

Practice Paper

XII

Q. 1 to 4 @1 mark

Q. 5 to 7@ 3 mark

Q.8 Q 2

FM=15

1. To produce 1600 seeds, the number of meiotic divisions required will be

- A. 2400
- B. 2000
- C. 1600
- D. 1800

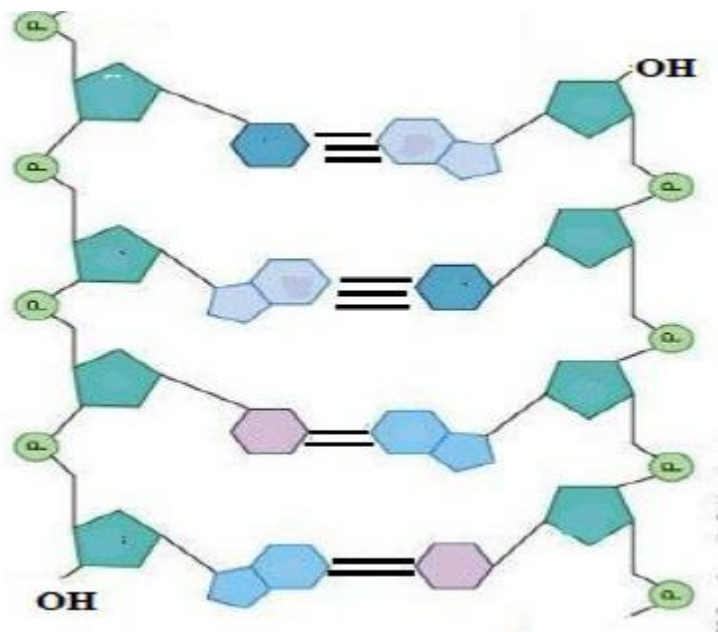
2.

A sample of normal double-stranded DNA was found to have thymine content of 27%. What will be the expected proportion of guanine in this strand?

- A. 23%
- B. 32%
- C. 36%
- D. 73%

3. Observe the schematic diagram that depicts a small section of nucleic acid. The bases in two strands are paired through hydrogen bonds that are shown by the dark lines. Identify the correct sequence of nucleotide in the 5'-3' direction.

- A. GCAT
- B. CGTA
- C. TAGC
- D. ATCG



4.

E. coli has 4.6×10^6 base pairs and completes the process of replication in 18 minutes, then the average rate of polymerization is approximately

- A. 2000 bp/s
- B. 4000 bp/s
- C. 3000 bp/s
- D. 1000 bp/s

5.

- A. The schematic representation given below shows a DNA strand at two types of mutations in the DNA strand.

Original template	A	U	G	C	A	G	A	C	A	U	C	U	U	A	G
	Met			Gln			Thr			Ser			Stop		

Mutation I	A	U	G	A	A	G	A	C	A	U	C	U	U	A	G
	Met			Lys			Thr			Ser			Stop		

Mutation II	A	U	G	A	G	A	C	A	U	C	U	U	A	G	
	Met			Arg			His			Leu					

- (i) Identify the type of mutation exhibited in I and II.
(ii) Which of the above mutation is more harmful? Give reason.

6.

Given below is a schematic representation of a mRNA strand

5' mRNA 3'

A G G A G G U A U G A U C U C G U A A A A U A A A

- i) In the above sequence identify the translational unit in mRNA.
ii) Where are UTRs found and what is their significance?

7. Elaborate Lac Operon with suitable diagram.

8. a.

- (D) 1. (C.B.S.E. 2023)
 DNA profiles of the child and three individuals 1, 2 and 3 who claim to be parents of the child are given. Select the option that shows the correct actual parent/parents of the child.

Child X	Individual 1	Individual 2	Individual 3

- (A) Individuals 1 and 3
 (B) Individuals 1 and 2
 (C) Individuals 2 and 3
 (D) Individual 1. (C.B.S.E. 2023)

b. Explain the mechanism of action of this process.