BK BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
SENIOR SECONDARY CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL

PRE-MID TERM EXAM 2024-25

BIOLOGY (044) Marking Scheme

Class: XII Marks:25

Section A

1. d) 7 1
2. a) males and females, respectively 1
3. c) A is true but R is false. 1

Section B

4. a) XX^h X XY 1+1
   Son- X^hY , Daughter- XX^h
   XX^h X XY------- X^hY
   b) Sex-linked recessive disorder.
5. T+C= 240+260= 500 1+1
   Chargaff's base pair rule.
   In a double stranded DNA, The ratios between Adenine and Thymine and Guanine and Cytosine are constant and equals one.
6. a) Dominance- The trait that can be expressed. 1+1
   Recessive- The trait that can not be expressed.
   b) Homozygous- Similar alleles
   Heterozygous- Dissimilar alleles
7. Histones are organised to form a unit of eight molecules called histone octamer. 2
   The negatively charged DNA is wrapped around the positively charged histone octamer to form a structure called nucleosome (Figure 6.4 a). A typical nucleosome contains 200 bp of DNA helix.
8. A Tall plant with yellow seeds- TtYy X ttyy 1+1

TtYy	ttYy	ttyy	Ttyy
Tall Yellow	Dwarf Yellow	Dwarf green	Tall green

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Section C

9. RR X rr- Rr 1+1+1
   Rr--- pink flowers.
   Incomplete inheritance.
10. The chromosomal disorders on the other hand are caused due to absence or excess or abnormal arrangement of one or more chromosomes. 1+1+1
    Failure of segregation of chromatids during cell division cycle results in the gain or loss of a chromosome(s), called aneuploidy .
    Ex- Down's syndrome
    Klinefelter's Syndrome
    Turner's Syndrome
11. a single gene can exhibit multiple phenotypic expression. Such a gene is called a pleiotropic gene. The underlying mechanism of pleiotropy in most cases is the effect of a gene on metabolic pathways which contribute towards different phenotypes. An example of this is the disease phenylketonuria 2+1

phenotypic expression characterised by mental retardation and a reduction in hair and skin pigmentation.

12. S strain ⟶ Inject into mice ⟶ Mice die 1+1+1

R strain ⟶ Inject into mice ⟶ Mice live

Griffith was able to kill bacteria by heating them. He observed that heat-killed S strain bacteria injected into mice did not kill them. When he

S strain (heat-killed) ⟶ Inject into mice ⟶ Mice live

S strain (heat-killed) + R strain (live) ⟶ Inject into mice ⟶ Mice die