Promoter gene
- D. Repressor protein

Answer: A



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112. The phenomenon of 5' end third base of tRNA pairing. With non-complementary base of mRNA is

A. Universality

B. Collinearity

C. Degeneracy

D. Wobbling

Answer: D



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113. 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: A



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114. Which of the following group of codons code for amino acid serine ?

A. CUU,CUC,CUA and CUG

B. UAU,UAC,UGU and UGC

C. UCU,UCC,UCA and UCG

D. GUU,GUC,GCU and GCC

Answer: C



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115. 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. TTAA

B. AATT

C. CACC

D. TATA

Answer: D



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116. The Okazaki fragments in DNA chain growth

A. Result in transcription

B. Polymerise in the 3' to 5' direction and forms replication fork

C. Prove semiconservative nature of DNA replication

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

Answer: A



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117. 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 sequence
- D. Ribosome

Answer: C



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118. Anticodon is present on

A. rRNA

B. tRNA

C. mtDNA

D. mRNA

Answer: D



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

- A. Association of 30 S, mRNA with formyl-met-tRNA
- B. Association of 50 S subunit of ribosome with initiation complex
- C. Formation of formyl-met-tRNA

D. Binding of 30 S subunit of ribosome with
mRNA

Answer: A



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120. Consider the following statements :

Assertion (A) : Amber codon is a termination codon .

Reason (R) : If in a m-RNA, a termination codon is present, the protein synthesis stops

abruptly whether the protein synthesis is complete or not.

Now select you answer from code given below

:

A. Both Assertion and Reason are true and the Reason is a correct explanation of the Assertion

B. Both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion

C. Assertion is true, but the Reason is false

D. Assertion is false, but the Reason are
false

Answer: A



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121. In regulation of gene expression in prokaryotes :

A. Lactose acts as an the suppressor for gene expression

B. Tryptophan acts as the inducer for gene

expression

C. Regulator gene is the one that produces the repressor molecule

A. I alone correct

B. II alone correct

C. III alone correct

D. II and I alone correct

Answer: C



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122. Formation of mRNA for DNA is

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

Answer: B



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123. Central dogma of genetic information is modified by the discovery of :

A. Reverse transcriptase

B. DNA polymerase

C. RNA polymerase

D. Ligase

Answer: A



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124. The concept of 'operon' was proposed by :

A. Jacob and Monod

B. David Baltimore

C. Allec jeffery

D. None of these

Answer: A



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125. Which conserved motifs are found in E. coli genes ?

A. TATA box

B. CAAT box

C. Probnow box

D. All of these

Answer: A



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126. Eukaryotic RNA polymerase-III catalyses the synthesis of

A. mRNA

B. tRNA and 5 S rRNA

C. 18 s rRNA

D. 5 s rRNA

Answer: B



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127. The sequence of structural genes in lac operon is

A. Lac A, Lac Y, Lac Z

B. Lac A, Lac Z, Lac Y

C. Lac Y, Lac Z, Lac A

D. Lac Z, Lac Y, LacA

Answer: D



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128. Choose the wrong statement in the process of protein synthesis

A. After uncoiling of DNA molecule, one strand acts as a template for the formation of mRNA

B. In the presence of DNA polymerase enzyme, the mRNA is formed based on the triplet codes

C. The mRNA that leaves nucleus reaches cytoplasm and gets attached with 30S

ribosomal subunit

D. The amino acids are transferred from the intracellular amino acid pool to the active ribosomes by the tRNA

Answer: D



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129. 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. CGTT box

C. AAAT box

D. TATA box

Answer: D



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130. E. coli cell with a mutated Z gene of the lac operon cannot grow in medium containing only lactose as the source of energy because:

A. In the presence of glucose, E. coli cells do not utilise lactose

B. They cannot transport lactose from the medium into the cell

C. The lac operon is constitutively active in these cells

D. They cannot synthesis functional $B\eta$ -galactosidase

Answer: D



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