



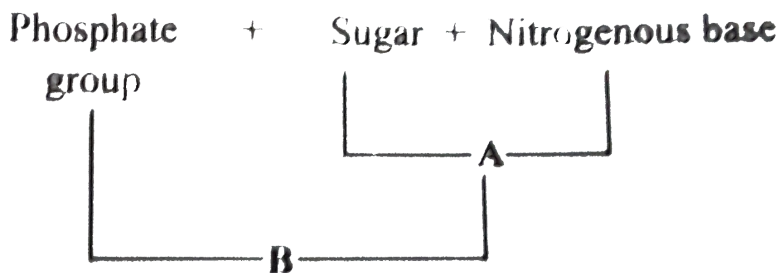
## BIOLOGY

### BOOKS - MTG BIOLOGY (HINGLISH)

### MOLECULAR BASIS OF INHERITANCE

#### Molecular Basis Of Inheritance

1. What does A and B represent in the given representation ?



A. A-Ribonucleoside, B-Deoxyribonucleoside

B. A-Ribonucleotide, B-Deoxyribonucleotide

C. A-Nucleoside, B- Nucleotide

D. A-Nucleotide, B- Nucleoside

**Answer: C**



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2. In 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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3. In a DNA molecule, the phosphate group is attached to carbon\_\_\_\_\_ of the sugar residue of its own nucleotide and carbon\_\_\_\_ of the sugar residue of the next nucleotide by \_\_\_\_\_ bonds.

A. 5',3', phosphodiester

B. 3',5', phosphodiester

C. 5',3' , glycosidic

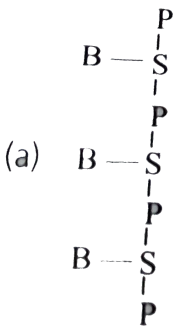
D. 3' ,5', glycosidic

**Answer: A**

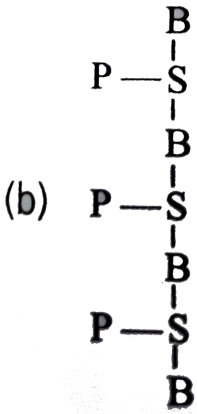


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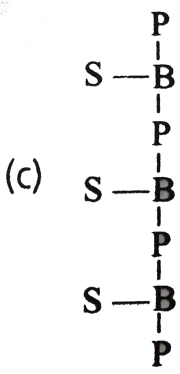
4. Which of the following shown the correct positions of the phosphate (P), sugar (S) and base (B) molecules in the given line diagrams representing the structure of DNA?



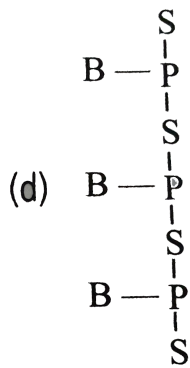
A.



B.



C.



D.

**Answer: A**

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5. DNA as an acidic substance present in nucleus was first identified by \_\_\_\_\_ in 1869, he named it as \_\_\_\_\_

- A. Meischer , nuclein
- B. Watson and Crick , DNA
- C. Chargaff, nuclein
- D. Wilkins and Franklin, double helix

**Answer: A**

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**6. Which of the following pairs is incorrectly matched?**

- A. Purines-Adenine and Guanine
- B. Pyrimidines-Cytosine and Uracil
- C. Nucleosides-Adenosine and Thymidine
- D. DNA-Basic biomolecule

**Answer: D**

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**7. Watson and Crick (1953) proposed DNA was based on**

- (i) X-ray diffraction studies studies of DNA dne by Wilkins and Franklin
- (ii) Chargaff's base equivalence rule

(iii) Griffith's transformation experiment

(iv) Meselson and Stahl's experiment.

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

B. (i) and (ii)

C. (iii) and (iv)

D. (i), (ii),(iii) and (iv)

**Answer: B**



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**8.** If a double stranded DNA has 20% of cytosine, what will be the percentage of adenine in it ?

A. 0.2

B. 0.4

C. 0.3

D. 0.6

**Answer: C**



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9. In one polynucleotide strand of a DNA molecule the ratio of  $A + T / G + C$  is 0.3. What is the  $A + G / T + C$  ratio of the entire DNA molecule ?

A. 0.3

B. 0.6

C. 1.2

D. 1

**Answer: d**



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10. If the sequence of bases in one strand of DNA is ATGCATGCA, what would be the sequence of bases on complementary strand ?

- A. ATGCATGCA
- B. AUGCAUGCA
- C. TACGTACGT
- D. UACGUACGU

Answer: C



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11. Refer to the given figure

- A. 

<i>K</i>	<i>L</i>	<i>M</i>	<i>N</i>
5' end	Phosphodiester bond	Thymine	Ribose sugar
- B. 

<i>K</i>	<i>L</i>	<i>M</i>	<i>N</i>
3' end	Glycosidic bond	Guanine	Deoxyribose sugar
- C. 

<i>K</i>	<i>L</i>	<i>M</i>	<i>N</i>
5' end	Hydrogen bond	Adenine	Ribose sugar
- D. 

<i>K</i>	<i>L</i>	<i>M</i>	<i>N</i>
5' end	Hydrogen bond	Adenine	Deoxyribose sugar

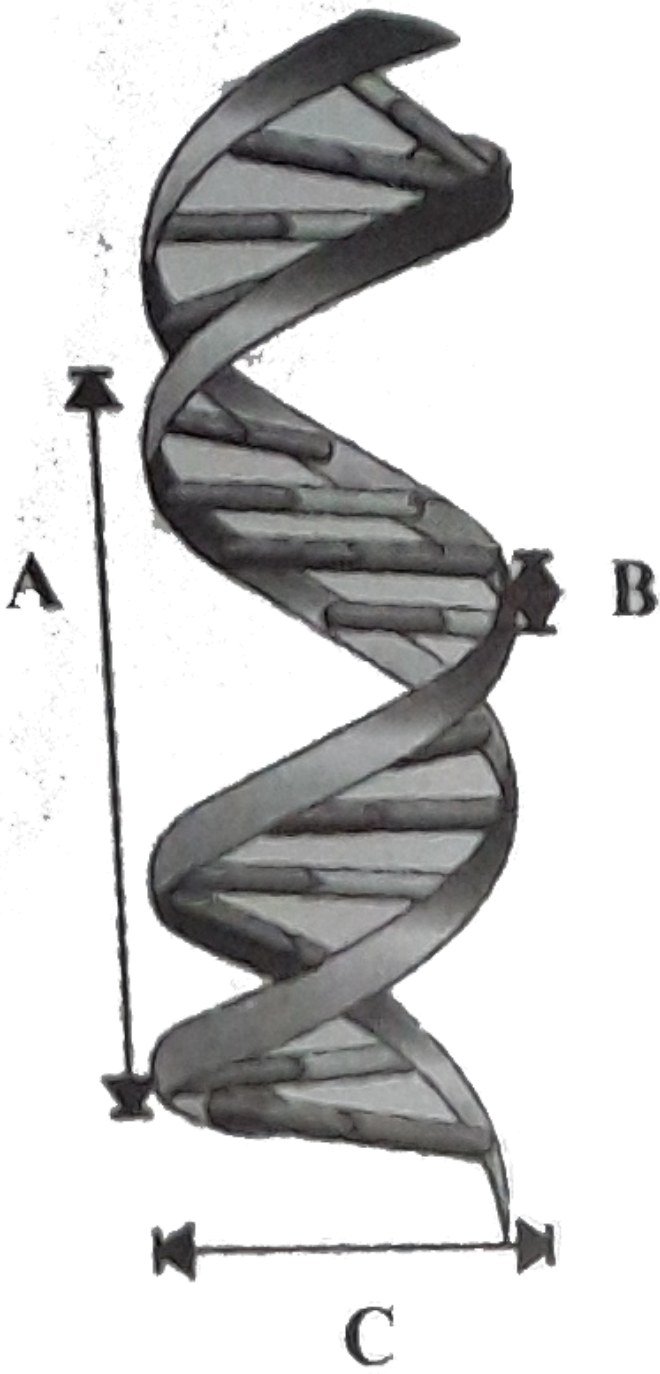
**Answer: d**



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**12.** Given figure represents the DNA double helix model as proposed by Waston and Crick (1953). Select the option that shown correct

measurements of A, B and C.



A. A-3.4nm,B-0.34 nm, C-2 nm

B. A-3.4nm, B-3.4nm,C-20nm

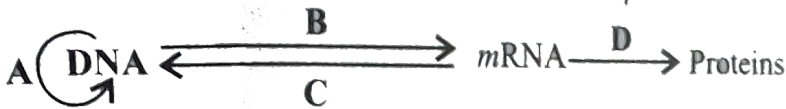
C. A-3.4Å,B-3.4Å, C-20Å

D. A-34 Å,B-3.4Å , C-2Å

**Answer: A**

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13. The given flow chart represents the flow of genetic information between biomolecules. Identify the processes A,B,C and D and select the correct option.



A.

A

B

C

D

Translation

Transcription

Replication

Reverse Transcription

B.

*A*                      *B*                                      *C*                      *D*  
Replication      Transcription      Translation      Reverse Transcription

C. *A*                      *B*                                      *C*                      *D*  
Replication      Transcription      Reverse Transcription      Translation

D. *A*                      *B*                      *C*                      *D*  
Replication      Reverse Transcription      Transcription      Translation

**Answer: C**



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**14.** Synthesis of DNA from RNA is explained by

A. central dogma reverse

B. reverse transcription

C. teminism

D. all of these.

**Answer: D**



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15. Histone proteins are

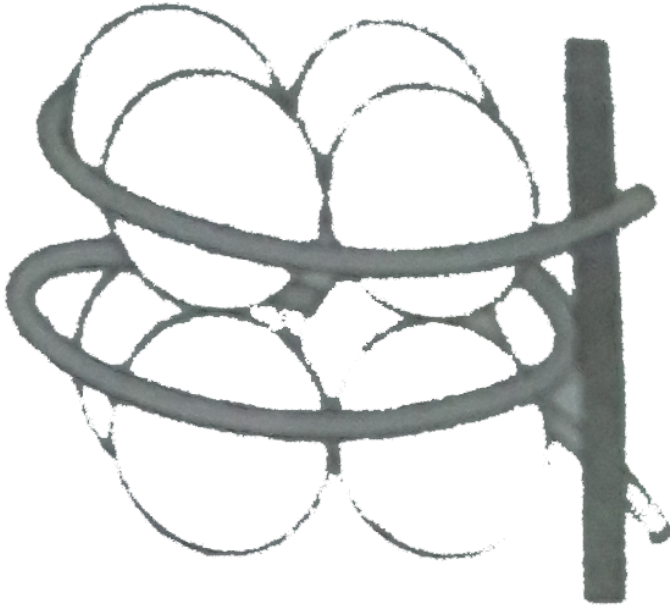
- A. basic , negatively charged
- B. basic , positively charged
- C. acidic, positively charged
- D. acidic, negatively charged.

**Answer: B**



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16. What does the given diagram represent ?



A. Nucleosome

B. Spliceosome

C. Histone complex

D. Both (a) and (b)

**Answer: A**

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

- A. nucleotides
- B. nucleosides
- C. histone octamer
- D. nucleosomes.

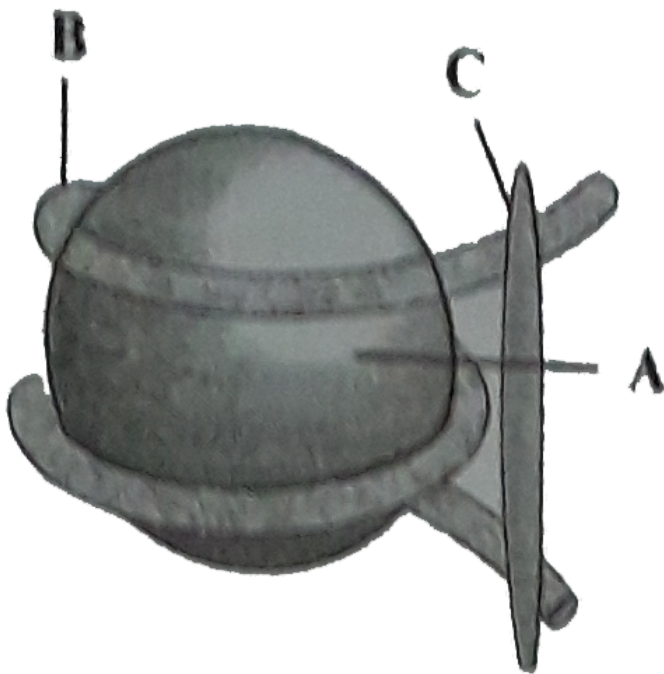
**Answer: D**



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18. Refer the given figure of nucleosome and select the option that correctly identifies the parts A,B and C.





*A*      *B*                      *C*  
 A. DNA      Histone octamer       $H_1$  histone

*A*                      *B*                      *C*  
 B. Histone octamer       $H_1$  histone      DNA

*A*                      *B*      *C*  
 C. Histone octamer      DNA       $H_1$  histone

*A*      *B*                      *C*  
 D. DNA       $H_1$  histone      Histone octamer

**Answer: C**



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19. Read the following statements and select the correct option.

Loosely packed and light stained region of chromatin are called as heterochromatin.

(ii) Densely packed and dark stained region of chromatin are called as euchromatin.

(iii) A typical nucleosome contains 200 bp of DNA helix.

A. Statements (i) and (ii) are true , but statement (iii) is false.

B. Statement (i) and (ii) are false, but statement (iii) is true.

C. Statement (ii) and (iii) are true , but statement (i) is false.

D. All the statements are true.

**Answer: B**



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20. Find out the wrong statement about heterochromatin.

- A. It is densely packed.
- B. It stains dark.
- C. It is transcriptionally active
- D. It is late replicating

**Answer: C**



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21. The year 2003 was celebrated as the 50<sup>th</sup> anniversary of discovery of

- A. transposons by Barbara Mc Clintock
- B. structure of DNA by Watson and Crick
- C. Mendel's laws of inheritance
- D. biotechnology by Kary Mullis.

**Answer: B**



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**22.** The proces of transformation is not affected by which of the following enzymes?

A. Dnase ,B. Rnase

c. Peptidase , D. Lipase

A. A,B

B. A, B, C, D

C. B, C, D

D. A, B, C

**Answer: C**



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23. To prove that DNA is the genetic material, which radioactive isotopes were used by Hershey and Chase (1952) in their experiments?

A.  $^{35}\text{S}$  and  $^{15}\text{N}$

B.  $^{32}\text{P}$  and  $^{35}\text{S}$

C.  $^{32}\text{P}$  and  $^{15}\text{N}$

D.  $^{14}\text{N}$  and  $^{15}\text{N}$

**Answer: B**



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24. If the DNA of a virus is labelled with  $^{32}\text{P}$  and the protein of the virus is labelled with  $^{35}\text{S}$ , after transduction which molecule (s) would be present inside the bacterial cells?

A.  $^{32}\text{P}$  only

B.  $^{35}\text{S}$  only

C. Both (a) and (b)

D. None of these

**Answer: a**



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**25.** RNA is the genetic material in

A. prokaryotes

B. eukaryotes

C. Tobacco Mosaic Virus (TMV)

D. E.coli.

**Answer: C**



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26. Which of the following criteria should be fulfilled by a molecule to act as a genetic material?

(i) It should be able to replicate.

(ii) It should be structurally and chemically stable.

(iii) It should be able to undergo slow mutations.

(iv) It should be able to express itself in the form of 'Mendelian characters'

A. (i) and (ii)

B. (ii) and (iii)

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

D. (i),(ii),(iii) and (iv)

**Answer: D**



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27. Select the correct statements out of the following .

(i) Both DNA and RNA are able to mutate.

(ii)RNA being unstable , mutates at a faster rate.

(iii)RNA shows catalytic properties.

(iv)Presence of uracil (U) at place of thymine (T) confers additional stability to RNA.

A. (i) and (ii)

B. (ii) and (iii)

C. (i) and (iv)

D. (i),(ii) and (iii)

**Answer: D**



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**28.** Match column I and II and select the correct option from the given codes.



A. A-(ii), B-(iii), C-(iv), D-(i), E-(v)



B. A-(v), B-(iv), C-(iii), D-(i), E-(ii)

C. A-(i), B-(iii), C-(iv), D-(ii), E-(v)

D. A-(i), B-(iv), C-(iii), D-(ii), E-(v)

**Answer: a**



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**29. Which one among the following was the first genetic material ?**

A. DNA

B. RNA

C. Protein

D. Nuclein

**Answer: B**



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30. Which of the following life processes is evolved around RNA ?

- A. Metabolism
- B. Translation
- C. Splicing
- D. all of these.

**Answer: D**



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31. Which of the following statement are incorrect ?

- (i) RNA act as a genetic material as well as a catalyst.
- (ii) RNA is more stable than DNA
- (iii) RNA has evolved from DNA

- A. (i) and (iii) only
- B. (ii) and (iii) only

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

D. (i) and (ii) only

**Answer: B**



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**32.** Chemically, RNA is (i)\_\_\_\_\_ reactive and (ii)\_\_\_\_\_ stable as compared to DNA.

A. (i)equally , (ii) equally

B. (i)less , (ii) more

C. (i)more , (ii)less

D. (i)more , (ii)equally

**Answer: C**



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33. Which of the following phenomena was experimentally proved by Meselson and Stahl?

- A. Transformation
- B. Transduction
- C. Semi-conservative DNA replication
- D. Central dogma

**Answer: C**



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34. First experimental proof for semi-conservative DNA replication was shown in

- A. *Streptococcus pneumoniae*
- B. *Escherichia coli*
- C. *Neurospora crassa*

D. *Rattus rattus*

**Answer: B**



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**35.** Select the correct match of enzyme with its related function.

A. DNA polymerase- Synthesis of DNA strands

B. Helicase - Unwinding of DNA helix

C. Ligase - Joins together short DNA segments

D. all of these.

**Answer: D**



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**36.** Other than DNA polymerase, which of the following enzymes involved in DNA synthesis ?

- A. Topoisomerase
- B. Helicase
- C. RNA primase
- D. all of these.

**Answer: D**



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**37.** Refer to the given steps of DNA strands

- (i) Exposure of DNA strands
- (ii) Synthesis of RNA primer
- (iii) Activation of deoxyribonucleotides
- (iv) Chain formatiion
- (v) Base pairing

(vi) Proof reading and DNA repair  
Itviigt DNA polymerase attaches at Ori site

Select the correct sequence of DNA replication.

A. (vii) → (iii) → (i) → (ii) → (v) → (iv) → (vi)

B. (iii) → (i) → (vii) → (ii) → (v) → (iv) → (vi)

C. (vii) → (i) → (iii) → (ii) → (v) → (iv) → (vi)

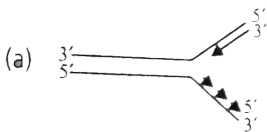
D. (i) → (iii) → (ii) → (vii) → (v) → (iv) → (vi)

Answer: a

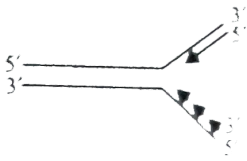


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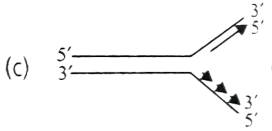
38. Which of the following figures correctly represents the replication fork formed during DNA replication ?



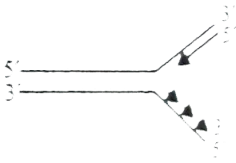
A.



B.



C.



D.

**Answer: d**



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**39.** Select the incorrect statement regarding DNA replication.

A. Leading strand is formed in  $5' \rightarrow 3'$  direction

B. Okazaki fragments are formed in  $5' \rightarrow 3'$  direction

C. DNA polymerase catalyses polymerisation in  $5' \rightarrow 3'$  direction



D. DNA polymerase catalyses polymerisation in 3' → 5' direction

Answer: D

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40. Which of the following differences are incorrect between leading and lagging strands of DNA ?

	<b>Leading strand</b>	<b>Lagging strand</b>
(i)	It does not require DNA ligase for its growth.	DNA ligase is required for joining Okazaki fragments.
(ii)	Formation of leading strand is slower.	Formation of lagging strand is quite rapid.
(iii)	Its template opens in 5' → 3' direction.	Its template opens in 3' → 5' direction.
(iv)	Formation of leading strand begins immediately at the beginning of replication.	Formation of lagging strand begins a bit later than that of leading strand.

A. (ii) and (iv) only

B. (ii),(iii) and (iv) only

C. (ii) and (iii) only

D. (i), (ii) and (iii) only

**Answer: c**



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41. DNA replication takes place at \_\_\_\_\_ phase the cell cycle.

A.  $G_1$

B. S

C.  $G_2$

D. M

**Answer: B**



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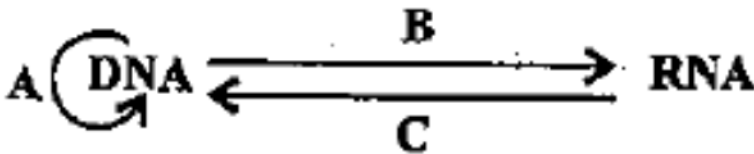
42. The process of copying genetic information from one strand of DNA to RNA is termed as \_\_\_\_\_ .

- A. replication
- B. transcription
- C. translation
- D. reverse transcription

Answer: B

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43. The given flow chart shows central central dogma reverse .



Enzymes used in processes A, B and C are respectively

	<i>A</i>	<i>B</i>	<i>C</i>
A.	DNA dependent DNA polymerase <i>A</i>	RNA dependent DNA polymerase <i>B</i>	DNA dependent RNA polymerase <i>C</i>
B.	DNA dependent DNA polymerase <i>A</i>	DNA dependent RNA polymerase <i>B</i>	RNA dependent DNA polymerase <i>C</i>
C.	DNA dependent RNA polymerase <i>A</i>	DNA dependent DNA polymerase <i>B</i>	RNA dependent DNA polymerase <i>C</i>
D.	RNA dependent DNA polymerase	DNA dependent RNA polymerase	RNA dependent RNA polymerase

**Answer: b**



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**44.** The enzyme DNA dependent RNA polymerase catalyses the polymerisation reaction in \_\_\_\_\_ direction .

- A. only 5' → 3'
- B. only 3' → 5'
- C. Both (a) and (b)
- D. None of these

**Answer: A**



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**45.** What would be the base sequence of RNA transcript obtained from the given DNA segment ?

5' - G C A T T C G G C T A G T A A C - 3' Coding strand of DNA

3' - C G T A A G C C G A T C A T C A T T G - 5' Non - coding strand of DNA

A. 5'-G C A U U C G G C U A G U A A C - 3'

B. 5'-C G U A A G C C G A U C A U U G - 3'

C. 5'-G C A T T C G G C T A G T A A C - 3'

D. 3'-C G T A A G C C G A T C A T T G - 5'

**Answer: a**



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46. If the sequence of bases in coding strand of DNA is ATTCGATC, then the sequence of bases in mRNA will be

A. TA A C T AC

B. U A A G C U A C

C. A T T C G A T G

D. AUUCGAUG

**Answer: D**



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47. If the sequence of bases in DNA is GCTTAGGCAA then the sequence of bases in its transcript will be

A. GCT TAG G C A A

B. CGA A TC C GT T

C. CGA A U C C G U U

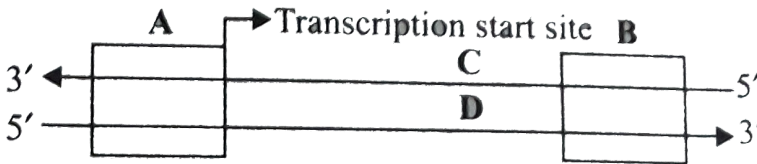
D. AACGGAUUCG

Answer: c

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48. Given diagram represents the components of a transcription unit.

Select the correct answer regarding it .



- |    |            |            |                 |                 |
|----|------------|------------|-----------------|-----------------|
|    | <i>A</i>   | <i>B</i>   | <i>C</i>        | <i>D</i>        |
| A. | Terminator | Promoter   | Template strand | Coding strand   |
| B. | Promoter   | Terminator | Coding strand   | Template strand |
| C. | Promoter   | Terminator | Template strand | Coding strand   |
| D. | Terminator | Promoter   | Coding strand   | Template strand |

Answer: C

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**49.** Transcription unit

- A. starts with TATA box
- B. starts with palindrome regions and ends with rho factor
- C. starts with promoter region and ends in terminator region
- D. starts with C A A T region.

**Answer: C**



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**50.** 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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**51.** Polycistronic messenger RNA (mRNA) usually occurs in

A. bacteria

B. prokaryotes

C. eukaryotes

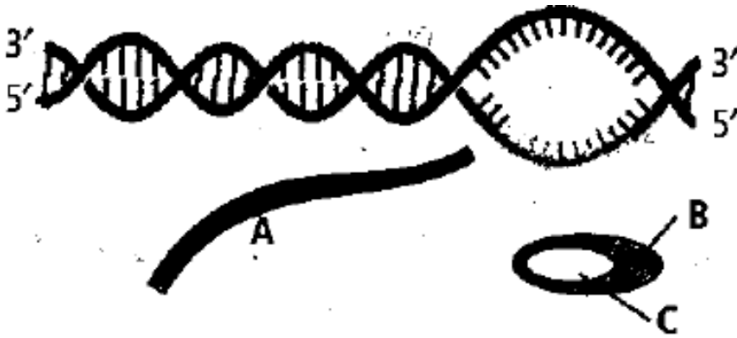
D. both a and b

**Answer: D**



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52. The given figure represents the process of transcription in bacteria.



A. A-DNA, B-RNA, C-Rho factor

B. A-RNA, B-RNA polymerase, C- Rho factor

C. A-RNA, B-RNA polymerase, C- sigma factor

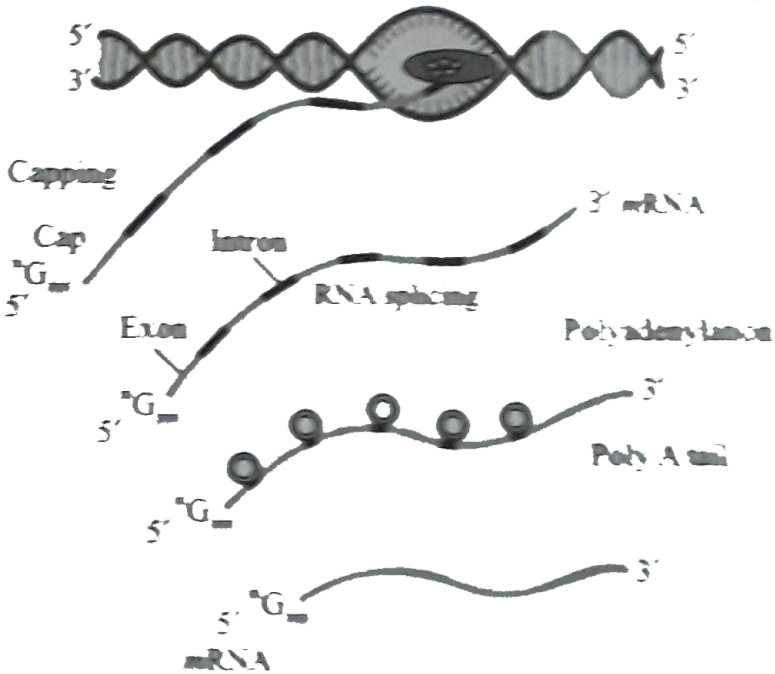
D. A-DNA, B-DNA polymerase, C-Sigma factor

**Answer: B**



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53. Refer to the given diagram. What does it represent ?



- A. Transcription in prokaryotes
- B. Transcription in eukaryotes
- C. Translation in prokaryotes
- D. Translation in eukaryotes

Answer: B



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54. In transcription in eukaryotes, heterogenous nuclear RNA (hnRNA) is transcribed by

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

**Answer: B**



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55. Menthyl guanosine triphosphate is added to the 5' end of hnRNA in a process of

- A. splicing
- B. capping

C. tailing

D. None of these

**Answer: B**



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**56.** Select the correct statements regarding the process of transcription in eukaryotes.

(i) The strand of dsDNA which takes part in transcription process is called as coding strand.

(ii) The enzyme RNA polymerase can catalyse polymerisation only in one direction i.e.  $5' \rightarrow 3'$ .

(iii) An unusual nucleotide methyl guanosine triphosphate is added to the 5' end of hnRNA during capping.

(iv) During tailing process, adenylate residues (200-300) are added at 3' end in a template independent manner.

A. (i) and (ii)

B. (iii) and (iv)

C. (ii),(iii) and (iv)

D. (i),(ii),(iii) and (iv)

**Answer: c**



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**57.** In eukaryotes, the process of processing of primary transcript involves

A. removal of introns

B. capping at 5' end

C. tailing (polyadenylation) at 3' end

D. all of these.

**Answer: D**



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58. Match column I and II and select the correct option from the given codes.



A. A-(iii),B-(v), C-(iv),D-(ii)

B. A-(ii),B-(iv),C-(v),D-(i)

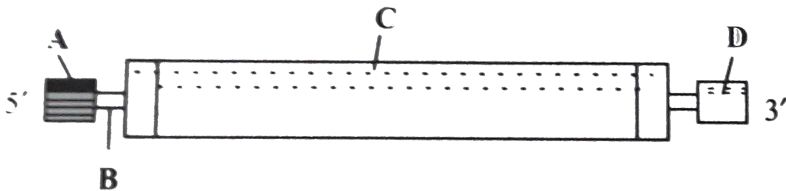
C. A-(ii),B-(iv),C-(v),D-(iii)

D. A-(iii), B-(v), C-(iv), D-(i)

Answer: b

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59. Identify A, B, C and D in the given diagram of mRNA.



A.

*A*                      *B*                      *C*                      *D*  
Methylated cap    Initiation codon    Termination codon    Poly A tail

B.

*A*                      *B*                      *C*                      *D*  
Poly A tail    Termination codon    Initiation codon    Methylated cap

C.

*A*                      *B*                      *C*                      *D*  
Methylated cap    Non-coding region    Coding region    Poly A tail

D.

*A*                      *B*                      *C*                      *D*  
Methylated cap    Coding region    Non-coding region    Poly A tail

**Answer: c**



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60. The fully processed hnRNA is called as (i)\_\_\_ and is transported out of the (ii)\_\_\_ into the (iii) \_\_\_ for translation.

A. (i)            (ii)            (iii)  
mRNA    nucleus    cytoplasm



- B. (i) (ii) (iii)  
mRNA cytoplasm nucleus
- C. (i) (ii) (iii)  
tRNA cytoplasm nucleus
- D. (i) (ii) (iii)  
tRNA nucleus cytoplasm

**Answer: A**

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61. Refer to the given sequence of steps and select the correct option.



- A. (i) (ii) (iii)  
Replication Transcription Translation
- B. (i) (ii) (iii)  
Replication Processing Translation
- C. (i) (ii) (iii)  
Transcription Splicing Translation
- D. (i) (ii) (iii)  
Transcription Replication Translation

**Answer: C**

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

- A. U A A,UAG,GUA
- B. U A A,UAG,UGA
- C. U A A,UGA,U UA
- D. UGU, UAG, UGA

Answer: B



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63. Match column I and II and select the correct option from the given codes.



- A. A-(iii),B-(iv),C-(i), D-(v), E-(ii)

B. A-(iii),B-(i),C-(iv), D-(v), E-(ii)

C. A-(iii),B-(iv),C-(v), D-(i), E-(ii)

D. A-(ii),B-(iv),C-(i), D-(v), E-(iii)

**Answer: a**



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**64.** Amino acids which are specified by single codons are

A. phenylalanine and arginine

B. tryptophan and methionine

C. valine and proline

D. methionine and arginine

**Answer: b**



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65.  $mRNA \xrightarrow{AUGUUU AUGCCUGUUUCUUAA}$

Polypeptide Met-Phe-Met-Pro-Val-Ser

Nucleotide sequence of the DNA strand from which this mRNA was transcribed is

- A. TAC A A A TAC GGA C A A AGA ATT
- B. AUG UUU AUG C CU GUU UCU U A A
- C. UAC A A A UAC G GA C A A AGA AUU
- D. ATG TTT ATG C CT GTT TCT TA A

**Answer: a**



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66.  $mRNA \xrightarrow{AUGUUU AUGCCUGUUUCUUAA}$

Polypeptide Met-Phe-Met-Pro-Val-Ser

Which codons respectively code for proline and valine amino acids in the given polypeptide chain, respectively ?

A. C CU and GUU

B. GUU and UCU

C. UCU and UA A

D. GUU and C CU

**Answer: a**



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**67. Which out of the following statement is incorrect ?**

A. Genetic code is ambiguous

B. Genetic code is degenerate

C. Genetic code is universal

D. Genetic code is non-overlapping

**Answer: A**



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

- A. overlapping
- B. degenerate
- C. wobbled
- D. unambiguous

**Answer: B**



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69. Read the following statements.

- (i) One codon codes for only one amino acid.
- (ii) Some amino acids are coded by more than one codon.
- (iii) The sequence of triplet nitrogenous bases in DNA of mRNA corresponds to the amino acid sequence in the polypeptide chain.

Give , suitable terms for the characteristics of 'genetic code' as per the above statements.

- |    |                     |                      |                      |
|----|---------------------|----------------------|----------------------|
| A. | Degeneracy<br>(i)   | Colinearity<br>(iii) | Unambiguous<br>(ii)  |
| B. | Degeneracy<br>(iii) | Colinearity<br>(ii)  | Unambiguous<br>(i)   |
| C. | Degeneracy<br>(ii)  | Colinearity<br>(iii) | Unambiguous<br>(i)   |
| D. | Degeneracy<br>(i)   | Colinearity<br>(ii)  | Unambiguous<br>(iii) |

**Answer: c**



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**70.** The mutations that involve addition, deletion or substitution of a single base pair in a gene are referred to as

- A. point mutations
- B. lethal mutations
- C. silent mutations

D. retrogressive mutations

**Answer: a**



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71. Sickle cell anemia results from a single base substitution in a gene, thus it is an example of

- A. point mutations
- B. frame shift mutation
- C. silent mutations
- D. both a and b

**Answer: a**



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72. Select the incorrect matched pair.

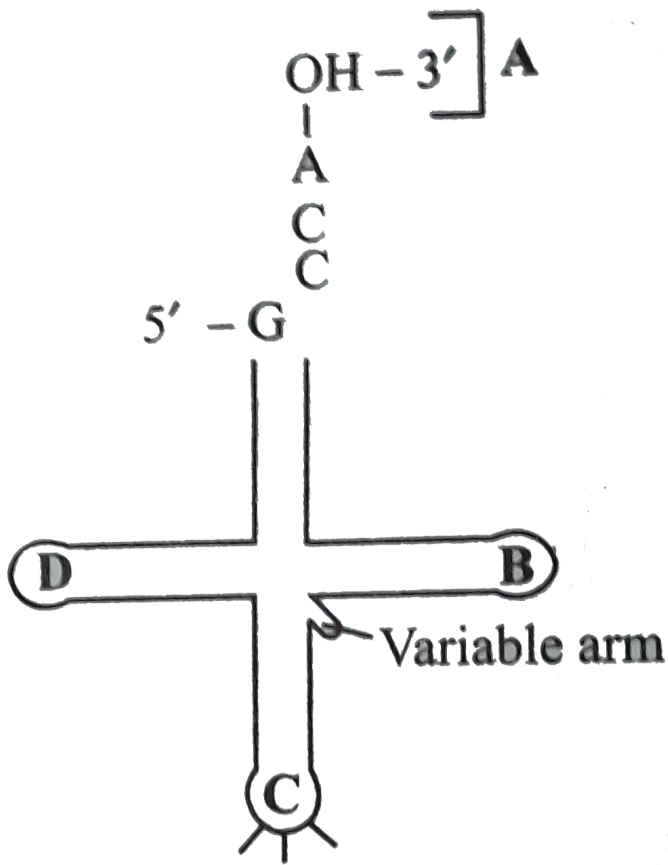
- A. Initiation codons-AUG,GUG
- B. Stop codons-U A A , UAG, UGA
- C. Methionine- AUG
- D. Anticodons - mRNA

**Answer: d**



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73. Identify the labels A, B, C and D in the given structure of tRNA and select the correct option.



A. 

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
Anticodon loop	<i>TΨC</i> loop	A A binding site	DHU loop

B.

(*A, B, C, D*), (A A binding site, *TΨC* loop, Anticodon loop, *DHU* loop)

C.

(*A, B, C, D*), (A A binding site, *DHU* loop, Anticodon loop, *TΨC* loop)

D.

(A, B, C, D), (A A binding site, DHU loop, TΨC loop, Anticodon loop)

**Answer: b**



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**74.** The differences between mRNA and tRNA are that

mRNA has more elaborated 3-dimensional structure due to extensive base-pairing

(ii) tRNA has more elaborated 3-dimensional structure due to extensive base-pairing

(iii) tRNA is usually smaller than mRNA

(iv) mRNA bears anticodon but tRNA has codons.

A. (i) and (ii)

B. (ii) and (iii)

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

D. (i),(ii),(iii) and (iv)

**Answer: b**



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**75.** Amino acid acceptor end of tRNA lies at

A. 5' end

B. 3' end

C.  $T\Psi C$  loop

D. DHU loop

**Answer: B**



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76. Which RNA carries the amino acids from the amino acid pool to mRNA during protein synthesis?

- A. rRNA
- B. mRNA
- C. tRNA
- D. hnRNA

**Answer: C**



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77. During translation , activated amino acids get linked to tRNA. This process is commonly called as

- A. charging of tRNA
- B. discharging of tRNA
- C. aminocylation of tRNA

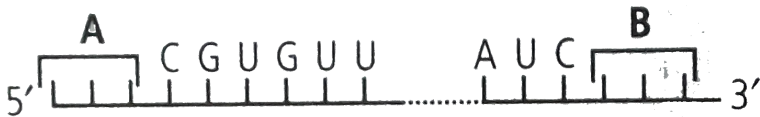
D.

Answer: d



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78. Refer to the given mRNA segment



It can be translated completely into a polypeptide. Which of the following codons may correspond with A and B ?

- A. A-AUG, GUG, B-UA A, UAG or UGA
- B. A-U A A ,UGA, B-AUG, GUG or UAG
- C. A-AUG,UGA, B-GUG, UA A or UGA
- D. A-AUG, GAG, B-U A A,U U Uor UGA

Answer: a



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79. In a mRNA molecule, untranslated regions (UTRs) are present at

- A. 5'-end (before start codon)
- B. 3'-end (after stop codon)
- C. Both (a) and (b)
- D. 3'-end only

**Answer: c**



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80. UTRs are the untranslated regions present on

- A. rRNA
- B. tRNA
- C. mRNA

Answer: c



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81. Given below are the steps of protein synthesis. Arrange them in correct sequence and select the correct option.

(i) Codon- anticodon reaction between mRNA and aminoacyl tRNA complex.

(ii) Attachment of mRNA and smaller sub-unit of ribosome.

(iii) Charging or aminoacylation of tRNA .

(iv) Attachment of larger sub-unit of ribosome to the mRNA-tRNA – (Met) complex.

(v) Linking of adjacent amino acids.

(vi) Formation of polypeptide chain.

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

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



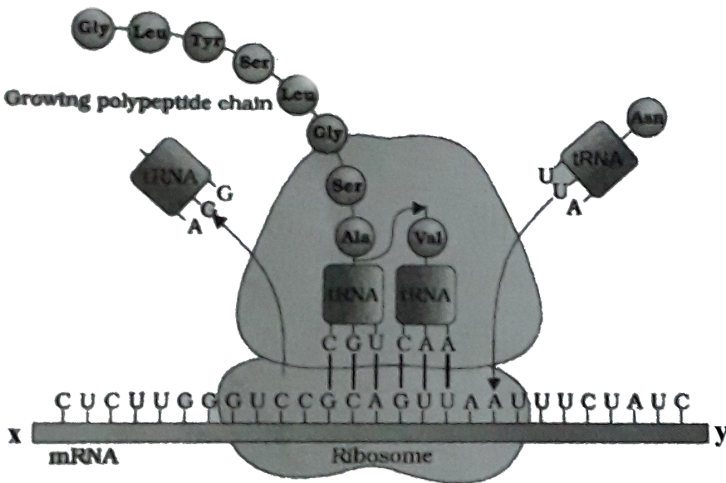
C. (iii) → (ii) → (iv) → (i) → (v) → (vi)

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

Answer: d

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82. Refer to the given figure



Select the option which identifies polarity X and Y and DNA sequence coding for serine (P) and the anticodon for the same amino acid (Q).

A. X Y P Q  
3' 5' TCA UCA

- B.  $X$   $Y$   $P$   $Q$   
5' 3' *UUG TCA*
- C.  $X$   $Y$   $P$   $Q$   
3' 5' *UCA TCA*
- D.  $X$   $Y$   $P$   $Q$   
5' 3' *TCA UCA*

**Answer: d**



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**83.** Which of the following statement is correct regarding ribosomes ?

- A. Most of a cell's DNA molecule are stored there.
- B. Complete polypeptide is released from there
- C. mRNAs are produced there
- D. DNA replication takes place there

**Answer: b**



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84. What would happen if in a gene encoding a polypeptide of 50 amino acids, 25<sup>th</sup> codon (UAU) is mutated to UA A?

- A. A polypeptide of 24 amino acids will be formed
- B. Two polypeptides of 24 and 25 amino acids will be formed
- C. A polypeptide of 49 amino acids will be formed
- D. A polypeptide of 25 amino acids will be formed

**Answer: a**



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85. Match column I with column II and select the correct option from the given codes.

Column I

A. Translation

B. Transcription

C. DNA replication

Column II

(i) Aminoacyl tRNA synthetase

(ii) Okazaki fragments

(iii) RNA polymerase

A. A-(ii), B-(i), C-(iii)

B. A-(i),B-(iii), C-(ii)

C. A-(iii),B-(i), C-(ii)

D. A-(ii),B-(iii), C-(i)

**Answer: b**



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**86.** Regulation of gene expression occurs at the level of

A. transcription

B. processing/splicing

C. translation

D. all of these.

**Answer: D**



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87. During expression of an operon , RNA polymerase binds to

- A. structural gene
- B. regulator gene
- C. operator
- D. promoter

**Answer: D**



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88. 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, Lac A

**Answer: d**



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**89.** Match column I with II column II and select the correct option from the given codes .

Column I

Column II

- |                    |  |
|--------------------|--|
| A. Operator site   | (i) Binding site for RNA polymerase      |
| B. Promoter site   | (ii) Binding site for repressor molecule |
| C. Regulator gene  | (iii) Codes for protein/enzyme           |
| D. Structural gene | (iv) Codes for repressor molecule        |

A. A-(ii), B-(i), C-(iii), D-(iv)

B. A-(ii), B-(i), C-(iv), D-(iii)

C. A-(iv), B-(iii), C-(i), D-(ii)

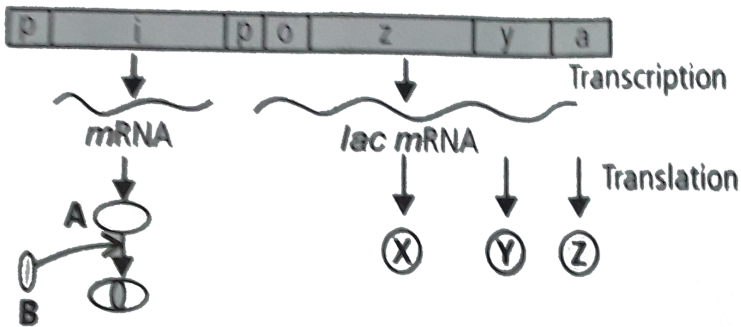
D. A-(ii), B-(iii), C-(i), D-(iv)

**Answer: b**



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90. The given figure shows lac operon and its functioning. Select the option which correctly labels A, B, X, Y and Z



A.

<i>A</i>	<i>B</i>	<i>X</i>	<i>Y</i>	<i>Z</i>
Repressor	Inducer	$\beta$ - galactosidase	Permease	Transacetylase

B.

<i>A</i>	<i>B</i>	<i>X</i>	<i>Y</i>	<i>Z</i>
Repressor	Inducer	Permease	$\beta$ - galactosidase	Transacetylase

C.

<i>A</i>	<i>B</i>	<i>X</i>	<i>Y</i>	<i>Z</i>
Inducer	Repressor	$\beta$ - galactosidase	Permease	Transacetylase

D.

<i>A</i>	<i>B</i>	<i>X</i>	<i>Y</i>	<i>Z</i>
Inducer	Repressor	$\beta$ - galactosidase	Transacetylase	Permease

Answer: a



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91. Which of the following cannot act as inducer ?

- A. Glucose
- B. Lactose
- C. Galactose
- D. Both (a) and (c)

Answer: d



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92. Inducible operon system usually occurs in (i) \_\_\_ pathways. Nutrient molecules serve as (ii) \_\_\_\_\_ to stimulate production of the enzymes necessary for their breakdown. Genes for inducible operon are usually switched (iii)\_\_\_\_\_ and the repressor is synthesised in an (iv)\_\_\_ form.



- A. (i) (ii) (iii) (iv)  
 anabolic corepressor on inactive
- B. (i) (ii) (iii) (iv)  
 anabolic inducer off active
- C. (i) (ii) (iii) (iv)  
 catabolic inducer off active
- D. (i) (ii) (iii) (iv)  
 catabolic corepressor on inactive

**Answer: c**

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**93.** Repressible operon system is usually found in (i)\_\_\_ pathways. The pathway's end product serves as a (ii) \_\_\_\_\_ to activate the repressor, turn off enzyme synthesis and prevent overproduction of the end product of the pathway. Genes for this operon are usually switched (iii)\_\_\_\_\_ and the repressor is synthesised in an (iv)\_\_\_\_\_ .

- A. (i) (ii) (iii) (iv)  
 anabolic corepressor on inactive
- B. (i) (ii) (iii) (iv)  
 anabolic inducer off active
- C. (i) (ii) (iii) (iv)  
 catabolic inducer off active

- D. (i) catabolic (ii) corepressor (iii) on (iv) inactive

**Answer: a**



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**94.** Match column I with II column II and select the correct option from the given codes .

Column I

A. Griffith

B. Hershey and Chase

C. Meselson

D. Jacob and Monod

Column II

(i) Lac operon

(ii) Semi-conservative DNA replication

(iii) Transduction

(iv) Transformation

A. A-(iv),B-(iii),C-(ii),D-(i)

B. A-(iii),B-(iv),C-(ii),D-(i)

C. A-(iv),B-(ii),C-(iii),D-(i)

D. A-(ii),B-(i),C-(iii),D-(iv)

**Answer: a**



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95. Human genome consists of approximately

A.  $3 \times 10^9 bp$

B.  $6 \times 10^9 bp$

C. 20,000-25,000 bp

D.  $2.2 \times 10^9 bp$

**Answer: A**



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96. Estimated number of genes in human being is

A. 3000

B. 80000

C. 20500

D.  $3 \times 10^9$

**Answer: c**



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**97.** Which of the following statement regarding 'human genome' is incorrect?

- A. Human genome consists of  $3 \times 10^9$  bp and about 20,500 genes
- B. The average gene size is 3000 bp and dystrophin is the largest known human gene
- C. Chromosome 1 contains maximum (2968) number of genes and Y-chromosome has the least (231) number of genes.
- D. Repeated (or repetitive ) sequences are not present in human genome.

**Answer: D**

98. Select the correct option that correctly fill the blanks i-iv.

I. Less than (i)\_\_\_ of genome represents structural genes that code for proteins.

ii. Chemical substance that binds with repressor and convert it into a non-DNA binding state is (ii)\_\_\_\_\_.

III. In prokaryotes, during replication RNA primer is removed by (iii) where as in eukaryotes it is removed by(IV)\_\_\_\_\_.

- |    |         |                |                          |                              |
|----|---------|----------------|--------------------------|------------------------------|
| A. | (i) 5%  | (ii) regulator | (iii) DNA polymerase II  | (iv) DNA polymerase $\beta$  |
| B. | (i) 10% | (ii) regulator | (iii) DNA polymerase I   | (iv) DNA polymerase $\alpha$ |
| C. | (i) 2%  | (ii) inducer   | (iii) DNA polymerase I   | (iv) DNA polymerase $\beta$  |
| D. | (i) 50% | (ii) inducer   | (iii) DNA polymerase III | (iv) DNA polymerase $\alpha$ |

**Answer: C**

99. Arrange the various steps of DNA fingerprinting technique in the correct order.

(i) Separation of DNA fragments by electrophoresis.

(ii) Digestion of DNA by restriction endonucleases.

(iii) Hybridisation using labelled VNTR probe.

(iv) Isolation of DNA .

Detection of hybridised DNA fragments by auto-radiography.

(v) Transferring the separated DNA fragments to nitrocellulose membrane.

A.  $(iv) \rightarrow (ii) \rightarrow (i) \rightarrow (vi) \rightarrow (iii) \rightarrow (v)$

B.  $(iv) \rightarrow (i) \rightarrow (ii) \rightarrow (iii) \rightarrow (vi) \rightarrow (v)$

C.  $(ii) \rightarrow (i) \rightarrow (iv) \rightarrow (vi) \rightarrow (iii) \rightarrow (v)$

D.  $(iii) \rightarrow (v) \rightarrow (iv) \rightarrow (ii) \rightarrow (i) \rightarrow (vi)$

**Answer: a**



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**100.** Match column I with II column II and select the correct option from the given codes .



A. A-(ii), B-(iii), C-(iv), D-(i)

B. A-(iii), B-(ii), C-(i), D-(iv)

C. A-(iii), B-(ii), C-(iv), D-(i)

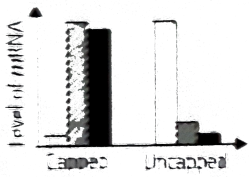
D. A-(i), B-(ii), C-(iii), D-(iv)

**Answer: b**

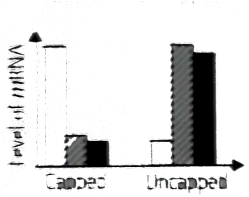


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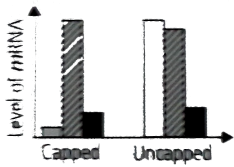
**101.** A scientist was studying an in vitro eukaryotic transcription system, which produced both capped and uncapped mRNAs. For an experiment, he incubated these mRNAs with mammalian cell nuclear extract and quantified the different products as shown . Which of the following graphs represents the expected result correctly ?



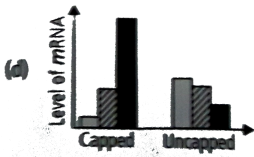
A.



B.



C.



D.

Answer: d



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102. A DNA template plus primer with the structure (where  $\phi$  = a phosphate group) is placed in an *in vitro* DNA synthesis system containing  $Mg^{2+}$ ,



an excess of the four deoxyribonucleoside triphosphates, etc. and a mutant form of E. coli DNA polymerase I that lacks 5' → 3' exonuclease activity. The 5' → 3' polymerase and 3' → 5' exonuclease activities of this aberrant enzyme are identical to those of normal E. coli DNA polymerase I. It simply has no 5' → 3' exonuclease activity. What will be the structure of the final product?



Answer: a

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103. C-value is the characteristic DNA content in a haploid cell of a given species. Earlier it was considered that C-value correlates with organism complexity. However, it is now evident that C-value varies enormously

among species and this bears no correlation with the complexity of the organisms. For example, the cells of some salamanders may contain 40 times more DNA than those of humans. Which of the following explains this C-value paradox?

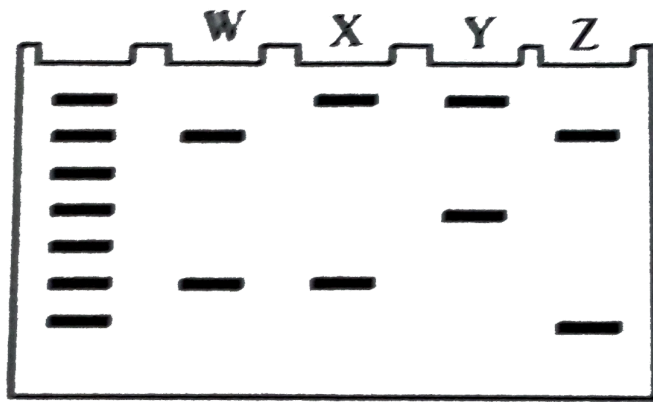
- A. Polyploidy
- B. Chromosomal mutation
- C. Non-coding DNA
- D. Coding DNA

**Answer: c**



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**104.** The DNA fingerprinting analysis analysis of four family members is shown below.



Study the band pattern obtained and assign each family member to W, X, Y and Z. Choose the correct option.

- A. W-father , X-mother , Y-child, Z-paternal uncle
- B. W-Child , X-father, Y-mother, Z-maternal uncle
- C. W-father , X-child, Y-mother, Z-paternal uncle
- D. W-child , X-father , Y-maternal uncle, Z-mother

**Answer: c**



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**105.** An organism uses 20 amino acids while its DNA is made up of 6 types of nitrogenous bases. What would be the minimum size of a codon ?

- A. 6
- B. 4
- C. 3
- D. 2

**Answer: d**



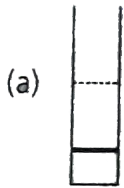
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**106.** The semi-conservative nature of DNA replication was established by Meselson and Stahl in their classic experiment with bacteria. They grew bacteria in  $N^{15} - NH_4Cl$  containing medium with  $N_{14}$  - containing compounds and allowed to grow for three generation . CsCl density gradient centrifugation of isolated DNA established the nature of semiconservation DNA replication. The pictorial representation below

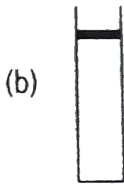
shows the position of differentially labeled DNA in CsCl density gradient.



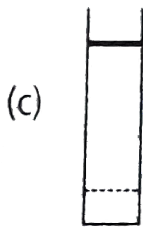
Had the DNA replication been conservative, what would have been the pattern ?



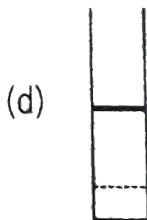
A.



B.



C.



D.

**Answer: c**



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**107.** You have created a fusion between trp operon and lac operon which encodes the enzymes for tryptophan biosynthesis, under the regulatory control of the lac operator. Under which of the following conditions will tryptophan synthase be induced in the strain that carries the chimeric operator fused operons ?

- A. Only when both lactose and glucose are absent
- B. Only when both lactose and glucose are present
- C. Only when lactose is absent and glucose is present
- D. Only when lactose is present and glucose is absent

**Answer: d**



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**108.** A DNA sequence undergoes three subsequent point mutations which result in subsequent changes in transcription of mRNA as shown below:

select the correct sequence of point mutations that occurred in the DNA.

A. Missense mutation → Frame shift mutation → Nonsense mutation

B. Silent mutation → Nonsense mutation → Frameshift mutation

C. Silent mutations → Frame shift mutation → Nonsense mutation

D. Missense mutation → Frameshift mutation → Silent mutation

**Answer: c**



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**109.** 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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**110.** 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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**111.** Both deoxyribose and ribose belong to a class of sugars called

- A. trioses
- B. hexoses
- C. pentoses
- D. polysaccharides

**Answer: C**



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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 helix
- B. the semi-conservative nature
- C. uniform width throughout DNA

D. uniform length in all DNA

**Answer: c**



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**113.** The net electric charge on DNA and histones is

A. both positive

B. both negative

C. negative and positive, respectively

D. zero

**Answer: C**



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

- A. 3' (downstream ) end and 5' (upstream ) end , respectively of the transcription unit
- B. 5' (upstream ) end and 3' (downstream ) end , respectively of the transcription unit
- C. the 5' (upstream) end
- D. the 3' (downstream )end

**Answer: b**

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115. Which of the following statement is the most appropriate for sickle cell anaemia ?

- A. It cannot be treated with iron supplements

- B. It is a molecular disease
- C. It confers resistance to acquiring malaria
- D. all of the above

**Answer: d**

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**116.** One of the following is true with respect to AUG

- A. it codes for methionine only
- B. it is also an initiation codon
- C. It codes for methionine in both prokaryotes and eukaryotes
- D. all of the above

**Answer: d**

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**117.** The first genetic material could be

- A. protein
- B. carbohydrates
- C. DNA
- D. RNA

**Answer: D**



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**118.** With regard to mature mRNA in eukaryotes

- A. exons and introns do not appear in the mature RNA
- B. exons appear but introns do not appear in the mature RNA
- C. introns appear but exons do not appear in the mature RNA
- D. both exons and introns appear in the mature RNA

**Answer: B**



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**119.** The human chromosome with the highest and least number of genes in them are respectively

- A. chromosome 21 and Y
- B. chromosome 1 and X
- C. chromosome 1 and Y
- D. chromosome X and Y

**Answer: C**



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**120.** 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 stahi

**Answer: d**

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**121.** 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 purines 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 ©

**Answer: b**



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**122.** 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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**123.** Which of the following steps in transcription is catalysed by RNA polymerase?



- A. Initiation
- B. Elongation
- C. Termination
- D. all of the above

**Answer: D**

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**124.** Control of gene expression takes place at the level of

- A. DNA-replication
- B. transcription
- C. translation
- D. none of the above.

**Answer: b,c**

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125. 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 the expression
- D. They can act both as activators and as repressors.

**Answer: d**



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126. Which was the last human chromosome to be completely sequenced ?

- A. Chromosome 1

B. Chromosome 11

C. Chromosome 21

D. Chromosome X

**Answer: a**



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**127.** Which of the following are the functions of RNA ?

A. It is a carrier 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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**128.** 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 Chargaff's 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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**129.** 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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**130.** If Meselson and Stahl's experiment is continued for four generations in bacteria, the ratio of  $\overset{15}{N}/\overset{15}{N}:\overset{15}{N}/\overset{14}{N}:\overset{14}{N}/\overset{14}{N}$  containing DNA in the fourth generation would be

A. 1:1:0

B. 1:4:0

C. 0:1:3

D. 0:1:7

**Answer: d**



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**131.** 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.  $5' - UACUUAC - 3'$

C.  $5' - CAUUCAU - 3'$

D.  $5' - GUAAGUA - 3'$

**Answer: a**



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**132.** The RNA polymerase holoenzyme transcribes

- A. the promoter, structural gene and the terminator region
- B. the promoter and the terminator region
- C. the structural gene and the terminator region
- D. the structural gene only.

**Answer: d**

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**133.** 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'-GUA-3'

**Answer: b**

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**134.** The amino acid attaches to the tRNA at its

- A. 5' - end
- B. 3' - end
- C. anticodon site
- D. DHU loop

**Answer: b**

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**135.** To initiate translation, the mRNA first binds to

- A. the smaller ribosomal sub-unit
- B. the larger ribosomal sub-unit
- C. the whole ribosome



D. no such specificity exists.

**Answer: A**



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**136.** 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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**137. Assertion :** The sugar phosphate backbone of two chains in DNA double helix show anti-parallel polarity.

**Reason :** The phosphodiester bonds in one strand go from a 3' carbon of one nucleotide to a 5, carbon of adjacent nucleotide, whereas those in complementary strand go vice versa.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. if both assertion and reason are false.

**Answer: a**



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**138.** Assertion : In Griffith's experiment, a mixture of heat-killed virulent bacteria R and live non - virulent bacteria S, lead to the death of mice.

Reason : 'Transforming principle' got transferred from heat -killed R strain and made it virulent.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. if both assertion and reason are false.

**Answer: b**



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**139.** Assertion : DNA is considered to be better genetic material than RNA for most organisms.

Reason : 2' -OH group present in RNA makes it labile and less reactive.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false.

**Answer: c**



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**140.** Assertion : The mechanism of DNA replication is semi-conservative in nature.

Reason : Each of the complementary strands of the parental double helix is conserved during the process.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. if both assertion and reason are false.

**Answer: a**

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**141.** Assertion : Synthesis of daughter or new strand occurs continuously along the parent  $3' \rightarrow 5'$  strand.

Reason: DNA polymerase can polymerise nucleotides in  $3' \rightarrow 5'$  direction on  $5' \rightarrow 3'$  strand.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. if both assertion and reason are false.

**Answer: c**



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**142.** Assertion : Template or antisense strand , having  $3' \rightarrow 5'$  polarity takes part in transcription.

Reason : Non-template or sense strand, having  $5' \rightarrow 3'$  polarity, does not take part in transcription.

- A. If both assertion and reason are true and reason is the correct explanation of assertion

- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. if both assertion and reason are false.

**Answer: b**

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**143.** Assertion : Polycistronic mRNA, found in prokaryotes, specify a number of polypeptides.

Reason : Monocistronic mRNA, found in eukaryotes, specify only a single polypeptide.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. if both assertion and reason are false.

**Answer: b**



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**144.** Assertion : Eukaryotic mRNA requires post transcription processing for formation of functional mRNA.

Reason : Eukaryotic transcripts possess extra non-functional segments called introns.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. if both assertion and reason are false.



**Answer: a**



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**145.** Assertion : A change in nitrogen base at the third position of a codon causes change in the expression of the codon.

Reason : A codon is mostly read by all the three nitrogen bases.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false.

**Answer: d**



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**146.** Assertion : tRNA recognises its corresponding codon in mRNA.

Reason : For each codon, there is an individual tRNA.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. if both assertion and reason are false.

**Answer: c**



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**147.** Assertion : Untranslated regions are sequences of RNA before initiation codon and after termination codon.

Reason : Untranslated regions provide stability to mRNA and also increase translational efficiency.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. if both assertion and reason are false.

**Answer: b**



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**148.** Assertion : The predominant site for control of gene expression in prokaryotes is transcription initiation.

Reason : The activity of RNA polymerase is regulated by accessory proteins, which affect recognition of start sites.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. if both assertion and reason are false.

**Answer: a**



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**149.** Assertion : Lac operon is a repressible operon.

Reason : The product of gene activity stops the activity of the said gene.

- A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. if both assertion and reason are false.

**Answer: d**

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**150.** Assertion : Repetitive sequences make up very large portion of human genome.

Reason : Repetitive sequences do not have direct coding functions in the genome.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. if both assertion and reason are false.

**Answer: B**



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**151.** Assertion : When the DNA sequences of two people are cut using the same restriction enzyme, the length and number of fragments obtained are different for both.

Reason : DNA sequence is arranged tandemly in many copy numbers which varies from chromosome to chromosome in an individual, showing high degree of polymorphism.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. if both assertion and reason are false.

**Answer: a**



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