

CLASS : XIth
DATE :

SUBJECT : BIOLOGY
DPP No. : 9

Topic :-MOLECULAR BASIS OF INHERITANCE

- In a 3.2 Kbp long piece of DNA, 820 adenine bases were found. What would be the number of cytosine bases ?
(A) 780 (B) 1560
(C) 740 (D) 1480
- Some of the steps of DNA fingerprinting are given below. Identify their correct sequence from the options given.
A. Electrophoresis of DNA fragments
B. Hybridisation with DNA probe
C. Digestion of DNA by restriction endonucleases
D. Autoradiography
E. Blotting of DNA fragments to nitrocellulose membrane
(A) C – A – B – E – D (B) C – A – E – B – D
(C) A – E – C – B – D (D) A – C – E – D – B
- If the sequence of bases in the coding strand of a double stranded DNA is 5' -GTTCGAGTC-3', the sequence of base in its transcript will be
(A) 5'-GACUCGAAC-3' (B) 5'-CAAGCUCAG-3'
(C) 5'-GUUCGAGUC-3' (D) 5'-CUGAGCUUG-3'
- The given figure shows the structure of nucleosome with their parts labelled as A, B & C. Identify A, B and C.
(A) A – DNA; B – H1 histone;
C – Histone octamer
(B) A – H1 histone; B – DNA;
C – Histone octamer
(C) A – Histone octamer; B – RNA;
C – H 1 histone
(D) A – RNA; B – H1 histone;
C – Histone octamer
- Match the codons given incolumn I with their respective amino acids given in column II and choose the correct answer.
(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

6. Select the wrong pair
 (A) RNA polymerase I - Sn RNA 5S rRNA, r-RNA
 (B) RNA polymerase I - r-RNA
 (C) RNA polymerase II - hnRNA
 (D) RNA polymerase - Trna
7. In the diagram given figure of Lac operon [2018]
 (A) i - Repressor, Z - β - galactosidase, y - permease, a - Transacetylase
 (B) i - Repressor, Z - β - galactosidase, y - permease, a - Transacetylase
 (C) i - Repressor, Z - β - galactosidase, y - permease, a - Transacetylase
 (D) i - Repressor, Z - β - galactosidase, y - permease, a - Transacetylase
8. Which of the following is codons codes for proline
 (A) CCC, CCU, CCG (B) UCC, UGU, CCU (C) CUG, CUU, CUA (D) CGC, CGG, CCA
9. Beads on string like structures of A are seen in B, which further condense to form chromosomes in C stage of cell division
- | A | B | C |
|----------------|------------|-----------|
| (A) Chromonema | Chromatin | Metaphase |
| (B) Chromatin | Chromatid | Metaphase |
| (C) Chromonema | Chromosome | Anaphase |
| (D) Chromonema | Chromatid | Anaphase |
10. Microsatellites are
 (A) Repetitive DNA sequences (B) ESTs
 (C) YAC (D) BAC
 (E) UTR
11. In the DNA molecule
 (A) The proportion of adenine in relation to thymine varies with the organism
 (B) There are two strands which run antiparallel-one in $5' \rightarrow 3'$ direction and other in $3' \rightarrow 5'$
 (C) The total amount of purine nucleotides and pyrimidine nucleotieds is not always equal
 (D) There are two strands which run parallel in the $5' \rightarrow 3'$ direction
12. The diagram shows an important concept inthe genetic implication of DNS. Fill in the blanks A to C.
 (A) A-Transcription, B - Translation, C-Francis Crick
 (B) A-Translation, B - Extension, C-Rosalind Frankline
 (C) A-Transcription, B- Replication, C-James Watson
 (D) A-Translation, B- Transcription, C-Ervin Chargaff
13. If the total of adenine and thymine in a double standed DNA is 55 %, the amount of guanine is this DNA willbe
 (A) 45 % (B) 27.5% (C) 25% (D) 22.5%
 (E) 40%
14. Read the following statements and choose the correct option
 A. Nitrogenous base is linked to the pentose sugar through a N-glycosidic linkage.
 B. Phosphate group is linked to $5'$ -OH of a nucleoside through phosphoester linkage
 C. Two nucleoside are linked through $3'-5'$ N-glycosidic linkage
 D. Negatively charged DNA is wrapped around positively charged histone octamer to form nucleosome.
 E. The chromatin that is more densely packed and stains dark is called euchromatin.
 (A) A,B and C alone are wrong (B) D alone is wrong
 (C) C and E alone are wrong (D) A lone is wrong

- (E) A,B and D alone are wrong.
15. The result of which of the following reaction experiments carried out by Avery et. on *Streptococcus pneumoniae* has proved conclusively that DNA is the genetic material ?
 (A) Live 'R' strain + DNA from 'S' strain + RNA ase
 (B) Live 'R' strain + DNA from 'S' strain +DNA ase
 (C) Live 'R' strain + Denatured DNA of 'S' strain + protease
 (D) Heat killed 'R' strain +DNA from 'S' strain + DNA ase
16. Match the column I with column II and choose the correct option
- | | |
|--|------------------------------|
| Column I | Column II |
| A. Incomplete dominance | i. Hershey and Chase |
| B. Linkage | ii. <i>Antirrhinum</i> sp. |
| C. Transforming principle | iii. Griffith |
| D. Proved that DNA is the genetic material | iv. Morgan |
| (A) A-i, B-iv ; C-iii : D-ii | (B) A-iv, B-ii ; C-iii : D-i |
| (C) A-ii, B-iii ; C-iv : D-i | (D) A-ii, B-iv ; C-iii : D-i |
| (E) A-ii, B-iv ; C-iii : D-i | |
17. Select the correct option
- | | |
|----------------------------|--|
| Direction of RNA synthesis | Direction of reading of the template DNA stand |
| (A) 5'-3' | 3'-5' |
| (B) 3'-5' | 5'-3' |
| (C) 5'-3' | 5'-3' |
| (D) 3'-5' | 3'-5' |
18. Choose the correct statement among the following.
 (A) Taylor and his colleagues used *E. coli* to prove semi- conservative replication of DNA.
 (B) In Griffith's experiment the mice infected with R-strain of *Streptococcus pneumoniae* died due to pneumonia
 (C) Hershey and Chase proved the transforming principle experimentally
 (D) Meselson and Stahl grew *Staphylococcus* in a medium containing cesium chloride to prove DNA is the genetic material
 (E) Semi-conservative replication was experimentally proved by Meselson and Stahl
19. Find the wrongly matched pair
 (A) Har Gobind Khorana - Synthesised RNA molecules chemically
 (B) George Gamow - Codon is triplet
 (C) Meselson and Stahl - Regulation of gene expression
 (D) Alec Jeffreys - DNA fingerprinting
 (E) Frederick Sanger - Amino acid sequencing
20. Find the correctly matched enzyme with the rRNAs they transcribe.
 I. RNA polymerase I- 28S, 18S and 5.8S rRNAs
 II. RNA polymerase III- 28S,18S and 5.8S RNAs
 III. RNA polymerase II- tRNA, 5sr RNA and sn RNAs
 IV. RNA polymerase II- hn RNA
- | | |
|-------------------|---------------------|
| (A) I and II only | (B) II and III only |
| (C) II only | (D) III and IV only |
| (E) I and IV only | |